



Centre for European Labour Market Research



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Discussion Paper 2004-12  
November 2004

Editor: Dr W David McCausland  
[www.abdn.ac.uk/business/](http://www.abdn.ac.uk/business/)

## **Who are the moonlighters and why they moonlight: Evidence for rural communities**

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**Abstract:** This paper examines the incidence of and reasons for moonlighting in the context of rural communities where multiple-job holding is viewed as an important means of promoting sustainability of these communities. Drawing upon a unique dataset of a relatively homogeneous population living in an isolated area on the west coast of Scotland, where employment opportunities are limited, dual-job holding is investigated within the fisheries and aquaculture industries. Evidence is found that those who moonlight do not do so primarily for financial reasons, and that educational attainment has a positive impact on the incidence of dual-job holding.

*JEL classification:* J22, J24

*Keywords:* Multiple-job holding, Sustainability of rural communities

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\* The data used in this study has been collected for the purposes of the project “Aquaculture and Coastal Economic and Social Sustainability”, financed by the EU (project no. Q5RS-2000-31151). The authors are grateful for helpful comments by two anonymous referees of this journal.

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## 1. Introduction

Multiple-job holding is a significant characteristic of the labour market and has attracted growing interest in recent years. Evidence from both the U.K. and the U.S. reveals a substantial and growing proportion of workers who have a second job (Böheim and Taylor, 2004). Yet, within the agricultural economics literature the investigation of multiple-job holding is not new. Over the past century off-farm sources of income are extensively used to sustain farming households. It is increasingly recognised that multiple-job holding among farm households is a permanent phenomenon (Lass et al, 1991).

Understanding the underlying reasons for multiple-job holding and who are the individuals most likely to hold a second job is important for policy makers. This is particularly true if the primary reason for multiple-job holding is financial pressure that induces individuals' to obtain a second job in order to maintain a level of income required to sustain the family household. Kimmel and Conway (2001) find that the average moonlighter in the U.S., who works full-time on their primary job, earns a lower wage and works fewer hours than those who do not have a second job. Additionally, working a second job is often not enough to raise the individual's income to that of the average worker.

Moonlighting should be expected to be an important activity in isolated rural communities. One of the most fundamental characteristics of rural labour markets is that employment opportunities and options available of workers are limited. Lower wages, declining demand for labour, reduced public spending in rural areas, and dependence on traditional but declining industries also exacerbate the labour market weakness in rural areas (Miller, 1987; Monk and Hodge, 1995). If multiple-job holding is viewed as a survival strategy for low income households in rural communities, then the

sustainability of rural communities may be largely dependent on the ability of individuals to supplement their incomes through an additional source of income other than their primary jobs.

Higher rates of moonlighting are to be expected within industries where amenities or a strong influence of family tradition may exist such as agriculture, fisheries and aquaculture. Individuals may have some emotional or other attachment through tradition to a specific sector or job that would lead them to turn down offers of higher earnings in other sectors. Individuals may choose instead to share the total work time between the lower paid job that they are attached to and a second higher paid but less preferred job. Consequently, if traditional occupations generate dual-job holding, the incidence of moonlighting should be more common among workers in certain sectors.

Comparatively little research has explored multiple-job holding within rural areas, despite theoretical reasons and qualitative research that suggests that multiple-job holding is important as a survival strategy within rural communities (Jensen et al, 1995). In these communities employment opportunities are restricted and individuals may not be able to change jobs when faced with limits on the amount of hours they can work on the main job or when the wages of their primary job are adversely affected. In addition, government or EU regulations regarding activities such as fishing or aquaculture place further limits on individual's work hours and incomes. Increasing pressure on fish stocks in the North Sea, and subsequent reductions in quotas have led to increased competition for remaining stocks. Reductions in quotas directly affect fishing effort, having a detrimental effect on fishermen's incomes and work hours, and increase the level of uncertainty faced by many fishermen. Multiple-job holding is therefore expected to play an important role in allowing individuals to remain working in the two traditional occupations of aquaculture and fisheries in isolated rural communities when job alternatives and opportunities are relatively more scarce.

This paper examines the incidence and reasons for multiple-job holding among individuals working in two of the largest employment industries on the west coast of Scotland. In particular, the analysis explores the impact of human capital attainment on the probability of individuals being employed in the fisheries and aquaculture sectors and on the probability of holding more than one job. A selectivity-corrected probit model is specified and estimated drawing upon a unique dataset of the local study area. The sample consists of a relatively homogeneous population, employed in traditional industries that are similar in many respects, and living and working in an isolated area where employment opportunities are limited.

## **2. Theoretical issues and discussion**

The labour economics literature on multiple job holding provides several different explanations for the so-called moonlighting, with the two most prevalent motivations being hours constraints on the primary job and heterogeneous jobs. Firstly, workers may face hours constraints on the primary job that limits that job's earnings capacity. In response to an employer's inability to offer enough hours on the primary job, individuals may choose to take a second job.

Secondly, the heterogeneous jobs explanations for multiple job holding recognises that moonlighting occurs amongst individuals who do not face a constraint on the number of hours they can work on their primary job. Moonlighting may arise because the labour hours supplied to the two jobs are not perfect substitutes. That is, the wage paid and utility lost from the forgone leisure may not completely reflect the benefits and costs to working (Kimmel and Conway, 2001). Thus, individuals may choose to take a second job to learn about new occupations or gain training; to gain credentials to acquire a higher paying second job; to engage in activities of interest to them; to gain satisfaction not received from the primary job; or to maintain flexible work schedules (for example, a woman who requires childcare may take two part-time jobs).

The standard theoretical framework in the literature assumes that an individual's labour supply decisions on both the primary and secondary job are based on utility maximising behaviour. An individual's utility function is written as follows:

$$U = U(C, h_1, h_2, L)$$

where  $C$  denotes consumption,  $h_1$  and  $h_2$  are hours worked on the first and second jobs respectively, and  $L$  represents hours of leisure. The utility function is maximised subject to both a budget and time constraint:

$$C = w_1 h_1 + w_2 h_2 + Y$$

and

$$T = h_1 + h_2 + L$$

where  $w_1$  and  $w_2$  are the wages paid in the first and second jobs respectively,  $Y$  is non-wage income, and  $T$  is the total number of hours available for work and leisure. Substituting the constraints into the utility function for  $C$  and  $L$  yields the utility-maximising problem:

$$\max_{h_1, h_2} U(w_1 h_1 + w_2 h_2 + Y, h_1, h_2, T - h_1 - h_2)$$

An hours-constrained worker does not work sufficient hours on his or her main job to guarantee him/her a level of income that optimises his or her own utility. In this case,  $h_1$  is no longer a choice variable and the only avenue for working more hours is to take a second job (Conway and Kimmel, 1998).

