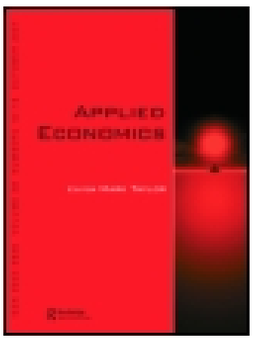

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# Moonlighting: multiple motives and gender differences

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# *Moonlighting: multiple motives and gender differences*

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This paper examines the incidence and reasons for moonlighting with a focus on gender differences. The study specifies and estimates a bivariate probit model of labour supply and the decision to hold more than one job. It is found that the factors leading men and women to moonlight are similar. A wage decomposition analysis reveals that 93 percent of the differential between male and female moonlighters' wages is not explained by differences in characteristics, and little connection is found between an individual's human capital and their moonlighting wage. Finally, it is found that moonlighters are less likely to report their income.

## I. INTRODUCTION AND BACKGROUND

There has been a recent increase in the attention that labour economists have devoted to understanding dual-job holding (moonlighting). This is no doubt due, at least in part, to the striking changes that have occurred with respect to moonlighting rates and the composition of the moonlighting population. In 1989, 7.2 million wage and salary workers held two jobs; their total hours of work averaged 52 per week, composed of 38 hours on the primary job and 14 hours on the secondary job (Stinston, 1990). This represents a 50% increase in the dual-job holding rate since 1980 (Plewes and Stinston, 1991). In 1994, about 5.9% of all workers reported holding more than one job at some point (Kimmel, 1995). Paxson and Sicherman (1994) note that more than 50% of continuously working men will moonlight at some point in their working lives. Although the moonlighting population is a small percentage of the total labour force, clearly dual-job holding is an important factor in the working lives of many Americans.

The rate of increasing dual-job holding and the types of jobs held by moonlighters vary by gender. In 1970, 2.5% of women and 6% of men held more than one job. By 1991, the rate for women had nearly tripled to 6% while that of men had risen slightly to 6.5% (Levenson, 1995). Plewes and Stinston (1991) note that this rapid increase in the rate at which women moonlight combined with the steady incidence of male moonlighting has resulted in a change in the composition of the moonlighting population. In the 1980s, the number of women holding more than one job doubled; 43% of labour force participants holding more than one job in 1989 were women (Stinson, 1990). In addition to their more rapid growth rate, female moonlighters are more likely to work at two part-time jobs while male moonlighters typically hold one full-time and one part-time job (Stinson, 1986; Plewes and Stinson, 1991). Interestingly, the dual-job holding rates of men and women are highest for those workers with a college education (Kimmel and Conway, 1995; Levenson, 1995; Kimmel and Powell, 1996). This challenges the conventional wisdom that the majority of moonlighters are low-wage earners trying to make ends meet and underscores the need for a further understanding of dual-job holding.

Understanding who moonlights and why is particularly important for policymakers who may not be as concerned about moonlighting if it is undertaken by relatively affluent/educated individuals. However, Kimmel and Conway (1995) find that the average moonlighter receives lower wages, works longer hours and is poorer than the average worker and that taking a second job is often not enough to raise a moonlighter's income to that of the average worker. Kimmel and Powell (1996) state that there are good reasons to be concerned about rising moonlighting rates. Specifically, they note that rising moonlighting rates may imply that individuals face increased time and financial pressures. This can result in an increased use of non-parental child care as parents strive to meet growing financial burdens.

