

Economic Analysis of Sickness and Labour Productivity among Cocoa Farmers in Obafemi/Owode Local Government Area, Ogun State

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Abstract

A high proportion of people suffer from malnutrition and other diseases related to poor nutrition and the rural people are worst hit by sicknesses resulting from poor nutrition. Therefore, this research work examined effects of sickness on labour productivity among crop farmers in Obafemi/Owode Local Government Area of Ogun State. A total number of one hundred and forty two farmers were interviewed using a structured questionnaire. The data obtained were analyzed using descriptive statistics and regression analytical procedure.

The descriptive analysis indicated that farmers in the study area literarily have no other source of income (59.86%). They are mostly aged males (65.49%) who have little or no education but a long year of experience in farming (more than 90% have more than ten years experience). Malaria is discovered to be the main cause of the prevailing sickness in the area with about 52% victims affected by it. The regression analysis revealed that the type of toilet used by the farmers, distance of toilet from homestead, working hours per day, diversification extent of food consumed and number of days farmers fell sick during cropping season are major influencing factors. The effects of sickness on labour productivity revealed that land area cultivated by farmers and weight of seeds planted directly affect labour productivity while proportion of days lost by farmers due to sickness and educational qualification have negative effects. It is therefore, recommended that youths should be encouraged to venture into agriculture and the provisions of rural community health services should be strengthened.

Keywords: Sickness, days, labour, productivity and cocoa farmers.

Introduction

The Nigerian economy is predominantly agricultural, the sector which is a major contributor to the Gross Domestic Product (GDP) of the country with the cropping sub sector having a larger share of the contributed agricultural sector (CBN, 2004). In addition, agriculture typically employs over fifty percent of the labour force majority of who dwell in the rural areas in Nigeria where social services and infrastructure are limited or non-existent. A majority of rural people are poor who depend on agriculture for food and income. About 90 percent of the country's food is produced by small-scale farmers cultivating tiny plots of land who depend on rainfall rather than irrigation systems. A high proportion of rural people suffer from malnutrition and other diseases related to poor nutrition (IFAD, 2007). Despite the prosperity created by the country's oil wealth, the lack of basic needs for food, water and shelter has held up rural development in Nigeria (Francis, 1985). Nutrition is an input to and foundation for health and development. Better nutrition means stronger immune systems, less illness and better health. Healthy people are stronger, more productive and more able to create opportunities to gradually break the cycles of both poverty and hunger in a sustainable way (WHO, 2007). Fogel (1994, 1997) disclosed that a large part of British economic growth during 1780-1980 was due to increase in effective labour inputs that resulted from workers' better nutrition and improved health. Sohn (2000) confirmed that improved nutrition increased available labour inputs in the Republic of Korea by one percent a year and was even more during 1962-1995. Malnutrition and food insecurity have obvious implications for health; unbalanced diet results in chronic diseases such as cardiovascular disease, cancer and diabetes (WHO, 2007). Poor environmental hygiene, malnutrition and infections by some parasitic micro-organisms often lead to sickness. In addition, Alagiah (1981) while delivering a speech on the International Drinking Water Supply and Sanitation Decade (IDWSSD) pointed out that eighty percent of man's illness in impoverished developing countries is water related. Moreover, it was recently discovered that stress causes sickness due to the fact that the hormone released into the body during the time of stress can stop the immune system from functioning properly (ABC, 2005). Indoor air pollution is also a health hazard resulting from the use of cheap biomass for heating and cooking which causes the deaths of two million people a year in developing countries, usually poor women and children (Jean and Dag, 2003).

Ill health leads to a reduction in the time available for productive activities, increases in the cost of care and disease prevention, reduction in leisure time and disutility due to pains and inconveniences associated with sickness. However, good health offers gains which include increase in productivity, greater opportunities to

obtain better paying jobs and longer working lives (Alaba and Alaba, 2002). Although Nurkse and Schultz (1979) have argued that improved health programs and the decline in death rates in less developed countries like China, India, Egypt and Kenya create overcrowding on the land thereby reducing the marginal productivity of farm labour to zero or even negative value. Barlow (1967) and Malenbaum (1970), however, observed that suppression of malaria in Ceylon (now known as Sri Lanka in the Indian Ocean) and improved health programs in poor areas have positive effects on agricultural production. This is in line with Ram and Schultz (1979) who suggests that improved health in low income countries have resulted in an increase in lifespan which implies more productive years of participation in the labour force and creates economic incentives for parents to save more and invest in human capital of their children through schooling. They contend that those who say that marginal productivity of farm labour decreases as labour force grows relative to capital misconstrue concept of capital by limiting it to material capital and ignoring the accumulation of stock of human capital.