Figure 1 illustrates an individual who is an hours constrained moonlighter. The individual cannot work more than  $H_1$  hours on the primary job, and the decision to take a second job will depend on

whether the wage paid on the second job exceeds its marginal disutility, given that  $H_1$  hours have already been committed to the primary job (Conway and Kimmel, 1998). If this second job wage is greater than the reservation wage, the hours constrained worker will take the second job as it will make him better off (i.e. on a higher utility level), and will choose to supply  $h_2$  hours to the second job.

Figure 2 depicts a moonlighter who is not hours constrained. In this case the individual has a higher wage on the second job than on the primary job<sup>1</sup>. An individual who is not constrained in his primary job can work any amount of hours that fall in the given standard working time span  $T - H_1$ . An individual in this situation who wants to work more hours would always opt to work additional hours on the second job rather than working more hours on the primary job at the lower wage rate (assuming no hours constraints on the second job).

However, the labour economics literature on moonlighting does not satisfactorily explain multiple-job holding among certain groups, e.g. multiple-job holding in the context of self-employed individuals or those individuals' with uncertain or variable incomes from their primary jobs. More pertinent to the discussion of multiple-job holding among fishermen in rural areas is the literature on multiple-job holding among farm households. Multiple-job holding is analysed within the context of the farm operator household. The operator is considered to be the major entrepreneur and decision-maker in the agricultural production process, and both the operator and the household supply resources to farm production and receive income from that production.

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<sup>1</sup> The decision of the non-constrained moonlighter can only be depicted for the case of a higher paying second job as it is impossible to depict the budget constraints and indifference map for a non-hours constrained moonlighter who has a higher wage rate on the primary job than on the moonlighting job.

The theoretical model is based on the following assumptions: (i) farm households are assumed to maximise utility by choosing levels of goods ( $Y_1$ ) and leisure ( $L$ ); (ii) a vector of exogenous environmental factors ( $\mathbf{E}$ ) determines the levels of utility; (iii) both the operator and spouse have opportunities to work on farm ( $F_1$  and  $F_2$ ), as well as off-farm opportunities ( $M_1$  and  $M_2$ ). The household faces a budget constraint consisting of both income and time constraints. Household income comprises of both farm profits and off-farm wages, while leisure, on-farm labour and off-farm labour comprise the allocation of total time.

An important departure from the standard analysis of multiple-job holding arises because the wage received for farm work is not assumed to be constant. The normal regularity conditions for the production function then imply that on-farm labour by both the operator and spouse will face diminishing marginal returns. Thus, the production function imposes the final constraint on the maximisation of utility by the farm household (Lass et al, 1991).

The model can be stated formally as the maximisation of utility (Huffman, 1980):

$$U = U(Y_1, L_1, L_2; E)$$

subject to the constraints

$$P_1 Y_1 = P_q Q - RX + w_1 M_1 + w_2 M_2 + V$$

$$Q = f(X, F_1, F_2; G) \text{ and}$$

$$T_i = L_i + F_i + M_i; \quad i = 1, 2$$

Thus, the household chooses the levels of goods, leisure, farm labour, off-farm labour, farm inputs ( $X$ ), and farm output ( $Q$ ) given prices ( $P_1$  and  $P_q$ ), off-farm wages ( $w_1, w_2$ ), other income ( $V$ ), and other exogenous factors ( $G$ ). Solving the first-order conditions then determines an interior solution for the optimal allocation of time between leisure, on-farm and off-farm work (an interior solution

implies a non-zero supply of labour to off-farm employment). If corner solutions exist for the operator and spouse (implying either on-farm or off-farm labour supply is zero), the Kuhn Tucker conditions can provide the following participation rules:

$$D_i = \begin{cases} 1 & \text{if } w_i^* > 0 \\ 0 & \text{if } w_i^* \leq 0 \end{cases}$$

where

$$w_i^* = (w_i - P_q \frac{\partial Q}{\partial F_i}) \Big|_{M_i = 0}$$

i.e.  $w_i^*$  is the unobserved difference between the market wage and the shadow value of farm labour for the operator ( $i = 1$ ) or spouse ( $i = 2$ ). Solving the Kuhn Tucker conditions in terms of the exogenous factors leads to the empirical specification for the participation decision as a probability model, where the binary decision to participate is generally modelled as a probit or logit model (Lass et al, 1991).

Mishra and Goodwin (1997) further the discussion of multiple-job holding among farm households by examining the effect of farm income variability on off-farm labour supply decisions. This is important because multiple-job holding is often considered an important means by which farm operators can reduce the variance of their total income, and is especially relevant to a discussion of multiple-job holding among fishermen who face such variability due to the uncertainty of their catches.

Economic theory predicts that risk-neutral farmers will divide their labour supply between farming and non-farming activities such that the expected marginal returns are equalised. If one employment opportunity has greater expected marginal returns, then more labour will be supplied to that activity. However, if individuals' are risk averse and the variance of wages is perceived to be greater in one activity relative to the other, then individuals' will supply less labour to the risky job and accept

lower wages in the less risky occupation. Changes in the riskiness of different occupations would therefore be expected to influence the allocation of labour.

Mishra and Goodwin (1997) consider a farm household consisting of two members (the farm operator and spouse), with income-generating options available for each household member in farming and in off-farm work. The farm household maximises expected utility, where utility is a function of household income and leisure. Uncertainty in farm earnings is assumed to arise because of a random output price, which is assumed to be normally distributed with a mean  $\mu$  and variance  $\sigma^2$ . They show that, holding constant the labour supply to farm work by the spouse and leisure by both individuals, increased variation in farm earnings will decrease the supply of labour to the farm and increase off-farm labour supply. Farm income variability has a significantly positive effect on the off-farm labour supply of farmers, but is insignificant for the spouse's off-farm labour supply decision.

### **3. Empirical issues and discussion**

#### *3.1. Multiple job holding in farm households*

There is an extensive literature that investigates the determinants of farm household involvement in non-farm labour markets. Factors found to influence the decision to participate in off-farm labour markets have been categorised by Leistriz et al (1985) as: (i) individual characteristics, (ii) family characteristics, (iii) farm production characteristics, (iv) financial characteristics of the farm family, and (v) locational characteristics. These factors are considered to be exogenous to the off-farm participation decision. Off-farm labour supply, however, will also be influenced by two other endogenous determinants, farm output and the off-farm wage.

Individual characteristics included in off-farm participation models are the standard human capital variables such as an individual's age, education and work experience. Theoretically, increases in human capital affect the off-farm participation decision in two ways: firstly, human capital enhances an individual's performance in farm operations, thereby increasing the shadow value of labour; and secondly, the value of labour off the farm is similarly increased. The actual effect on the participation decision is therefore an empirical issue (Lass et al, 1991).

A common finding in the off-farm labour supply literature is the significant effect of age on off-farm participation. Older farm operators are less likely to work off the farm (Goodwin and Mishra, 2004). Education appears to have a strong positive effect on the supply of labour to off-farm employment for both men and women (Huffman, 1980), whereas empirical evidence for the effect of experience is limited. On-farm experience by farm operators appears to reduce the probability of off-farm participation, while off-farm experience increases the probability of participation (Sumner, 1982; Lass et al, 1991).

