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Original Research Article

Motivations of Moonlighting in Labour Market of Sri Lanka: An Application of Binary Logistic Models

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Abstract: Objectives of this study are to investigate the determinants which motivate the workers for moonlighting and identify the characteristics of moonlighters in labour market of Sri Lanka. For this purpose, 185 married men workers who are working in agricultural sector and other jobs were randomly selected from Avissawella electoral division in Colombo during the period of 2018. Moonlighting is the dependent variable which takes a value of 1 when an individual holds more than one job and 0 if an individual is engaged in only one job. Since, the dependent variable has two categories of dichotomous such as moonlighter or non- moonlighter, binary regression models namely, probit and logistic models were applied with education levels, number of children of the workers, primary income from main job, wife's income and entitle of employment provident fund which were considered as five explanatory variables in the study. Results of chi - square test reveal that, level of education, earning income from main job and number of children has significant association with the moonlighting. The findings of the both probit and logistic regression models suggest that household characteristics such as secondary and higher education levels and number of children and as well as among labour market characteristics, two income ranges from primary job such as income between Rs 10000/= and Rs39999/= and the income Rs 40000/= and above were found statistically significant influence on an individual's motivation to engage in more than one job in labour market in the country. The overall results of the study may support to the policy planners and relevant stakeholders to develop strategies that affect workers choice and attitude to work in the labour market and endeavour to improve on distribution of jobs and human resources in the labour market of Sri Lanka.

Keywords: Moonlighting, Characteristics of moonlighters, Labour market, Chi-square test, Binary logistic models

INTRODUCTION

The workers prefer to engage in more than one job generally known as moonlighting and a rational worker to go for a second job due to many reasons, especially constraints of working hours on primary job and low satisfaction level of the of first job. As result of engaging in moonlighting the worker is able to maximize his or her utility and household income. Thus, low salaries and economic hardships are often cited as major reasons why formal sector workers engage in the informal economic activities as a second job. Thus, moonlighting can be thought to be a self-improvement effort of a worker striving to maximise their value in terms of salary and employment conditions (Beynon, Jones, Pickernell, & Packham, 2015).

Thus, moonlighting or multiple jobs holding arise when individuals work in more than one job at the same time and it has been increased considerably in transition & industrialized countries in recent decades. Statistical information on multiple jobs holding is limited in developing countries also in Sri Lanka when comparing with some other developing or developed countries. However, at present, developing countries also collects information on multiple jobs due its importance at the statistical estimations on entire labour market. Also multiple jobs holding directly affect the country's job market and thus, it is vital to the economic development of Sri Lanka. (Labour force survey annual report, 2016). According to the survey results show that 11.0% of total employed, persons hold secondary jobs during the survey year 2016 and out of these secondary employed persons, 655,488 were males and 222,140 were females during the same year.

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Further, the survey also illustrates that the 89.0 percent of employed population have been engaged in main job only. Based on the distribution of main and secondary job population among sectors the highest rate of secondary job was reported from Estate sector (15.8%) among all sectors whereas rates of urban and rural sectors are 3.3 and 12.3 percent respectively. Out of the total secondary jobs, highest share is reported from Agriculture sector (65%) whereas the lowest share is from Industries sector (12%) When the employed population in main job is considered, services sector illustrates the highest share (47%) whereas Industries sector shows lowest percentage (26%). These results show that many of the jobs in secondary employment are agriculture activities. (Labour force survey annual report, 2016). In this background, moonlighting of married men workers and their major characteristics are the important in the economic growth and development in Sri Lanka.

Objectives of the study

Objectives of this study are to

- Investigate the major factors which motivate the married men workers for moonlighting in Sri Lanka.

- Identify the major characteristics of married men workers in moonlighting in labour market of Sri Lanka.