Children's schooling and rural-urban migration have influenced agriculture by raising the opportunity cost of labour in many agricultural areas and thus leading to a growing interest in the role of human capital and labour productivity in development, both inside and outside agriculture (Van den Boom et al., 1977). A person's physical productive ability however, does not only depend upon his skills, but also upon his physical and mental health as well as the level of nutritional status from which he derives his immediate energy requirements. Health capital is consequently affected by preventable diseases which make farmers not utilize fully all farm inputs at their disposal, and it debilitates farmers physical performance and also have reducing effects on farm profit levels (Ngambeki, 1980; Ngambeki and Ikpi, 1982).

In recent times, the Federal Government of Nigeria has intensified efforts at bringing primary health care to rural populace through several health policy reforms. The most important of the reforms was in the area of Primary Health Care (PHC) and the complimentary drug policy which the national health policy (produced in 1988) made the cornerstone of the nation's health care. The focus of this study however, is to investigate the effects of ill health on farmers' productivity with an aim to find the determinants of days lost by farmers so as to help government focus on other areas of intervention other than building primary health centres.

The objectives of the study are to describe the socio-economic characteristics of farmers; identify the types of sickness predominant among the farmers and the predisposing factors; identify the determinants of the proportion of days lost by farmers due to sickness; determine the effect of sickness on labour productivity.

Methodology

The study was carried out in Obafemi/Owode Local Government area of Ogun State. It has a landmass of 104,787.07 hectares and the major occupation of the inhabitants is farming while some people involve themselves in quarrying business, artisan works and handcrafts as well as tie and dye making. Multi-stage random sampling technique was used to collect data for the study. The first stage involved a random selection of eight circles from both Obafemi and Owode blocks as classified by the Ogun State Agricultural Development Project while the second stage involved a random sampling of 142 respondents from the selected circles.

Data analysis

The data collected were analysed using the following analytical techniques:

Descriptive Analysis: Simple statistics such as frequencies, percentages and averages were used to describe the socio-economic characteristics and the predominant sickness among farmers in the study area.

Determinants of Days Lost by Farmers: An ordinary least square regression analysis was used to estimate the parameters of the model. The model is specified below:

$$y = f(X_1, X_2, X_3 \dots X_{12})$$

Where:

X_1 = Age in years

X_2 = Level of education (in years)

X_3 = Type of toilet dummy (water closet =1, otherwise =0)

X_4 = Distance of toilet to homestead (km)

X_5 = Source of drinking water (Pipe borne =1, otherwise =0)

X_6 = Distance of water to homestead (km)

X_7 = Average hours of work per day

X_8 = Average hours of leisure per day

X_9 = Diversification extent of food consumed

X_{10} = Netted window (presence = 1, otherwise =0)

X_{11} = Weight in kilograms

X_{12} = Number of times farmers fell sick during cropping session

Note:

X_9 = Diversification index of food expenditure = Herfindal index

$$X_9 = \sum_{i=1}^n \left[\frac{C_i}{\sum_{i=1}^n C_i} \right] \times 100$$

C_i is the amount spent on food item i per household

$\sum_{i=1}^n C_i$ is the total amount spent on food item i by all household interviewed.

The higher the index the more diverse are the sources of food nutrient intake. It is expected that the maximum index number that a household could obtain is 1 which signifies that the household has a perfect food diversification index and the least index is 0.

Four functional forms were fitted to data collected. The forms are explicitly represented in the equations below:

Linear model: $y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \dots + \alpha_{12} X_{12} + U$

Semi log model: $y = \alpha_0 + \alpha_1 \text{Log}X_1 + \alpha_2 \text{Log}X_2 + \dots + \alpha_{12} \text{Log}X_{12} + U$

Double log model: $\text{Log} y = \alpha_0 + \alpha_1 \text{Log}X_1 + \alpha_2 \text{Log}X_2 + \dots + \alpha_{12} \text{Log}X_{12} + U$

Exponential model: $y = \alpha_0 + \alpha_1^{x_1} + \alpha_2^{x_2} + \dots + \alpha_{12}^{x_{12}} + U$