Family characteristics include the number of dependent children and factors affecting the spouse's participation decision. For example, farm women are less likely to participate in off-farm work if there are children present in the household (Furtan et al, 1985). In contrast, the probability of off-farm work for farm men is increased by having dependent children (Goodwin and Mishra, 1997). Huffman and Lange (1989) also find evidence that pre-school children have the strongest effects on the off-farm participation decision of both men and women. This is consistent with the empirical evidence for multiple-job holding in non-agricultural sectors. Kimmel and Conway (2001) find that moonlighters have more children and more young children compared to non-moonlighters, and that having more children increases the probability of multiple-job holding. These findings support the hypothesis that more children represent greater financial demands. Yet, having a pre-school aged child reduces the incidence of multiple-job holding for women.

With respect to farm production variables, empirical evidence suggests that the probabilities of participation for men and women are inversely related to farm income. Off-farm participation is therefore more common among households with small and modest sized farms. Financial characteristics such as income from non-wage sources which secures the household's financial position also leads to fewer hours of off-farm employment (Streeter and Saupe, 1986; Sumner, 1982). Goodwin and Mishra (2004) find off-farm labour supply is negatively influenced by the overall net worth of the farm household, and suggest that this reflects a lower degree of financial pressure which is considered one of the main motivations for multiple-job holding among farm households.

Off-farm participation will not only be influenced by the ability of farm households to supply labour to off-farm labour markets, but also by the demand for this labour. In the farm household literature the impacts of access and availability to employment opportunities have been captured by the inclusion of variables measuring location. These variables have included a measure to reflect urbanisation (Buttel et al, 1982) and a population density variable (Sander, 1983), and binary variables representing location (Leistritz et al, 1985). However, Lass et al conclude that location variables generally perform poorly. This may be because binary location variables measure regional differences in farming as well as location relative to employment opportunities.

Wages represent the market value of an individual's stock of human capital, which is usually assumed to be fixed in the short run. The effect of a wage increase on off-farm labour supply (assuming leisure is a normal good) is ambiguous. A rise in market wages results in substitutions of market labour for consumption (leisure) and farm labour. There are also income effects for consumption and an income effect due to the reduction of farm income as labour is substituted from farm work to market work. The elasticities of supply are therefore uncertain for both men and

women (Lass et al, 1991). Empirical evidence suggests that substitution effects outweigh income effects. Own-wage elasticity for both men and women are positive, but typically more elastic for women.

A measure of farm output is included in the off-farm participation literature for several reasons. Firstly, farmers with larger farms are expected to participate in off-farm employment less frequently, and to supply fewer hours when they do participate. Secondly, increases in farm output (or farm returns) should reduce the supply of labour to the off-farm market. If greater farm output is assumed to indicate higher short run profits, then greater farm output should result in lower off-farm participation rates and fewer hours supplied. The negative relationship between farm output and off-farm labour supply is supported by various studies (e.g. Sanders, 1983; Furtan et al, 1985). Huffman (1980) also finds a positive relationship between off-farm labour supply and the variance of farm sales. This may capture both the effects of risk on labour supply (greater risk leads to greater off-farm participation in order to reduce variation of income), and also the effects of farm size distribution on labour supply.

Goodwin and Mishra (2004) considered the effect of career objectives on off-farm labour supply decisions. They argued that an important component of the implicit returns to a labour activity is the job satisfaction that an individual obtains from a particular job, and that this satisfaction is closely related to career aspirations and goals. They found evidence that career objectives are important in determining farm operators' labour supply. This is analogous to the heterogeneous jobs explanation found in the labour economic literature on multiple-job holding, where second jobs provide workers with training, professional contacts, or other desirable characteristics that cannot be obtained from the primary job.

### *3.2. Multiple job holding in rural communities*

In a wider context than farm households, comparatively little work has explored multiple-job holding within rural areas despite theoretical reasons and qualitative research which suggests that multiple-job holding as a survival strategy may be particularly important in rural areas (Jensen et al, 1995) for several reasons. Less densely populated rural areas are relatively lacking in economies of agglomeration and essential services, forcing rural workers to rely on informal job alternatives (Levitan and Feldman, 1991). Lower wages, declining demand for labour, and less public spending in rural areas further encourage the informal economy, making multiple-job holding an important survival strategy (Miller, 1987).

While empirical work is limited, several qualitative studies in the U.S. point to widespread participation in the informal economy in rural areas (e.g. Levitan and Feldman, 1991; Fitchen, 1981; Campbell et al, 1993). Jensen et al (1995) find a positive effect of rurality on informal work, with families in rural areas significantly more likely to report informal activities compared to individuals living in more densely populated communities.

Ferman et al, (1987) argues that multiple-job holding is carried out primarily by individuals of low socio-economic status, and acts as a safety net for the poor. Alternatively, Gaughan and Ferman (1987) suggest that informal work requires physical and human capital that the poor tend to lack. Jensen et al (1995) offer conflicting evidence regarding the question of whether informal work is a survival strategy for low-income families. They find that informal work is more prevalent among low-income families, who were more likely to claim that informal work had at times helped them survive, and that it is positively related to formal labour force participation, and is less prevalent among those in the lowest income group.

The nature of rural labour markets is itself an important factor in explaining the importance of multiple-job holding in rural communities. Monk and Hodge (1995) suggest that labour markets in rural areas often behave differently compared to labour markets in urban areas. Populations are usually more dispersed and unevenly distributed, and transport can be costly and more difficult. There is evidence that wage rates and earnings are relatively low in rural areas, and a higher propensity for part-time work also contributes to keeping earnings down relative to other areas. In addition, the dependence of many rural areas on one or a few traditional but declining industries often exacerbates labour market issues in rural areas (Monk and Hodge, 1995).

One of the most fundamental characteristics of rural labour markets is that employment opportunities and options available to workers are limited. In addition, inefficiencies exist in the institutional mechanisms that disseminate job-related information and provide human-resource development programs (Briggs, 1986).

The mismatch between workers and jobs can be a major constraint to labour market participation in rural areas. The narrow industrial base, the relatively small number of employers, the high incidence of self-employment, and the prevalence of small firms all contribute to a limited number and variety of rural job opportunities (Hodge et al. 2002). A high proportion of jobs within rural areas are semi-skilled, often low-paid, and part-time or seasonal. The decline in the agricultural and fisheries sectors has also led to a change in the types of jobs available in rural areas. Green (1997) suggests that those individuals most adversely affected are the unskilled and those without higher qualifications.