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Economists typically explain moonlighting as a response to an employer who does not, for some reason, offer enough hours to the employee on the primary job. Therefore, individuals take a second job in addition to their primary job. This is the hours constrained moonlighter explanation. More recent research has recognized that moonlighting may occur even among those individuals who do not face a constraint on the number of hours that they can work at their main (primary) job. An alternative motivation for moonlighting may be that having two jobs enables individuals to engage in activities of particular interest for them. For example, a university professor may wish to use his/her expertise to perform consulting work, or a comedian may have a 'day' job and perform comedy on nights and weekends (Conway and Kimmel, 1994; Kimmel and Conway, 1995). For women, moonlighting may be a way to maintain a flexible work schedule (Plewes and Stinson, 1991). For example, a woman with young children who requires child care may hold two part-time jobs, one during the morning while her children are in school and another in the evening when her husband is home to care for the children. Along these same lines, workers who are unable to secure full-time employment may decide to take two or more part-time jobs. Conway and Kimmel (1994) and Sicherman and Paxson (1994) note that moonlighting may be the only way for workers to respond to wage changes or otherwise adjust hours of work during the short run. In this research, we attempt to distinguish between two basic motivations for moonlighting: primary job constraints and heterogeneous jobs. These are the same motives that Conway and Kimmel (1994), Kimmel and Conway (1995) and Kimmel and Powell (1996) use to clarify dual-job holders. The heterogeneous jobs motive refers to those moonlighters who take a second job because the second job provides different non-pecuniary benefits to the individual.

Despite the changes in moonlighting behaviour that occurred in the 1980s, little is known about the different factors that motivate individuals to hold more than one job or how these factors may vary across gender. Moreover, although researchers have acknowledged that more than one motive for moonlighting exists, no direct test of multiple motives has yet been done. This research aims to contribute to the understanding of moonlighting behaviour by focusing on both the motives behind and the gender differences in this behaviour. To understand who moonlights a bivariate probit model of the decision to work in the labour force and take more than one job is specified and estimated. Then, in order to more closely examine the motives underlying this decision, an empirical model of the reason for moonlighting is put forth. Both of these models are estimated separately by gender given the notable gender differences in dual-job holding described earlier. Finally, because one of the most interesting differences between male and female moonlighters is in their hourly earnings, a wage decomposition analysis is performed to ascertain to what extent these wage differences can be explained by human capital, demographic and geographic variables. Understanding the structure of second job wages is important in light of the fact that most dual-job holders report taking a second job due to financial hardship (Kimmel and Powell, 1996). This paper is organized in the following manner. Section II contains a discussion of underlying theory of multiple-job-holding and reviews the more recent literature on this topic. Section III describes the data set. Section IV presents the econometric models and the estimation results. Section V concludes.

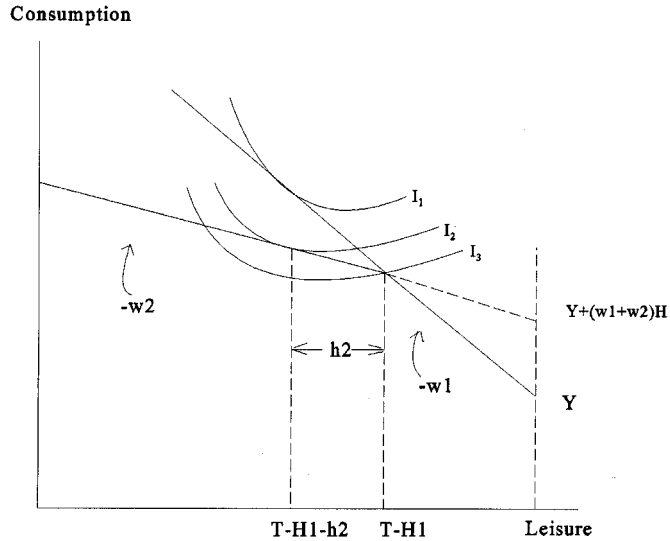


Fig. 1. *Utility maximizing decision of a constrained moonlighter*

## II. THEORY AND PREVIOUS LITERATURE

As noted, economists have usually assumed an individual moonlights because they cannot work as many hours as they would like on their primary job. This can be illustrated with the standard labour/leisure diagram. Fig. 1 illustrates the typical budget constraint facing an individual who is an hours constrained moonlighter. In this figure, $Y$ is unearned income, and $w_1$ and $w_2$ are the wage rates available on the primary and secondary job (the primary job is typically defined as the job where the most hours are worked, while the second job is usually considered to be the moonlighting job). In the case of an hours constrained moonlighter, the wage rate on the primary job will be higher than the wage rate on the secondary job.[1] Total

[1] However, if an individual moonlights for any reason other than an hours constraint, the wage rate on the second job will not necessarily be lower than the wage rate on the primary job. Shishko and Rostker (1976) discuss comparative statistics for the cases where the wage on the secondary job is less than, equal to or greater than the wage on the primary job.