Effect of sickness on labour productivity: Labour productivity which is defined as output in naira divided by total labour used in man-day (Q), is influenced by certain identified variables (Z s) and these independent variables are:

Z_1 = Land area (ha)

Z_2 = Seeds planted (₦)

$Z_3 = \frac{\text{Number of sick days per season}}{\text{Total number of days in the season}}$

Z_4 = Age in years

Z_5 = Level of education

Z_6 = fertilizers (kg)

The model can be implicitly represented as

$$Q = f(Z_1, Z_2, Z_3, Z_4, Z_5, Z_6)$$

Four functional forms were fitted to data collected. The forms are explicitly represented in the equations below:

Linear model: $Q = \beta_0 + \beta_1 Z_1 + \beta_2 Z_2 + \dots + \beta_6 Z_6 + U$

Semi log model: $Q = \beta_0 + \beta_1 \text{Log}Z_1 + \beta_2 \text{Log}Z_2 + \dots + \beta_6 \text{Log}Z_6 + U$

Double log model: $\text{Log} Q = \beta_0 + \beta_1 \text{Log}Z_1 + \beta_2 \text{Log}Z_2 + \dots + \beta_6 \text{Log}Z_6 + U$

Exponential model: $Q = \beta_0 + \beta_1^{Z_1} + \beta_2^{Z_2} + \dots + \beta_6^{Z_6} + U$

The lead equation was chosen based on economic, econometric and statistical criteria.

Results and Discussion

Socio-Economic Characteristics of Farmers

Table 1 shows the age distribution of farmers in the study area. The modal age of farmers was found to be between 60 and 69 years accounting for about 29 per cent of the farmers. Farmers within age bracket 50 and 59 were 23.24 per cent while those in age bracket 40 and 49 as well as those who were 70 years old and above were 19.01 per cent each. The younger generation within 30 and 39 constituted 9.86 percent only. This study depicts future problem of farming in the study area as youth who are strong and dynamic are few in the vocation and the aged (50 and above) constitute the largest proportion of farmers (71.13%). Thus there is a possibility of food shortage and increase in prices of food in near future if more youths are not encouraged in farming. It can be deduced from Table 1 that a larger percentage of sample farmers were men (65.49%). This could be because of the fact that farming requires a lot of strength, energy and power. The proportion of married farmers was 85.92 percent while that of the widows and singles were 8.45 and 5.63 percent respectively (Table 1). This result complements the fact that majority of the farmers belong to the older age group. It is however believed that amount spent on hiring labour will reduce owing to the fact that children from these families can help in farm activities. The educational status shows that 56.34 percent of the farmers did not have any form of formal education, 33.80 percent attended primary and 9.86 percent had secondary school education. Since education

could affect the farmers' decision on methods of treating sickness, it could as well be an indicator to low or high labour productivity. The modal family size of the sample farmers was between 4 and 6 persons per household associated with 28.1 percent sample households. About 27.46 percent households had family size between 7 and 9, while 24.65 percent had family size between 1 and 3. It may be noted that the larger the family size, the higher the family labour participation in farm operations and the more the weight of household expenses on the family heads. As stated in Table 1, about 52 percent of the farmers suffered from malaria, 24.65 percent suffered from typhoid, 13.38 percent suffered from pneumonia and 10.56 percent suffered from back pain. Thus malaria was the major cause of sickness of sample farmers. This means farmers were subjected to unhealthy environment.

Table 1: Socio-economic characteristics of the farmers

Variables	Frequency	Percentage
Age (years)		
30-39	14	9.86
40-49	27	19.01
50-59	33	23.24
60-69	41	28.87
70 and above	27	19.01
Total	142	100
Gender		
Female	49	34.51
Male	93	65.49
Total	142	100
Marital Status		
Married	122	85.92
Single	8	5.63
Widowed	12	8.45
Total	142	100
Level of Education		
None	80	56.34
Primary	48	33.80
Secondary	14	9.86
Total	142	100
Household Size		
1-3	35	24.65
4-6	40	28.17
7-9	39	27.46
10-12	24	18.90
> 12	4	2.82
Total	142	100
Prevailing Sickness		
Back pain	15	10.56
Pneumonia	19	13.38
Malaria	73	51.41
Typhoid Fever	35	24.65
Total	142	100

Source: Field Survey Data, 2006.