Limited employment opportunities in rural areas adversely affect the earnings of rural workers. Lichter et al (1994) find empirical support in the U.S. for the argument that similarly qualified workers in non-metropolitan areas are paid less than their metropolitan counterparts for the same

kind of work. They also find relatively lower returns to education in non-metropolitan areas, and that the probability of poverty relies heavily on the kind of work available in rural labour markets. In the U.K., Phimister et al (2000) find lower average rural wages relative to wages in non-rural areas, and greater persistence of low pay in rural areas

### *3.3. Labour supply for moonlighters*

In both the farm household literature and the literature on rural labour markets reviewed above the predominant explanation for multiple-job holding is financial need, i.e. multiple-job holding is used as a survival strategy for low income households. In line with this is the early empirical research on moonlighting in the labour economics literature that focused primarily on the hours constraint motive. Thus, Shisko and Rostker (1976) argue that a worker who cannot spend as much time on the main job as he would like in order to achieve his utility maximising hours of work may take up a second job. They estimate a moonlighting supply curve and find that the supply of labour to a second job falls with primary job earnings. Also, an increase in the moonlighting wage rate will increase the labour supplied by moonlighters and cause previous non-moonlighters to enter the secondary market.

Hamel (1967) also finds that the level of a worker's earnings determines his propensity to moonlight, and as the level of earnings rises the incidence of multiple-job holding declines. Guthrie (1969) investigates moonlighting among teachers in the U.S., and concludes that his findings are consistent with the general belief that moonlighting serves primarily to improve living standards. Krishnan (1990) also finds that longer hours and higher income on the primary job deters multiple-job holding, supporting the hours constraints motive for multiple-job holding.

More recent research into multiple-job holding has begun to recognise different motives for moonlighting, and addresses these motives and other issues of interest in their empirical work.

Kimmel and Conway (2001) examine the characteristics of moonlighters and the length of their moonlighting episodes to understand who moonlights and why. They argue that those who moonlight because they face an hours constraint would be expected to have shorter moonlighting spells compared to those with alternative motives (e.g. those who have heterogeneous jobs). They find evidence for multiple motives for moonlighting, with the constraint motive being the most common.

Paxson and Sicherman (1994) examine patterns of mobility into and out of second jobs for individuals over time, and the hours changes that accompany these movements. They focus on the link between dual-job holding and job mobility (i.e. on why and when workers move into and out of second jobs), and specify a joint model of the decision to moonlight versus the decision to change to a primary job that does not have an hours constraint. Their results show that multiple-job holding is a dynamic process with most workers experiencing multiple-job holding at some point in their working lives, and that the hours constraints explanation for moonlighting fails to account for the fact that overtime workers can avoid hours constraints by searching for new jobs.

Averett (2001) focuses on gender differences in moonlighting behaviour and moonlighting wages. Using data from the CPS she estimates a bivariate probit model of labour supply and the decision to hold more than one job, and finds no substantive differences in the factors that lead men and women to moonlight. She also finds that the observed hourly wage differential between male and female moonlighters cannot be explained by differentials in the characteristics of male and female dual-job holders.

Lundberg (1995) investigated moonlighting in the context of a job with amenities. The basic argument is that dual-job holding can be explained by individuals having some emotional or other attachment to a specific sector or job that would lead them to turn down offers of higher earnings in other sectors. If the attachment is strong, workers are unlikely to give up their job when faced with falling earnings, instead choosing to share the total work time between the lower paid job that has the amenity and another better paid but less preferred job. Consequently, if amenities generate dual-job holding, the incidence of moonlighting should be more common among workers in certain sectors such as agriculture and fisheries where workers have strong attachments to their jobs. The author cites evidence from developed countries such as the U.S. and Sweden to show that the incidence of dual-job holding has steadily risen within the agricultural sector. Using both a general model of amenities and moonlighting and a target income model with leisure it is found that lower wages in agriculture and higher manufacturing wages are important determinants of the increase in dual-job holding among farmers in Sweden over the period 1974 to 1981. Thus, the author concludes that the observation that workers in amenity sectors are prone to have two jobs has both theoretical and empirical support.

Böheim and Taylor (2003) describe the dynamics of second job holding in Great Britain during the 1990s. They find evidence in support of the hours constraints explanation as those individuals who wish to work more hours per week are more likely to hold a second job, and also the more hours worked in the primary job the less likely an individual is to have an additional job. However, they also find that second job holding is persistent over time and conclude that hours constraints is unsatisfactory as an explanation for dual-job holding. Bell et al (1997) employ the first four waves of the BHPS to analyse whether moonlighting functions as a “hedge” against unemployment but they find little evidence to support this hypothesis. Finally, Krishnan (1990) investigated how a husband’s decision to moonlight is affected by his wife’s decision to work, and finds that increased participation by wives deters multiple-job holding.

#### 4. The study area

Rural areas make up a significant component of Scotland, accounting for 89% of Scotland's landmass, 29% of its population, and 27% of Scotland's total employment. There is also considerable variation within rural Scotland, ranging from remote rural areas (mainly in the north and west) to those closer to the central belt.

In this paper, the study community is the coastal communities of Mallaig and Kyle of Lochalsh, which are located in the Highland Region on the west coast of Scotland. The Highland region has a population of approximately 204,000, and has a relatively low population density of 0.08 people per hectare (compared to 0.66 for Scotland and 1.1 for the EU). The population of the Highland region is approximately 4% of the population of Scotland, with around 36% of the Highland region's population living in rural areas (compared to only 11% of Scotland's population). Table 1 shows demographic data for Scotland and the Highland region in 1997 and population data for 2000.

The pattern of rural employment is broadly similar to Scotland as a whole, with service industries comprising the largest contribution to total employment. However, rural Scotland is more reliant on the primary sector and 12% of all rural employees work in agriculture (4% for Scotland). Average earnings in rural Scotland are below the Scottish average. This may be explained by these areas' reliance on low value added industries, e.g. in 1999 average wages for full-time manual males in Agriculture, forestry & hunting was 15% below the all industry and services average (Scottish Executive, 2003).

The fishing industry is a vital source of employment in Scotland. Around 5,707 people are directly employed as fishermen, with a further 13,000 employed onshore in fishing-related activities

(Scottish Executive, 2002). The Highland region plays a major part in the Scottish fisheries sector. Almost 40% of the total employment in fish catching in Scotland is in the Highlands. In addition, aquaculture in Scotland experienced substantial growth during the 1990s, and makes an important contribution to the social and economic well-being of many rural communities, especially in the north and west coasts of Scotland. In particular, salmon farming and its ancillary industries provide around 6,500 jobs in Scotland, many of them in remote locations where alternative employment opportunities are scarce.

## **5. Sample description**

The data used in this paper are taken from a survey of individuals who are either employed in the fishing and aquaculture sectors or other local industries within the coastal communities of Mallaig and Kyle of Lochalsh. The population of Mallaig accounts for a very small proportion of the Highland region's population, around 0.5%. Both communities have a population of around 1,000 individuals. Consequently, these communities represent a homogeneous and isolated study area that is controlled for by nature and which limits the opportunities for individuals to get employment from outside the community.

The survey was based on questionnaires that were constructed to collect general and specific information on a sample of individuals who are employed in fisheries and aquaculture. The survey gathered information on the personal characteristics of the respondents such as age, gender, marital status, household size, and personal and family income; their level of education and professional training; job characteristics, such as number of hours worked, employment status, and payment schemes; their attitudes towards their occupation; and information on the labour mobility between the sectors of the local economy.