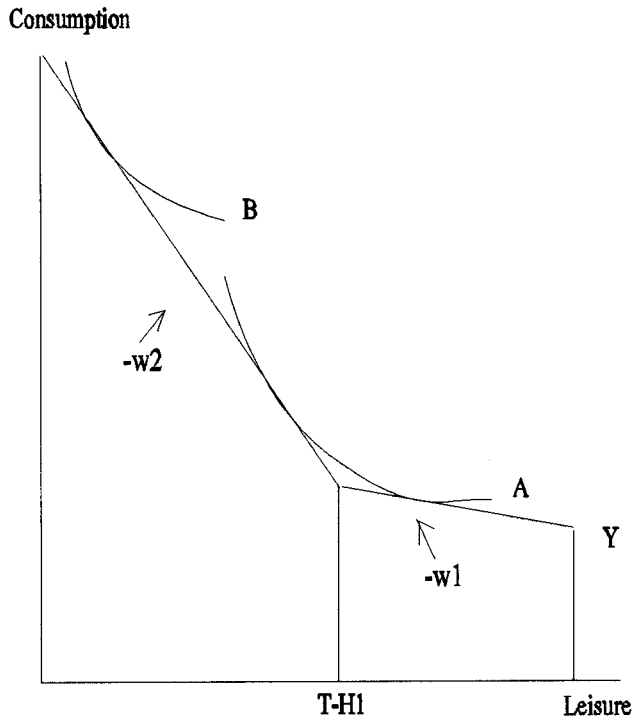


Fig. 2. *Utility maximizing decision of a moonlighter with earnings on the second job greater than earnings on the first job*

time available to the individual in a week is represented by $T$, and $H1$ and $H2$ represent the number of hours devoted to the primary and secondary jobs respectively. Note that the person whose indifference curves are illustrated in Fig. 1 would be better off (e.g. reach a higher indifference curve) if the employer on the primary job would provide more hours. However, if this is not the case, this individual will choose to take a second job in order to maximize utility.

Figure 2 depicts a moonlighter who is not hours constrained. By definition, non-constrained moonlighters are those who could work more hours on the primary job if they so desired. Unlike the case in Fig. 1, this individual has a higher wage on the second job than on the first job.[2] This is plausible in a wide array of cases. For example, the university professor who consults on the side might earn more per hour consulting than at the university, but be reluctant to give up the relative security of the university job. This might also be the case for a woman who balances two jobs, one in the morning and one in the evening, to be able to care for her children during the day. Individuals with these budget constraints would only moonlight if they had relatively flat indifference curves, in other words if they were 'workaholics'. In fact, an individual with a budget constraint such as that in Fig. 2 who wanted 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.[3]

Early research on multiple-job holding acknowledged that multiple motives may exist, but the empirical work implicitly assumed all moonlighters were hours constrained and typically only male moonlighters were studied (Shishko and Rostker, 1976; O'Connell, 1979; Krishnan, 1990, 1993).

However, more recent research explicitly recognizes the different motives for moonlighting and has begun to address the implications of multiple motives for economic models of dual-job holding. For example, Conway and Kimmel (1994) estimated a labour supply model for prime-aged male moonlighters using data from the Survey of Income and Programme Participation (SIPP). In their model they explicitly accounted for multiple motives of moonlighting. In particular, they noted that hours on the primary job are endogenous if an individual moonlights for a reason other an hours constraint. They presented evidence that the labour supply of prime-aged males is more wage responsive than previously thought once moonlighting is incorporated into the hours of work decision.