REVIEW OF LITERATURE

Moonlighting or multiple jobs holding refers to a person who works a primary job but at the same time he or she also works a secondary job. Thus, moonlighting arises when a person works more than one job simultaneously and engages in another job to earn extra income. Nowadays, moonlighting becomes an important feature in most of labour markets in the countries. Many factors motivate the workers to engage in moonlighting and which is influenced by several factors such as personal and financial characters and conditions of labour markets in the countries. In this background, there are many research has done by many researchers in this field and some the previous studies discussed in this section as below.

Jean Kimmel and Lisa M. Powell (2001) have evaluated a comparative analysis of moonlighting between Canada and the United States. From their study, it can be concluded that overall moonlighting rates are higher in the United States than in Canada, although females in both countries moonlight at approximately the same rate. The determinants of secondary jobholding in Germany and the UK (2009) was examined by Guido Heineck using panel data and he has found that, hours-constraints on the main job cap workers' earnings capacity which may lead them to moonlight to adjust their desired level of working time in UK.

Another study has done by Sumadi Samaraweera and Athula Ranasinghe (2011) on moonlighting among married men over life cycle stages in Sri Lanka and their results reveal that, moonlighting among married men is higher for the two groups with children less than six years and rural agricultural workers are more likely to moonlight in Sri Lanka.

William Baah-Boateng at el (2013) has investigated the determinants of moonlighting in Ghana during the period 1998/99 and 2005/06. Their results concluded that, personal and labour market characterises significantly influence on an individual's decision to moonlight in the country. Jehan, N. & Khan, H. (2016) examined the economic analysis of moonlighting in higher education institutes of Khyber Pakhtunkhwa using binary logistic regression model. Their results proved that, wage rate of second job, accumulative wage of more than one second jobs, employment status and cadre, hours of work at second job, location and marital status were found significant in determining moonlighting in the country.

Moonlighting intentions of middle level employees of selected IT companies in India was analyzed by A. Ashwini, G. Mirthula and S. Preetha (2017) and they have found that, multiple job holding is used by individuals as a way to deal with the financial problems or the increased financial obligations in their family and to satisfy the non-pecuniary priorities in their modern life.

Vedastus L.at el (2017), have examined moonlighting among teachers in urban Tanzania: A survey of public primary schools in Ilala District and their findings showed that 39.4% of teachers had a secondary income generating activity and sex and age of the teachers were significant predictors of the decision to moonlight and also it proves that the older teachers, are more likely to become as a moonlighter in the country.

Method of data collection

To identify the factors which motivates the workers to engage in more than one job and to define the major characteristics of moonlighters, primary data were collected through questionnaire. Actually 280 respondents were randomly selected through the questionnaire and some of them not complete their information. Thus, for analyzing the data, 185 relevant respondents were used who married men workers are working in agricultural sector and other jobs from Avissawella electoral division in Colombo district, Sri Lanka. The dependent variable is the moonlighting which takes a value of 1 when the individual engages in more than one job or moonlighter and 0 if an individual is engaged in only one job or non - moonlighter. The information related to dependent variable is a binary and the respondents were asked whether he is doing more than one job coding as 1 for moonlighter or doing

only one job where coding as 0 for non- moonlighter. Data related to household characteristics of married men workers and labour market characteristics were collected through questionnaire using categorical variables.

Analytical frame work

To investigate the major determinants which motivate the employees towards the secondary job or moonlighting and identify the characteristics of married men workers in moonlighting, econometrics analytical techniques were applied in the study. The determinant factors were categorised into two main motivations such as household characteristics and labour market characteristics and those data were analyzed by using the following analytical tools were applied in the study.

Chi- square test (χ^2)

To test the association between the variables chi- square test is more applicable where the variables are categorical in nature. To test whether there is any association between household characteristics such as education level and number of children with moonlighting and labour market characteristics such as individual earning incomes from main job and wife's income with moonlighting, chi-square test employed in this study.

Binary regression models

To identify the factors which encourage the workers to do more than one job and describe the characteristics of moonlighters in labour market of Sri Lanka, binary models namely, probit and logistic regression models were applied. Since the basic ideas are the same in both models, interpretation of each of them is different.