The survey data was collected using the method of quota sampling, which is a type of non-probability sampling. Quota sampling is a method of stratified sampling in which the selection within strata is non-random. Given the administrative convenience and the ability to control each stratum, along with the scarce population in the locality and the difficulty in getting fishermen and skippers in a random sample, quota sampling was chosen as the most appropriate method for a survey sampling individuals employed in the fisheries and aquaculture sectors<sup>2</sup>.

The sample data consists of 102 individuals employed in fisheries, 103 working in aquaculture, and 324 individuals living in the local community. Table 2 reports demographic and job characteristics for the sample of individuals.

The large majority of those employed in both fisheries and aquaculture are male (99% and 91% respectively), compared to 60% of the local population being female. The average age of workers in fisheries and aquaculture is lower than the average age of other local residents, 38 years for those working in fisheries and aquaculture relative to 48 years for the local population.

Aquaculture workers are generally more educated than fishermen, and workers in other local employment sectors are generally more educated relative to both fishermen and fish farmers. Just under half of fishermen in the study community have no secondary school qualifications; a quarter have achieved standard grade or equivalent; and 10% have higher grade or equivalent. Approximately 16% of aquaculture workers have no secondary level qualifications, with a quarter having standard grade and 17% achieving higher grade. Only 12% of the local community have not achieved secondary school qualifications, 19% have standard grade qualifications and 8% higher grade or equivalent.

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<sup>2</sup> The data were weighted to make the sample representative of the population. The weights were based on occupational division, and are equal to the proportion in the population divided by the proportion in the sample (Whitehead, 2000).

Almost all the fishermen in the sample are classified as self-employed, in contrast to fish farmers who are mainly full-time employees (95 fishermen out of 102 are self-employed compared to only 2 out of 103 fish farmers). Consequently, a comparison of multiple-job holding between self-employed and full-time employees in this analysis constitutes a comparison of multiple-job holding between fishermen and fish farmers. Despite the common finding that the self-employed is a subgroup with relatively high moonlighting rates (Kimmel and Conway, 2001), in the study community the incidence of multiple-job holding is substantially higher among employed aquaculture workers than among self-employed fishermen.

Of the 324 local members of the population who are surveyed, 97 are full-time employees, 55 are employed part-time, 39 are self-employed, and 133 are economically inactive or unemployed. This aggregates to 191 workers and 133 non-workers. However, information on second jobs is not available for those who work in the local community in other sectors apart from fishing and aquaculture.

Fishermen and fish farmers have both higher annual household incomes and higher non-earned incomes relative to other local workers and residents (where non-earned income is defined as the income from the rest of the household excluding the respondent). It is difficult to compare the length of time spent working on the primary job between fishermen and fish farmers. As full-time employees, fish farmers tend to work a standard nine-hour day. In contrast, when on a fishing trip fishermen tend to work much longer hours. Consequently, our sample data shows that the number of hours worked per day is substantially higher for fishermen (15.3 hours for fishermen compared to 8.23 hours for fish farmers and 7.65 hours for other locally employed workers).

One of the main motivations given for multiple-job holding in both the labour economics literature and the farm household literature is financial need, i.e. multiple-job holding is used as a survival strategy by those in low income households. In line with this, the sample shows that aquaculture workers have on average lower annual incomes and lower hourly earnings relative to fishermen and higher rates of multiple-job holding. The incidence of multiple-job holding is substantially higher among aquaculture workers than among fishermen, with over one in four aquaculture workers having more than one job compared to only 11% of fishermen (hourly wages from the primary job for fishermen are derived by dividing the annual income from fishing by the annual number of hours worked by the fishermen. Annual earnings from the primary job are derived by taking the midpoint of the income band that the individual selected in the questionnaires).

Table 3 presents the sample means for both moonlighters and non-moonlighters. Moonlighters tend to be older and are more likely to be married, although the number of children living in the household is fairly similar for moonlighters and non-moonlighters. Moonlighters are also more educated compared to non-moonlighters, with more moonlighters having achieved both higher grade school qualifications and a university degree.

Moonlighters in general work fewer hours on their primary job than the average non-moonlighter. Contrary to the financial need explanation for multiple-job holding, moonlighters tend to have higher annual household incomes and higher non-earned incomes relative to non-moonlighters. This finding is more in line with the view that individuals moonlight for other reasons than financial namely, individuals take up a second job for the non-pecuniary benefits that are not provided in the primary job (Kimmel and Conway, 2001; Boheim and Taylor, 2004).

## **6. Methodology**

To explore the reasons underlying why fishermen and fish farmers moonlight, binary probit models for the decision to moonlight are estimated, along with a probit model with sample selection. To illustrate, consider a number of  $p$  independent variables thought to affect the choice of taking up a second job, such as gender, family income, number of children, etc. Let the conditional probability that a fisherman or fish farmer has taken up a second job be denoted by  $P(y = 1 | x) = \pi(x)$ . Then, the probit of the multiple regression model is given by the equation:

$$g(x) = (\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p) \quad (1)$$

In which case

$$\pi(x) = \int_{-\infty}^{g(x)} \phi(t) dt \quad (2)$$

The first step is to estimate separate probit models for fishermen and fish farmers to reveal if there are any differences in the reasons for multiple-job holding between fisherman and aquaculture workers. Due to the small number of moonlighting fishermen, these two models are estimated as binary probit models, where the dependent variable equals one if the individual has more than one job and equals zero if the individual has one job.

It is important, however, to recognise that possible selection processes may be a work, which would imply that the sample observed may not be a random draw from the population, but a systematic portion of it. Specifically, two sources of selection should be controlled for; the first is the decision to work in the fisheries and aquaculture sectors, and the second is the decision to hold more than one job. If selectivity is an issue, the probit model with sample selection is appropriate because the decision to work in the fisheries or aquaculture industries as well as the decision to hold more than one job are estimated simultaneously. This will allow the parameters determining the decision to be

employed in fisheries or aquaculture to differ from those determining whether or not an individual moonlights.

A probit model with sample selection relates the categorical dependent variables to an individual's personal and work experience characteristics. The probit model with sample selection assumes that there exists an underlying relationship (see Tunali, 1986):

$$y_j^* = x_j \beta + u_{1j} \quad (3)$$

such that we observe only the binary outcome:

$$y_j^{probit} = (y_j^* > 0) \quad (4)$$

The dependent variable, however, is not always observed. Rather, the dependent variable for observation  $j$  is observed if:

$$y_j^{select} = (z_j \lambda + u_{2j} > 0) \quad (5)$$

where

$$u_1 \sim N(0,1)$$

$$u_2 \sim N(0,1)$$

$$corr(u_1, u_2) = \rho$$

In the sample data used in this study, an individual who holds a second job is observed only if he or she is employed in fisheries or aquaculture.