In related work, Kimmel and Conway (1995) use SIPP data to estimate a duration model of moonlighting. They hypothesize that those who moonlight because they face an hours constraint should have shorter moonlighting spells compared to those who moonlight because their jobs are heterogeneous. They find some support for this hypothesis.

Levenson (1995) presents indirect evidence of multiple motives. He noted that during the 25 years preceeding the study had made wage and employment gains relative to men, yet women experienced the growth in multiple-job holding, not men (although men did experience a slight rise in the late 1980s). This suggests that the growth in female moonlighting must be due to more than economic constraints. However, he did not formally test this hypothesis.

Paxson and Sicherman (1994) examined the dynamics of moonlighting using data from both the Current Population Survey (CPS) and the Panel Study of Income Dynamics (PSID). They find that multiple-job holding is a dynamic process – most workers experience multiple-job holding at some time during their working lives. Their data from the PSID reveal that between 1979 and 1989 nearly 65% of men, and 43% of women had held a second job in at least one of those years. They noted that the traditional models of moonlighting, which assume that individuals moonlight solely because of hours constraints, fail to

[2] It is impossible to depict the budget constraints and indifference map for a non-hours constrained moonlighter who has a wage rate on the primary job greater than that on the moonlighting job. According to economic theory, a person with normally shaped indifference curves would always maximize utility by choosing to work more hours on the primary job if that job paid more.
[3] This assumes that there are no hours constraints on the second job.

account for the fact that over time workers can avoid hours constraints by searching for new jobs. The focus of their research is on why and when workers move in and out of second jobs. They 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. Finally, Abdukadir (1992) examined the possibility that moonlighting is caused by short-term liquidity constraints.

Although recent researchers have begun to more rigorously examine dual-job holders, little is still known about the underlying motives or the gender differences in this behaviour. This paper aims to fill that gap in the literature.

## III. DATA

### *Sample and variables*

The data are from the 1991 Current Population Survey (CPS). In May, a special supplement was administered to obtain information on multiple-job holding, volunteer work and flexitime. These data are particularly well-suited to this analysis as they contain detailed information on up to two jobs including wages and hours of work as well as a series of questions as to why an individual holds more than one job. In this dataset, the primary job is defined as the job where the individual works the greatest number of hours. If the number of hours worked on both jobs is equal, the primary job is defined as the job which the individual has held for the longest time. These data have been used by others to examine the incidence of multiple-job holding (Stinson, 1986, 1990; Plewes and Stinson, 1991; Paxson and Sichermin, 1994; Kimmel and Powell, 1996).

The primary advantage of these data is that the sample is nationally representative, information about wages and hours for up to two jobs is available, and respondents are asked why they moonlight. In other data sets, such as the SIPP, the PSID and the National Longitudinal Survey of Youth (NLSY), it is possible to identify wages and characteristics of more than one job, but it is not always possible to identify if these jobs are held simultaneously, i.e. if the person is truly moonlighting or had two jobs at different times or was moving between jobs.[4] Moreover, these other data sets do not ask respondents their reason for holding more than one job which is particularly important for this research.

One disadvantage of this dataset is that respondents are not asked the detailed income questions that are administered in the March CPS questionnaire. Therefore, it is impossible to identify those individuals who receive income from sources such as social security and welfare. This is particularly problematic when examining labour supply decisions since such income sources are labour supply conditioned. Another disadvantage is that these data are not longitudinal, therefore the reasons why the rate of moonlighting in the 1980s increased so dramatically for women cannot be explored directly.

To obtain a sample suitable for analysis, individuals were selected if they were part of the outgoing rotation groups and aged 18–55 years.[5] These restrictions provide a sample of 10106 women and 9330 men. Table 1 presents the descriptions of the variables used in this analysis. Tables 2 and 3 present the sample means for women and men by labour force and moonlighting status. Note that the proportion of men and women who report moonlighting is commensurate with that reported by other researchers; 5.8% of the working women and 6.8% of the working men held more than one job.[6]

Examining the means in Table 2 also reveals that when compared to working women who do not hold more than one job (comparing columns 4 and 5), moonlighting women are less likely to be Black, married, enrolled in school, live in the southern or northeastern USA, or to live in a metropolitan area. On average, they have more education, are more likely to be college graduates and to have at least attended graduate school. In addition, they are slightly more likely to have kids, and their children tend to be older. The wages for the two groups of working women (single and dual-job holders) are virtually the same, however, the unearned income of the moonlighters is lower on average than of working women who hold only one job.