Determinants of Proportion of Days Lost by Farmers

Multiple forms of regression analysis were used to obtain the determinants of proportion of days lost by farmers. Out of the four functional forms tested for goodness of fit, semi-log functional form was chosen as the lead equation.

The result of different functional equations (linear, semi-log, double-log and exponential) is shown in Table 2. All the functional forms had variable X4 which is the distance of toilet from homestead to be significant at $P \leq 0.01$. In addition, X9, diversification extent of food consumed, was equally significant at $P \leq 0.01$ in all functions except in exponential function. X3 which is defined as the type of toilet was significant at $P \leq 0.05$ and $P \leq 0.10$ in semi-log and double-log functional forms respectively and so was X7, hours spent farming per day, significant at $P \leq 0.01$ and $P \leq 0.05$ in semi-log and double-log correspondingly. X12, number of days farmers fell sick during cropping season, was significant in linear, semi-log and exponential functions at $P \leq 0.01$, $P \leq 0.05$

and $P \leq 0.10$ in the same order.

Semi-log functional form which has the highest number of significant variables with adjusted R² being 21.38% was chosen as the lead equation. The equation was statistically significant at $P \leq 0.01$ though the adjusted R² was small. This means that the model presents a good fit for the data. The coefficients of the variables of average of hours farming and the proportion of days lost per person had a positive sign with $P \leq 0.05$ level of significance. This implies that one percent increase in the average hour of work per day will lead to 0.028 percent increase in the proportion of days lost by farmers and one percent increase in the number of days farmers fell sick during cropping season will result in 0.010 percent decrease in the proportion of days lost by farmers. This complements the observation that most farmers spent long time working on farm and had little leisure, hence, the tendency to fall sick increases. Also, coefficients of type of toilet used and distance of toilet from homestead were significant at $P \leq 0.05$ and $P \leq 0.01$ respectively with a negative sign. This can be explained thus: one percent increase in the number of farmers that uses a more hygienic type of toilet, that is, water closet will lead to 0.044 percent decrease in the proportion of days lost and a unit increase in the distance of toilet from homestead will lead to 0.010 decrease in the proportion of days lost due to sickness. This is because in most villages, passage of excreta is usually done in nearby bushes. This could however lead to air pollution and hence, outbreak of diseases. If a house-built toilet which would be hygienically maintained could not be afforded, the farther away the toilets are from homestead, the more healthy farmers would be. The coefficient of the diversification extent of food consumed by farmers had a negative relationship with the proportion of days farmers lost due to sickness and was significant at $P \leq 0.01$. Increase in the diversification extent of food consumed by farmers will lead to 0.026 decreases in the number of days lost by farmers due to sickness. Therefore, the more diverse the sources of food intake of farmers, the more healthy they become.

Table 2: Determinants of Proportion of Days Lost By Farmers

Functional forms	α_0	α_1	α_2	α_3	α_4	α_5	α_6	α_7	α_8	α_9	α_{10}	α_{11}	α_{12}	R ²	Adjusted R ²	F
Linear	0.0838 (2.64)	-0.0001 (-0.32)	0.0001 (0.15)	-0.0151 (-0.76)	-0.117*** (-5.70)	-0.0071 (-0.40)	0.0001 (0.24)	0.0017 (1.64)	-0.0019 (-0.54)	0.1041*** (2.71)	-0.0133 (-0.84)	0.0001 (0.18)	0.0838*** (4.37)	0.3458	0.2850	5.68
Semi-log	0.024 (0.21)	-0.010 (0.61)	-0.001 (-2.10)	-0.044* (-4.02)	-0.010*** (-4.11)	-0.0021 (-0.14)	-0.0005 (-0.018)	0.0277*** (0.011)	-0.0061 (-0.007)	-0.026*** (-0.008)	-0.003 (-0.017)	-0.008 (-0.41)	-0.0102** (2.31)	0.2807	0.2138	4.20
Double-log	-5.2270 (-2.50)	0.1917 (0.63)	-0.0376 (-1.10)	0.7031* (-1.82)	-1.376*** (-2.86)	-0.0536 (-0.16)	-0.0360 (-0.52)	0.4695** (2.31)	-0.0147 (-0.12)	-0.4606*** (-3.03)	-0.2011 (-0.65)	-0.0224 (-0.06)	0.0411 (0.46)	0.2088	0.1352	2.84
Exponential	-3.0480 (-4.93)	0.0047 (0.82)	-0.0094 (-0.52)	-0.3921 (-1.01)	-1.559*** (-3.91)	-0.0823 (-0.24)	0.0039 (0.47)	0.0319 (1.54)	0.0131 (0.19)	-1.7887* (-2.40)	-0.3318 (-1.08)	0.0021 (0.34)	0.0094* (1.95)	0.2081	0.1345	2.83

Source: Field Survey Data, 2006.