Many factors can account for the variation in observed moonlighting. In labour studies these variables are typically those reflecting personal characteristics such as age, education, gender and marital status. Also included are variables considered to affect an individual's decision to take a second job, e.g. non-earned income and wages from the primary job. In the farm household literature personal and family characteristics are also included, along with farm production characteristics and financial characteristics of the family. Non-earned income and primary job wages are included as both are theoretical determinants of labour supply and of multiple-job holding. The actual wage on the primary job can be thought of as reflecting a number of personal productivity characteristics that are not captured in the vector of demographic type variables (Shisko and Rostker, 1976). Given the hours-constraints motive for moonlighting, earnings from the primary job are exogenous and should affect the moonlighting decision negatively when increasing. The same applies for non-earned income (i.e. income from the rest of the household excluding the individual). However, it can be argued that if individuals moonlight for other reasons (e.g. the heterogeneous jobs motivation), then the wage from the primary job will be endogenous to the decision to moonlight. As farm income is included in the farm household studies and the primary wage job in the labour economics literature, the wage from fishing and aquaculture is included as an explanatory variable in the model.

The independent variables consist of both personal characteristics and human capital variables. The personal characteristics of the individual are gender, marital status, and the number of dependent children living in the household. The variables that capture the human capital of the individuals are age, educational level, training (defined as the number of years of training the individual has undertaken on his current job), and the number of years experience the individual has on his primary job. The hours worked on the primary job are not included as a regressor in the probability of moonlighting equation because hours are endogenous if an individual moonlights because jobs are heterogeneous (Kimmel and Conway, 2001; Averett, 2001). A sector dummy variable is included,

which specifies whether an individual works in fisheries or in aquaculture (where the variable equals 1 if the individual works in fisheries and 0 if employed in aquaculture).

Within the farm household literature, farm production and financial variables are included as regressors to show if factors such as farm output/profits and farm income influence farmers' off-farm labour supply decisions. While the dataset in this study does not include data on profits for fishermen and fish farmers, it does contain information on whether the fish farmer owns a stake in the fish farm he works on, and whether the fishermen is the skipper on the fishing boat. As skippers are entitled to a larger share of the catch and fish farm stakeholders benefit financially from owning part of the fish farm, including these variables in the model specification should reveal whether these factors influence multiple-job holding among fishermen and fish farmers. Both variables are specified as binary dummy variables, equalling one if the individual is a skipper or stake owner and zero otherwise.

The human capital model emphasises the heterogeneous nature of workers as the primary cause of wage differentials, where individual earnings differentials will reflect differentials in human capital in terms of age, education, experience and training. The importance of human capital has also been emphasised in studies examining the nature of low pay and poverty. For example, Sloane and Theodossiou (1996) highlighted the role of education and training in both reducing the likelihood of being in a low paid job or dropping into the low paid category and in raising the likelihood of moving from a low paid job into a high paid job. When considering the sustainability of isolated coastal or rural communities, investment in human capital and the role of education and training may be an important vehicle in improving the economic well being of those individuals who live in these communities.

## **7. The characteristics of multiple-job holding: Who are the moonlighters?**

The results from the probit models for fishermen and fish farmers separately are reported in the first two columns of Table 4. A common finding in the farm household literature is the significant effect of age on off-farm participation. Similarly, our results reveal age to be positively and then negatively related to the probability of moonlighting, reflecting a life-cycle effect for fishermen. Fishermen with standard grade school qualifications are also more likely to have a second job, implying that having education qualifications may help individuals to get an additional job. Having educational qualifications also helps aquaculture workers to get a second job. Fish farmers who have higher grade school qualifications are more likely to moonlight relative to those fish farmers with no qualifications. Fish farmers who have undertaken training for their job are also more likely to have a second job.

As expected, wages from the primary job have a significantly negative effect on the decision to moonlight for both fishermen and fish farmers, while income from the rest of the household is insignificant. Surprisingly, having a stake in a fish farm has a positive effect on fish farmers' decision to have more than one job, and being a skipper has a significantly positive impact on fishermen's decision to moonlight.

A common finding in both the labour studies and the farm household literature is the significant impact of children on multiple-job holding, e.g. for men, the presence of children in the household has a positive effect, whereas for women children have a negative impact on multiple-job holding. In contrast, the results of the model show a significantly negative effect of children on fishermen's decision to moonlight, and an insignificant effect for fish farmers. Thus, the greater the number of children in the household, the less likely a fisherman is to hold more than one job.

Testing for any differences between fishermen and fish farmers in the factors that influence multiple-job holding reveals that the majority of coefficients are not significantly different. Consequently, a binary probit model for multiple-job holding is estimated for fishermen and fish farmers together. The results for this model are reported in the third column of Table 4.

Similar to the separate probit results, education has a positive effect on the probability of fishermen and fish farmers having a second job. However, age is no longer significant in the decision to moonlight. Included in the model specification is the dummy variable denoting the sector in which the individual is employed. This variable is negative and significant, implying that fishermen are less likely to have a second job relative to aquaculture workers.

However, the binary probit models, do not account for the possible sources of sample selection, i.e. firstly, the decision to work in fisheries and aquaculture; and secondly, the decision to have more than one job. To investigate whether selectivity is an important issue with respect to multiple-job holding among fishermen and fish farmers, a probit model with sample selection is estimated, and the results are reported in Table 5. These results are the probit coefficients. The marginal effects were also calculated, as the signs of the derivatives are not always the same as the signs of the coefficients with bivariate probit models. In this case, the signs of the derivatives do not differ from the signs of the coefficients. Due to the small number of fishermen with more than one job, the sample is not split into fishermen and fish farmers when estimating the model with sample selection, but the decision to moonlight for fishermen and fish farmers combined is estimated.

Focusing first on the participation in fisheries and aquaculture equation, the results show that non-earned income has a negative effect on the probability of an individual being employed in either sector. Increased non-labour income therefore raises an individual's shadow wage and discourages participation in the market. The coefficient for the wage of the primary job, however, is

insignificant. This is supported by evidence which show that income is not a priority for why fishermen or aquaculture workers enter or remain working in their respective occupations<sup>3</sup>.

Age does not appear to influence participation in fisheries and aquaculture. In contrast, the human capital variables have a positive and significant influence on fisheries and aquaculture employment. For the education variable, those with secondary school qualifications are more likely to be employed in fishing or aquaculture relative to the uneducated; however, as expected, those with a university degree are less likely to work in these sectors. Both training for the primary job and years of experience on the primary job increase the probability of participation in fisheries and aquaculture.

The results for the moonlighting equation reveal several similarities and differences to the binary probit models. In contrast to the separate probit models but similar to the combined model, age does not appear to be significant in the decision of fishermen and fish farmers to have a second job. Family characteristics such as the number of children also do not affect the moonlighting decision of fishermen and aquaculture workers.