Turning to Table 3, the means for the men, several patterns emerge. When comparing moonlighters versus men who work one job (columns 4 and 5) it can be seen that Black men are less likely to moonlight; however, in contrast to women, married men are more likely to moonlight. Moonlighting men are more likely to have a child in the family, particularly young children. They also tend to have more education, but are less likely to be enrolled in school than men with one job.

[4] In the CPS, to determine if a person is a dual-job holder, survey respondents are asked if, in addition to their primary (main) job they reported during the survey reference week, they did any paid work for any other employers. If they do not report a paid second job, they are then asked if they operated their own business or had another job or business at which they were not working that week (Plewes and Stinson, 1991).

[5] Conway and Kimmel (1994) also use the same age restrictions when analysing SIPP data. In addition, they delete those who are enrolled in school and the self-employed. However, making those deletions further reduced an already small sample, so we choose to retain those individuals.

[6] These rates are comparable to those reported by Paxson and Sicherman (1994) in their analysis of the 1991 CPS data.

Table 1. *Variable descriptions*

| | |
|---|---|
| AGE | Age of individual measured in years |
| BLACK | = 1 if black, 0 otherwise |
| NEVMAR | = 1 if never married, divorced, separated, 0 otherwise |
| WDIVSEP | = 1 if widowed, divorced, separated, 0 otherwise |
| MARRIED | = 1 if married, 0 otherwise |
| HOURSP | usual hours worked per week on the primary (main) job |
| KIDS1TO6 | = 1 if there are kids between 0–6 years old in the family, 0 otherwise |
| KID6TO13 | = 1 if there are children between 6–13 years old in the family, 0 otherwise |
| KIDS13P | = 1 if there are children in the family 13 years old and older, 0 otherwise |
| KIDINFAM | = 1 if there are kids in the family, 0 otherwise |
| NEAST | = 1 if live in the northeast, 0 otherwise |
| MWEST | = 1 if live in the midwest, 0 otherwise |
| SOUTH | = 1 if live in the south, 0 otherwise |
| WEST | = 1 if live in the west, 0 otherwise |
| METRO | = 1 if live in a metropolitan area, 0 otherwise |
| METDK | = 1 if the living area is not identified (do not know if metropolitan area or not), 0 otherwise |
| UCONTR | = 1 if covered by a union or employee association contract, 0 otherwise |
| MOONL | = 1 if a moonlighter, 0 otherswise |
| MANAGE1,2 | = 1 if holds a managerial or a professional occupation on the primary or secondary job respectively, 0 otherwise |
| TECH1,2 | = 1 if the occupation belongs to the technical, sales and administrative support occupations category on the primary or secondary job respectively, 0 otherwise |
| SERVICE1,2 | = 1 if has a service occupation on the primary or secondary job respectively, 0 otherwise |
| FARMING1,2 | = 1 if the occupation belongs to the farming, forestry, or fishing occupations category on the primary or secondary job respectively, 0 otherwise |
| CRAFT1,2 | = 1 if the occupation belongs to the precision, production, craft, or repair occupations category on the primary or secondary job respectively, 0 otherwise |
| LABOUR1,2 | = 1 if either an operator, a fabricator, or a labourer on the primary or secondary job respectively, 0 otherwise |
| AGRIC1,2 | = 1 if in the agriculture, forestry, or fisheries industry on the primary or secondary job respectively, 0 otherwise |
| MNCONS1,2 | = 1 if in the mining or construction industry on the primary or secondary job respectively, 0 otherwise |
| MANUFAC1,2 | = 1 if in the manufacturing industry on the primary or secondary job respectively, 0 otherwise |
| TRANSP1,2 | = 1 if in the transportation, communication, or other public facilities industry in the primary or secondary job respectively, 0 otherwise |
| WHOLRET1,2 | = 1 if in the wholesale or retail trade on the primary or secondary job respectively, 0 otherwise |
| FINANCE1,2 | = 1 if in the finance, insurance, or real estate industry in the primary or secondary job respectively, 0 otherwise |
| SERVIND1,2 | = 1 if in the business or repair services, personal services, entertainment or recreation services, or professional or related services industries in the primary or secondary job respectively, 0 otherwise |
| PUBLIC1,2 | = 1 if in the public administration industry on the primary or secondary job respectively, 0 otherwise |
| EDUCATION | highest grade attended, measured in years |
| HOURSS | hours per week worked at the second job |
| WORKING | = 1 if employed on at least one job, 0 otherwise |
| HRLYPAYP | hourly earnings in dollars |
| UNEARN | unearned income per week |
| MISSINC | = 1 if no unearned income or hourly earnings (for those working) are reported, 0 otherwise |
| HRLYPAYS | hourly earnings on the second (moonlighting) job |
| COLLEGE | = 1 if attended/completed college, 0 otherwise |
| GOVT1 | = 1 if employed in the government in the primary job, 0 otherwise |
| HGOVT2 | = 1 if employed in the government in the secondary job, 0 otherwise |
| ENROLL | = 1 if enrolled on school last week |
| GRADUATE | = 1 if attended graduate school |
| FULLS | = 1 if worked full-time on the second job (35 or more hours per week), 0 otherwise |
| FULLP | = 1 if worked full-time on the primary job (35 or more hours per week), 0 otherwise |
| PARTS | = 1 if worked part-time on the secondary job (less than 35 hours per week), 0 otherwise |
| PARTP | = 1 if worked part-time on the primary job (less than 35 hours per week), 0 otherwise |