Probit model

Since the dependent variable has binary variable which is an individual worker is engaged in more than one job or not, probit model is more appropriate than other linear regression models except binary logistic regression.

The probit model can be specified as:

$$Y = X'\beta + \varepsilon$$

Where, Y is the vector of values representing a binary dependent variable and X is a vector of explanatory variables that affect the worker's choice to moonlight or not. β is a vector of parameters of the control variables and ε is the standard vector representing the stochastic error term. Based on the above general form of the model, the following probit model was used in the study.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \varepsilon \text{..... (1)}$$

Where,

Y = Dependent variable coded as 1for the worker has more than one job and otherwise 0

X_1= levels of education represented by dummy variables as,

1 for primary, otherwise 0
1 for secondary, otherwise 0
1 for higher, otherwise 0

X_2 = Primary income from main job represented by dummy variables as,

1 for less than Rs 10000, otherwise 0
1 for between Rs 10000 to Rs 39999, otherwise 0
1 for Rs 40000 and above, otherwise 0

X_3 = Wife's income which is represented by dummy variables as,

1 for less than Rs 10000, otherwise 0
1 for between Rs 10000 to Rs 39999, otherwise 0
1 for Rs 40000 and above, otherwise 0

X_4 = number of children which is coded as,

1 for no child
2 for only one child
3 for two or more than two children

X_5= entitlement of employment provident fund (EPF) coded as,

1 for entitle for employee provident fund
2 for not entitle

β_0 = constant

β_1, β_2, β_3, β_4 and β_5 are the coefficients of each explanatory variables.

Logit model

Instead of probit model, logit model also can be used as another choice to attain the objectives of the study. Thus, to formulise the approach on the determinants of moonlighting among married men in Sri Lanka, another binary model which is the logistic or logit model also used in the study. In this model, moonlight as a function of the worker's education, number of children, primary income from the main job, wife' s income and entitle of employment provident fund (EPF). Both models give the same findings, even though size of the coefficients and interpretation are different one to another. For comparison purpose, probit and logit models were applied and after estimate them marginal effects also analysed in the study. The logit model can be expressed as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \varepsilon \text{.....(2)}$$

Where Y is the dependent variable whether the respondent moonlights or not coded as 1 for moonlighter 0 for non- moonlighter and X_1, X_2 … are the explanatory variables of the respondent as mentioned the above while β_0, β_1, β_2 … are the coefficients to be determined and ε is a mean zero error tem.

RESULTS AND DISCUSSIONS

This section examines the findings of study from the empirical examination of the moonlighting decisions of married men workers in Colombo district, Sri Lanka. In the beginning, the study used descriptive statistics for moonlighter and according to that, out of total sample nearly 51% of the workers doing more than one job while 49% of the have only one job in the study area. The association between household characters and labour market characters with moonlighting or nor examined by chi- square test and the statistics results obtained from chi- square for the variables used in the study are given in the table 01.

Table 01: Results of chi- square test

Variable	Moonlighter (%)	Non- Moonlighter (%)	χ^2	P- value
Education			63.7	0.00*
Primary	91.10	8.90		
Secondary	47.40	52.60		
Higher	15.10	84.90		
Number of children			35.06	0.00*
No children	25	75		
One child	54.10	45.90		
More than one child	85	15		
Primary income			78.18	0.00*
Less than 10000	96.30	3.70		
Between 10000 - 39999	45.90	54.10		
More than 40000	8.70	91.30		
Wife's income			0.168	0.919
Less than 10000	48.90	51.10		
Between 10000 - 39999	52.60	47.40		
More than 40000	51.20	48.80		
Entitlement of EPF			0.139	0.709
Yes	52.10	47.90		
No	48.80	51.20		

Source: Estimated by author, 2018.

Note: * Represents the statistically significant at 1% level.