Theoretically, human capital variables can either increase or decrease off-farm labour supply, while in the labour economics literature education typically has a positive effect on multiple-job holding. The results of the model show that fishermen and fish farmers with either standard or higher grade school qualifications are more likely to have more than one job. This result supports empirical evidence from farm household studies which argue that education has a positive influence on the probability of off-farm participation for both men and women, i.e. the effects of human capital on

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<sup>3</sup> Fishermen mainly enter the fishing profession for reasons of family tradition or lifestyle, while fish farmers largely enter and remain in aquaculture because of the lack of alternative employment within the local community (Report to the European Commission (2004)).

off-farm wages outweigh the increase in the shadow value of labour on the farm. Consequently, increases in the human capital of fishermen and fish farmers will raise the value of labour in the secondary job market, thereby increasing fishermen and fish farmers' supply of labour to the secondary market.

The positive effect of education on multiple-job holding is also consistent with empirical findings in the labour economics literature. For example, Averett (2001) finds that men who moonlight tend to have more education than men with one job. Renna (2003) also argues that education is an important factor that shapes the characteristics of the secondary job market. In contrast, however, he finds that individuals with either very low or very high levels of education are more likely to be in the secondary job market and to supply more hours in the second job. This is similar to Kimmel and Conway (1995) who find that moonlighters with four or more years of college or those with less than a high school education have the longest moonlighting durations on average. Their results suggest that moderately educated workers (high school education) are most likely to moonlighting for short periods of time on jobs that pay much lower wages (a pattern consistent with the constraint motive), whereas highly educated or poorly educated workers are more likely to job-package.

The number of years of training an individual has undertaken does not appear to influence the decision to moonlight. The experience variable is omitted from the moonlighting equation as inclusion of both age and experience variables does not appear to be appropriate due to strong collinearity (Lass et al, 1991). The independent variable denoting the sector of employment is significant and negative, in line with the combined probit results, suggesting that fishermen are less likely to moonlight relative to aquaculture workers.

Similar to the binary probit models, the variable capturing the effect of being a skipper or a stakeholder in the fish farm is positive and significant. One interpretation of this is that this variable

may capture the effects of risk on labour supply. Multiple-job holding may be interpreted as a means of diversification to spread risk, and so the more financially invested the fisherman or fish farmer is to the fishing or aquaculture activity, the more likely he is to have a second job in order to spread the risk which results from the variability of the catch or farm sales. Given the uncertain future of the Scottish fisheries sector, changes in fishing regulations and quotas may lead to increased variability in fishing incomes, and therefore a higher incidence of multiple-job holding among fishermen.

The prediction of the hours constraints explanation for multiple-job holding, i.e. that the higher the wages from the primary job, the lower the probability of the individual moonlighting, is not borne out by either the combined probit model or the probit model with sample selection. Neither the wage from the primary job nor non-earned income has a significant effect on an individual's decision to hold two jobs. This is in line with Averett (2001) who found that the wage of the primary job is insignificant for both men and women. Thus, it does not appear from our results that it is the lower paid, uneducated individuals who are more likely to moonlight. These results imply that workers in fisheries and aquaculture may hold their primary job for the sake of mainly pecuniary motives and security, or because of the emotional attachment they have to the lifestyle supplied by their occupation, but take a second job for the non-monetary benefits that the job provides such as: learning about new occupations or gaining training; gaining credentials to acquire a higher paying second job; engaging in activities of interest to them; gaining satisfaction not received from the primary job; or maintaining flexible work schedules.

One finding of this paper is that sample selection is not an important issue in the context of multiple-job holding among fishermen and fish farmers in rural communities. The Wald test of independent equations shows the results obtained from the probit model with sample selection would not be

significantly different from those obtained from estimating the probit and selection models separately.

## **8. Conclusions**

The striking changes in the rate of multiple-job holding in the U.S. in recent years has led to an increase in the attention that labour economists have paid to understanding the reasons why individuals moonlight. Similarly, the growing trend in off-farm labour supply among farm households has attracted significant attention in the agricultural literature. Reasons for multiple-job holding will be of particular importance to policymakers if multiple-job holding is primarily caused by financial pressure and is seen by individuals as a way out of poverty. In particular, multiple-job holding is often considered to be a survival strategy for low-income households within rural communities. This paper uses a unique dataset of a relatively homogeneous population of fishermen and aquaculture workers and examines multiple-job holding in the context of rural communities where multiple-job holding may be an important way of promoting sustainability of these communities.

Several findings emerge from this paper that contribute to the moonlighting literature and which are useful for policymakers. Firstly, this paper addresses the issue of whether selectivity into particular employment sectors is important in the context of multiple-job holding within rural communities. The empirical findings suggest that sample selection is not an important issue in the context of this study. The paper also investigates whether the motivations for multiple-job holding vary across fisheries and aquaculture. There does not appear to be any significant differences between the characteristics that explain multiple-job holding among fishermen and fish farmers.

Second, evidence is found that multiple-job holding as a survival strategy may not be the primary motive for multiple-job holding among fishermen and aquaculture workers in rural areas. Within these communities it is not the lower paid and uneducated individuals who are most likely to hold a second job. Further, neither primary job wages nor non-earned income appears to influence an individual's decision to moonlight. This may lend support to the "portfolio" model of moonlighting found in the labour economics literature, so that within rural communities workers choose packages of jobs so as to optimise over the mean and variance of income. In this model, one job might provide a steady but low income, and the second might have wages that are high on average but more variable. Therefore, jobs in different occupations offer some insurance. Our results may also be consistent with models in which second jobs provide workers with training, professional contacts, or other desirable characteristics that cannot be obtained from the primary job.

Third, education has a positive impact on the incidence of multiple-job holding. This finding has important implications for policy makers' as individuals in rural communities may be able to increase their probability of getting a second job and therefore use multiple-job holding as a way of job packaging, by acquiring educational qualifications. The predominant role of education in increasing household income through the role of moonlighting holding suggests that investment in education in rural communities is a potent means of increasing the economic well being of those living in isolated communities and of promoting sustainability for these communities in the long term.

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Table 1

## Demographic data for Scotland and the Highland Region

	Scotland	The Highlands
Resident population	4,998,567	204,004
Localities	4,446,297	131,226
Rural Areas	552,270	72,778
Population density (persons per km <sup>2</sup> )	66	8
Births per 1,000 population	11.6	-
Deaths per 1,000 population	11.6	-
GDP at factor cost (£ million)	54,430	3,093
GDP at factor cost (£ per head population)	10,614	8,308

Source: Scottish Abstract of Statistics 1998, and Scottish Economic Statistics 2000

Table 2  
Demographic and job characteristics of the sample

	<b>Fishermen</b>	<b>Aquaculture workers</b>	<b>Other local workers</b>
Average age (years)	37	38	48
Male	99%	91%	40%
Married/living together	61%	60%	71%
No. of children in household	0.46	0.57	0.55
Annual household income	£29,617	£27,237	£17,490
No. of contributors to household income	1.76	1.43	2.09
Non-earned annual income	£9,097	£9,337	£8,274
Annual wage from primary job	£19,761	£16,324	£8,976
Hourly wage from primary job	£7.19	£7.63	£5.77
Hours per day on primary job	15.34	8.23	7.65
Hours per week on primary job	65	46	24
Annual wage from second job	£986	£1,067	n.a.
Standard grade qualifications	24%	24%	20%
Higher grade qualifications	10%	17%	8%
Degree or above	2%	9%	17%
Full time employees	5%	97%	30%
Part time employees	1%	1%	17%
Self employee	94%	2%	12%
Economically inactive/unemployed	-	-	41%
More than one job	11%	27%	26%