Comparing male and female moonlighters, column 4 of Tables 2 and 3, there are some notable differences. A larger percentage of female moonlighters are Black, while more male moonlighters are married. About 81% of moonlighting men work full-time on their primary jobs while only 56% of the women work full-time on the first job. Very few men or women work full-time on their second job. There is a notable difference in hourly earnings between male and female moonlighters. For both primary and moonlighting jobs, men earn over US$2 per hour more than women. Men also tend to work longer hours. They work 41 hours on average at their primary jobs and 15 on their second jobs. Women work an average of 33 hours on the primary job and 12 on their second job. Most moonlighting women have second jobs in the technical, sales and administrative support occupations, whereas most moonlighting

Table 2. *Sample means for women aged 18–55 in the May 1991 CPS (outgoing rotations only)*

| Variable | All women | Working women | Non-working women | Working women who hold two jobs | Working women who hold only one job |
|---|---|---|---|---|---|
| Age | 35.3880 | 35.4838 | 35.2261 | 35.6471 | 35.4916 |
| Black | 0.1065 | 0.0994 | 0.1184 | 0.0818 | 0.1002 |
| Married | 0.5940 | 0.5703 | 0.6339 | 0.4987 | 0.5758 |
| Wdivsep | 0.1525 | 0.1653 | 0.1309 | 0.2148 | 0.1619 |
| Nevmar | 0.2535 | 0.2644 | 0.2352 | 0.2864 | 0.2624 |
| Kids1to6 | 0.2220 | 0.1766 | 0.2987 | 0.1279 | 0.1794 |
| Kid6to13 | 0.2943 | 0.2650 | 0.3437 | 0.3146 | 0.2627 |
| Kids13p | 0.1818 | 0.1738 | 0.1953 | 0.2404 | 0.1704 |
| Kidinfam | 0.5110 | 0.4684 | 0.5829 | 0.4936 | 0.4674 |
| Education | 13.1259 | 13.5117 | 12.4743 | 14.0946 | 13.4763 |
| Enrol | 0.0590 | 0.0441 | 0.0841 | 0.0435 | 0.0440 |
| College | 0.3954 | 0.4292 | 0.3384 | 0.5038 | 0.4253 |
| Graduate | 0.0850 | 0.1045 | 0.0521 | 0.1483 | 0.1015 |
| Neast | 0.2465 | 0.2483 | 0.2434 | 0.2276 | 0.2490 |