According to the chi-square results, among household characteristics education level and number of children of married men workers have significant association with whether the worker has one job or more than one job. 91% of the respondents who have satisfied up to primary education engaged in more than one job while 15% of them who have qualified up to higher education engaged in only one main job. Because, when the respondents have higher qualification in education, they are able to engage in only one main job which provides more income than others. Thus, they are not motivated to do a secondary job. Another household character is the number children also significant association with moonlighting in the sample. Among characteristics of labour market, only primary income has significant association with moonlighting and according to that, the respondents who earns their income which is less than Rs10000/=, they are motivated to moonlighting than other respondents who earns more than Rs40000/=. In addition to the chi-square test, probit and logit models also estimated to define the characteristics of married men moonlighters and identify the factors determining the moonlighting behaviour in the study area.

Table 02: Estimated results of probit and logit models

Variable	Probit			Logit		
	β	z	p>z	β	z	p>z
Secondary education	-1.15	-3.49	0.000	-2.29	-3.43	0.001
Higher education	-2.20	-5.74	0.000	-4.15	-5.31	0.000
Number of children	0.47	2.53	0.011	0.77	2.27	0.023
Primary income between Rs10000- Rs 39999	-1.15	-3.63	0.000	-2.24	-3.65	0.000
Primary income Rs 40000 and above	-2.39	-5.62	0.000	-4.38	-5.29	0.000
Wife's income between Rs10000- Rs 39999	-0.35	-0.99	0.321	-0.80	-1.23	0.219
Wife's income Rs 40000 and above	-0.50	-1.33	0.184	-0.92	-1.31	0.190
Entitle of employment provident fund	-0.20	-0.65	0.518	-0.19	-0.35	0.724
Constant	1.87	2.88	0.004	3.81	2.91	0.004

Source: Estimated by author, 2018.

Table 02 presents the estimated coefficients of both probit and logistic regression models derived from equations 1and 2and according to the results obtained from the above both models reveal that, the pseudo R^2 has 0.51 and 0.52 respectively. It indicates that, nearly 52% of the variation in the moonlighting is predicted by the explanatory variables which were used in the study. Further, likelihood ratio value showed that, the overall combination of independent variables is significant. In both models the estimated results are nearly same in terms of sign of the variables even though interpretations of them are different. Primary education is taken as reference for education of the married men workers while the income below Rs 10000/= taken as reference for both primary income and wife's income in the analysis. Thus, those three variables measured by dummy variables and education and number of children of the workers were considered as personal characters and primary income from main job, wife's income and entitle of employment provident fund considered as characteristics of labour market in the study.

Among personal characteristics of the workers, secondary and higher education levels and number of children have statistically significant impact on moonlighting. On the other hand, among labour market characteristics, primary income between Rs 10000/= and Rs 39999/= and the income Rs 40000/= and above also important determinants of moonlighting in the study area. However, other two labour market characteristics such as wife's income and entitle of employment provident fund has insignificant in both models in the study. Results of probit and logit models have negative coefficients for secondary and higher education levels indicate that, the married men workers who have their educational levels beyond primary, they are less likely to become as a moonlighter compared to primary educated workers. Thus, educational level of a worker has a significant relationship with moonlighting at 1% level in both models and compared to workers with primary education, workers with higher levels of education are associated with less probabilities of moonlighting in the study area. Positive sign of the variable for number of children reveals that, the married men workers who have more children in their family prefer to do more than one job than other men workers with less number of children. Because of the higher children makes them higher living expenditures and to manage their increased cost they prefer to earn more money by doing more than one jobs. Thus, for workers with one child and more than one child are associated with higher likelihoods of moonlighting compared to the workers with no child at all.

With respect to primary income which has two ranger as the income between Rs 10000/= and Rs 39999/= and other range of income which is Rs 40000/=and above have negative sign shows that, the men workers who earns more income less likely to participate in moonlighting compared to the workers who earns the income below Rs 10000/=. They have statistically significant at 1% level in both models clearly illustrates that, when they earn their income more than Rs 10000/=, they are able to manage their financial facilities and thus, they are not much motivated to do a secondary job in the district. Even the sizes of coefficient for all explanatory variables are significantly different, their signs are the same represents that the impact of each independent variables on the dependent variable is the same. The overall results of the probit and logit models concluded that, all the regression coefficients of the corresponding explanatory variables included in the models are statistically significant, and they have the expected signs in the study. In the table above proves that, among personal characters of the married men workers, levels of education and number of children while among the labour market characters only primary income from the main job are the main determinants on the moonlighting in the study area.