Table 3

## Demographic and primary job characteristics of moonlighters

	<b>Moonlighters</b>	<b>Non-moonlighters</b>
Average age (years)	42	37
Male	86%	97%
Married/living together	68%	61%
No. of children in household	0.70	0.67
Annual household income	£27,138	£21,232
No. of contributors to household income	1.4	1.9
Non-earned annual income	£9,438	£8,539
Annual wage from primary job	£13,508	£12,839
Hourly wage from primary job	£7.55	£6.40
Average hours per day on primary job	9.1	11.6
Annual wage from second job	£5,470	-
Standard grade qualifications	24.3%	24.5%
Higher grade qualifications	35.1%	29.6%
Degree or above	8.1%	5.0%
Full time employees	46%	36%
Part time employees	13%	10%
Self employee	19%	27.5%
Economically inactive/unemployed	22%	26%
Aquaculture workers	27%	73%
Fishermen	11%	89%

Table 4

The decision to moonlight for fishermen and fish farmers

	<b>Probability of moonlighting for fishermen</b>	<b>Probability of moonlighting for aquaculture workers</b>	<b>Combined probability of moonlighting</b>
Constant	-20.392 (-1.13)	23.286 (2.43)	-4.295 (-1.21)
Wage on primary job	-2.083*** (-4.57)	-3.556*** (-3.91)	0.001 (0.01)
Non-earned income	0.303 (0.54)	0.147 (0.59)	0.124 (0.58)
Age	1.424* (1.91)	0.372 (1.47)	0.057 (0.43)
Age squared	-0.015* (-1.86)	-0.005 (-1.61)	-0.001 (-0.60)
No. of children	-0.823*** (-3.37)	-0.195 (-0.81)	-0.087 (-0.61)
Below 'A' level	3.439*** (2.95)	0.378 (0.62)	0.911* (1.88)
'A' level or equivalent	0.660 (0.80)	1.787** (2.79)	1.247*** (2.80)
Degree or equivalent	-0.233 (-0.22)	-0.892 (-0.85)	0.537 (0.98)
Experience	0.005* (1.70)	0.001 (0.02)	0.002 (0.69)
Training	-1.349* (-1.78)	1.111* (1.86)	0.783 (1.44)
Skipper	2.683** (2.21)		
Stakeholder in fish farm		5.159*** (4.42)	
Combined skipper or stakeholder			1.690*** (3.10)
Sector of employment			-1.903*** (-4.05)
<i>N</i>	46	59	117
F(11, 46)	2.92**	3.13**	2.21

Note: t-statistics are reported in parentheses.

Table 5  
The decision to moonlight controlling for sample selection

	Probability of working in fisheries or aquaculture	Probability of moonlighting
Constant	12.321*** (2.86)	-4.376 (-1.18)
Wage on primary job	0.029 (0.35)	-0.009 (-0.08)
Non-earned income	-1.278** (-2.54)	0.101 (0.48)
Age	0.060 (1.02)	0.085 (0.56)
Age squared	-0.003* (-1.84)	-0.001 (-0.68)
Marital status	1.619* (1.64)	-0.081 (-0.13)
No. of dependent children	0.275 (1.61)	-0.091 (-0.68)
Below 'A' level	6.299*** (4.94)	0.894* (1.88)
'A' level or equivalent	1.714 (1.49)	1.200*** (2.64)
Degree or equivalent	-1.563** (-2.13)	0.448 (0.84)
Experience	0.011* (1.66)	
No. of years training	2.952** (2.09)	0.810 (1.53)
Sector of Employment	-0.708 (-1.08)	-1.745*** (-4.30)
Skipper or stakeholder	-1.135* (-1.78)	1.825*** (3.97)
$\rho$	0.900	
$N$	120	
Log. likelihood	-459.409	
Wald test	1.14	

\*\*\* 1% significance level, \*\* 5% significance level, \* 10% significance level

Fig.1. Utility maximising hours-constrained moonlighter

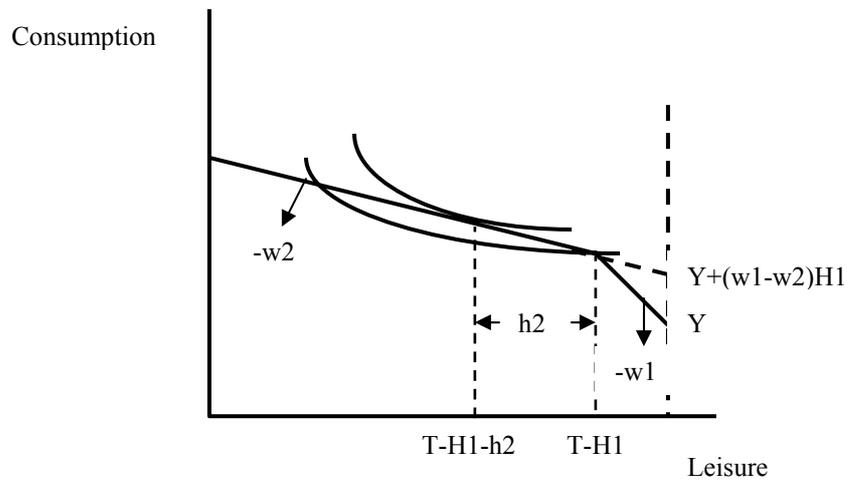
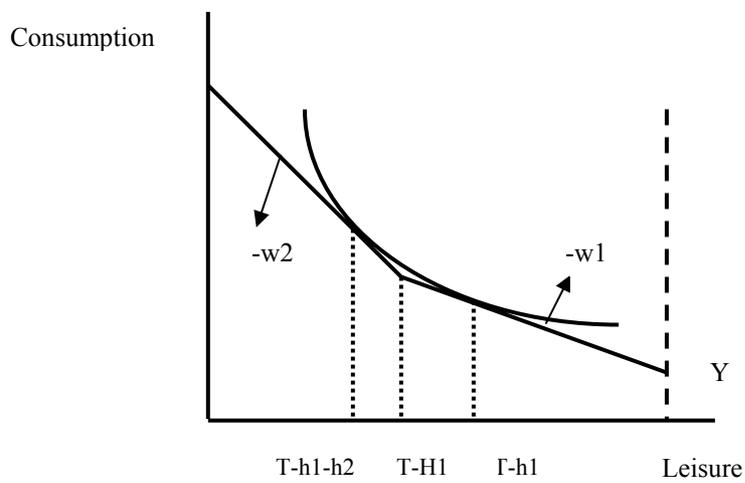


Fig. 2. Utility maximising non hours-constrained moonlighter



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