Figures in parenthesis are t-values

***, ** Coefficient significant at 1%, 5% respectively

Effects of Sickness on Labour Productivity

The effect of sickness on labour productivity among the farmers in the study area is explained here using multiple regression analysis. Three types of functional forms were tested for goodness of fit. They include linear, semi-log and double-log functions. The results are shown below Table 3.

Table 3: Effects of Sickness on Labour Productivity

Functional forms	β_0	β_1	β_2	β_3	β_4	β_5	β_6	R ²	R ²	F
Linear	33649.34 (2.93)	-2775.36* (-1.94)	428.47*** (4.11)	-50165.83* (-1.82)	-2195.63 (-0.23)	-167.74 (-0.86)	-862.20 (-1.65)	0.15271	0.1084	3.45
Semi-log	21773.24 (0.61)	-2667.51 (-1.08)	9261.64*** (3.71)	-4745.19* (-1.81)	-1542.41 (-0.16)	-9478.27 (-0.94)	-1867.21 (-1.92)*	0.1364	0.0913	3.02
Double-log	8.18 (8.83)	-0.05 (-0.82)	0.59** (9.14)	-0.08 (-1.15)	-0.13 (-0.51)	-0.03* (-0.03)	-0.06** (-0.20)	0.4151	0.3845	13.58
Exponential	9.53 (31.39)	-0.12*** (-3.21)	0.02*** (8.92)	-1.45*** (-1.98)	-0.15 (-0.58)	-0.01 (-0.21)	-0.02** (-1.63)	0.5685	0.5190	15.79

Source: Field survey data, 2006.

Figures in parenthesis are t-values

***, **, * Coefficients significant at 1%, 5%, 10% respectively

Based on economic, statistical and econometric criteria, exponential function was selected as the lead equation. The exponential functional form has R² of 66.85%, R² of 51.90 % and F-ratio of 15.79 as shown in Table 3. Four explanatory variables out of six were significant in the model and three variables carried a negative sign each showing their inverse relationship with the regressand. The significant variables include: cultivated land area in hectares (Z₁), the seeds planted in naira (Z₂), the proportion of days lost by farmers due to sickness in the season (Z₃) and (Z₆) educational level of the farmers.

Cultivated Land Area (Z₁): This was significant at $P \leq 0.10$ and was found to have a direct relationship with labour productivity. It can therefore be explained that for every additional unit hectare of land area cultivated there will be 80 percent increase in output per labour.

Seeds Planted: It was found to have $P \leq 0.01$ level of significance. It equally had a positive relationship with output per labour. The result signifies that for every one naira increase in the amount of seeds planted which invariably means a unit increase in the total weight of seeds; there will be 62 percent increase in labour productivity.

Proportion of Sick Days per Person: There exists an inverse relationship between the proportion of sick days per person and the labour productivity in the study area. It was significant at $P \leq 0.01$. The equation can thus be interpreted that for every single day a farmer is held down by sickness in the cropping season there was 0.8049 reductions in his expected output.

Level of Education: This was positively related to labour productivity and it was significant at $P \leq 0.10$. The direct relationship between level of education and labour productivity revealed that the higher the level of education of a farmer the more productive he is. This can be related to his speed in understanding innovation which could be helpful to his work, better understanding of how to take care of his health and better management of his environment.

Conclusions and Recommendations

This study reveals that cultivated land area, weight of seeds planted and farmers' level of education greatly influence labour productivity so also the proportion of days lost by farmers due to sickness which was significantly determined by type of toilet used, distance of toilet from homestead, hours worked per day, diversification extent of food consumed and number of days farmers fell sick during the cropping season. It can thus be concluded that improving the health status of farmers and those factors that prevent sickness will consistently increase farmers' output per person.

It is therefore recommended that the policy that looks into rural development should not leave behind health policy which lay emphasis on health preventive care and not health curative services so that preventable diseases would have been combated before they produce debilitating effects on the people. Safe, unceasing and accessible drinking water should be provided for the villagers to avoid water borne diseases. There should be continuing education on the advantages of improved nutrition on health. This should be carried out by the local government and the village health centres. The farmers should be made aware about the right combinations of food nutrients and the functions performed by each.