After estimated the probit and logit models, marginal effects of each explanatory variables on the dependent variable also analysed in terms of probability and their results were displayed in the following table. Thus, the table explains the strength of each explanatory variable effect on the probability of moonlighting among the married men workers in the district and it could be interpreted as sensibility of the probability of moonlighter or not with respect to a particular explanatory variable is changed.

Table 03: Probability of moonlighting among married men workers

Variable	Probit		Logit	
	Probability	**p>z**	**Probability**	**p>z**
Secondary education	-22.01%	0.000	-23.78%	0.000
Higher education	-41.88%.	0.000	-43.09%	0.000
Number of children	9.04%	0.007	7.98%	0.017
Primary income between Rs10000- Rs 39999	-21.88%	0.000	-23.28%	0.000
Primary income Rs 40000 and above	-45.47%	0.000	-45.52%	0.000
Wife's income between Rs10000- Rs 39999	-6.68%	0.320	-8.35%	0.212
Wife's income Rs 40000 and above	-9.63%	0.178	-9.57%	0.181
Entitle of employment provident fund (EPF)	-3.86%	0.515	-2.07%	0.724

Source: Estimated by author, 2018.

According to the table 03, marginal effects for secondary education in probit and logit models are -0.22 and -0.23 which reveals that if the workers have their educational qualification up to secondary and higher, the probability that such a person become as a moonlighter decreases by nearly 22% and 24% respectively. Among the explanatory determinants in the probit and logit models, number of children has positive impact on the probability of being a moonlighter and it is statistically significant at 5% level. In case of number of children, the married men worker who has higher number of children observed that, the probability to doing more than one job also increases by 9.04% in probit and 7.98% in logit models respectively. This may be due to the higher number of family members with children places extra financial and children expenditures on married men fathers that matter there is a need to diversify their income sources from multiple job holding.

The primary income takes another more significant factor by the size of the marginal effect among all the other determinants in the both models for moonlighting and therefore primary income from their main job is another determinant in the study. In the above results reveal that the men workers earn their income below Rs10000/= are more likely to have another job than higher income earners. In both models the workers who earn the income more than Rs 40000/=, the probability become as a moonlighter is reduce by 45% which represents that when they have enough income then not necessary to do a secondary job in the labour market. On the other hand, as income of the married men wives increases, it will discourage them to become as moonlighter. Because, if they receive enough income from their wives, do not have much financial strain and not necessary to do a secondary job. But wife's incomes under two ranges are not significant in both models. Negative sign of EPF shows that the workers who are entitle to receive the EPF from their primary job, they are not motivated to do secondary job, but it appears not to be a significant factor in the probability of moonlighting in both models. The overall results summarize that, secondary and higher educational qualifications, number of children, income from primary job play an important role in determining probability of moonlighting among married men workers. However, the labour market characters such as, income earns from their wives and entitlement of employment provident fund are not significant in the study.

CONCLUSION

The results from the empirical analyses provide the evidence mainly focusing on the motivation factors which are influencing the moonlighting and characteristics of moonlighters in Avissawella electoral division in Colombo, Sri Lanka. The empirical analyses from frequency test indicate that secondary jobholding is a persistent phenomenon and over the time period considered, nearly 51% of the workers doing more than one job while 49% of the have only one job in the study area. Education of the respondents mainly secondary and high levels, and workers' earnings capacity and the income from their primary job which may encourage them to do only one job while the respondents who have more number children motivate them to become as a moonlighter in order to adjust their financial strain and burden of their family in Sri Lanka.

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