Policy that empowers the young school leavers who are strong and more educated to divert their strength into agriculture should not be neglected. Those who are interested should be helped with enough resources to take off. Hence, Ogun State Employment Generation Programme should be strengthened to reach more to the youths so that their productivities can be enhanced.

References

- Alaba O.A. and Alaba O.B. (2002): Malaria in Children for Female Caregivers Productivity in Nigeria. Paper presented at the 43rd Nigerian Economic Society Conference, Lagos
- Alagiah, D.R. (1981): "The International Drinking Water Supply and Sanitation Decade (IDWSSA)" Talk Delivered in Zimbabwe during the Launching of Decade pp. 1-10
- Australian Broadcasting Corporation (2005): Stress Causes Sickness: www.abc.net.au/news/newsitems/200512/s1523294.htm,
- Barlow Robin (1967): The Economic Effects of Malaria Eradication. *American Economic Review*. 57(2) pp 130-148
- Bloom D.E., Canning D. and Sevilla J. (2003): Technological Diffusion, Conditional Convergence and Economic Growth, NBER Working Paper, No. 8713 Boston, USA, pp. 1-25.
- Central Bank of Nigeria, (2004): Central Bank of Nigeria, Annual Report.
- Fogel R.W. (1994), Economic Growth, Population Theory and Physiology: The Bearing of Long Term Processes on the Making of Economic Policy, *American Economic Review*, 83(3): 369- 395.
- Fogel R.W. (1997), New Findings on Secular Trends in Nutrition and Mortality: Some Implications for Population Theory, in M. Rosenzweig and O. Stark, eds., *Handbook of Population and Family Economics*, Volume 1A, New York, Elsevier.
- Francis C. Okafor (1985): Basic needs in rural Nigeria, Springer Netherlands, Vol.17, No 2. pp115- 125.
- Frank Feeley, Paul Bukuluki Alizanne Collier and Matthew Fox (2004): The Impact of HIV/AIDS on Productivity and Labor Costs in Two Ugandan Corporations, Center for International Health and Development, Boston University School of Public Health.
- IFAD, (2007): Rural Poverty in Nigeria.
- Jean Lennox and Dag Ehrenpreis (2003): Good Health: A Cornerstone of Development, OECD Observer No. 237 May 2003.
- Malenbaum, W. (1970): Health and Productivity in Poor Areas. *Empirical Studies in Health Economics* ed. A.E.

- Klarman, Baltimore, Johns Hopkins University Press.
- Martine Audibert and Jean-Franois Etard (1998): Impact of Schistosomiasis on Rice Output and Farm Inputs in Mali *Journal of African Economies*, *Volume 7, Number 2, 185-207*.
- Ngambeki, D. S. (1980): Nutrition, Health, Capital and Agricultural Labour Productivity in Oyo and Ogun States of Nigeria. Unpublished PhD Thesis, University of Ibadan, Nigeria.
- Ngambeki, D. S. and Ikpi, A.E. (1982): "Rural Farmer Productivity in the Tropics: The Nigerian Experience", *Canadian Journal of Agricultural Economics*, vol. 30 No. 3, pp 297-320.
- Nurkse, R. and Schultz, T.W. (1979): Excess Population and Capital Construction. *Malayan Economic Review*.
- Ram, R. and Scultz, T.W., (1979): Life Span, Health, Savings and Productivity. *Economic Development and Cultural Change*. Vol. 27, Number 3, pp 399- 421.
- Sohn B. 2000, How Much Has Health Improvement Contributed to the Korean Economic Growth, Mimeograph, Brown University.
- Van den Boom, M. Nube and W. K. Asenso-Okyere (1997): Nutrition, Labour Productivity and Labour Supply of Men and Women in Ghana: In: Sustainable Food Security in West Africa W.K. Asenso-Okyere, G. Benneh and W. Sim eds Kluwer Academic Publishers, Boston.
- Virtanen M, Kivimäki M, and Vahtera, J. (2006): Sickness absence as a risk factor for job termination, unemployment, and disability pension among temporary and permanent employees. *Occup Environ Med* 63:212–17.
- Weil, D. (2001). Accounting for the Effect of Health on Economic Growth, Mimeograph, Brown University
- World Health Organization (2007): Nutrition, <http://www.WHO.org/Nutrition.htm>

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