| Mwest | 0.2305 | 0.2376 | 0.2187 | 0.2711 | 0.2361 |
| South | 0.3002 | 0.2976 | 0.3046 | 0.2532 | 0.3002 |
| West | 0.2227 | 0.2165 | 0.2333 | 0.2481 | 0.2147 |
| Metro | 0.7502 | 0.7594 | 0.7348 | 0.6905 | 0.7632 |
| Metdk | 0.0162 | 0.0169 | 0.0152 | 0.0281 | 0.0162 |
| Ucontr | 0.0142 | 0.0227 | | 0.0230 | 0.0226 |
| Govt1 | 0.1510 | 0.2067 | | 0.2353 | 0.2040 |
| Govt2 | 0.0046 | 0.0066 | | 0.1176 | |
| Moonl | 0.0387 | 0.0578 | | 1.0000 | |
| Hoursp | 36.0621 | 36.0621 | | 32.9237 | 36.2547 |
| Hourss | 12.1049 | 11.8937 | | 12.1049 | |
| Hrlypayp | 9.6268 | 9.6268 | | 9.9317 | 9.5896 |
| Hrlypays | 9.9674 | 9.8009 | | 9.9674 | |
| Unearn | 442.5154 | 461.3451 | 413.7556 | 371.8699 | 465.8692 |
| Missinc | 0.1516 | 0.1869 | 0.0923 | 0.4731 | 0.1714 |
| Parts | 0.0371 | 0.0553 | | 0.9591 | |
| Partp | 0.1562 | 0.2488 | | 0.3760 | 0.2395 |
| Fulls | 0.0016 | 0.0025 | | 0.0409 | |
| Fullp | 0.4718 | 0.7512 | | 0.5627 | 0.7605 |
| Manage1 | 0.2151 | 0.2849 | | 0.3043 | 0.2839 |
| Tech1 | 0.3733 | 0.4493 | | 0.4373 | 0.4490 |
| Service1 | 0.1543 | 0.1587 | | 0.1688 | 0.1587 |
| Farming1 | 0.0103 | 0.0042 | | 0.0102 | 0.0042 |
| Craft1 | 0.0194 | 0.0222 | | 0.0230 | 0.0222 |
| Labour1 | 0.0740 | 0.0807 | | 0.0563 | 0.0819 |
| Manage2 | 0.0112 | 0.0164 | | 0.2839 | |
| Tech2 | 0.0159 | 0.0244 | | 0.4066 | |
| Service2 | 0.0080 | 0.0120 | | 0.1995 | |
| Farming2 | 0.0014 | 0.0022 | | 0.0358 | |
| Craft2 | 0.0007 | 0.0011 | | 0.0179 | |
| Labour2 | 0.0020 | 0.0024 | | 0.0511 | |
| Agric1 | 0.0129 | 0.0068 | | 0.0128 | 0.0069 |
| Mncons1 | 0.0018 | 0.0027 | | 0.0000 | 0.0028 |
| Manufac1 | 0.1098 | 0.1311 | | 0.0946 | 0.1331 |
| Transp1 | 0.0365 | 0.0514 | | 0.0460 | 0.0517 |
| Wholret1 | 0.1882 | 0.2037 | | 0.1637 | 0.2060 |
| Finance | 0.0673 | 0.0865 | | 0.0665 | 0.0875 |
| Servind1 | 0.3824 | 0.4585 | | 0.5652 | 0.4523 |
| Public1 | 0.0371 | 0.0490 | | 0.0460 | 0.0490 |
| Agric2 | 0.0014 | 0.0022 | | 0.0358 | |
| Mncons2 | 0.0001 | 0.0002 | | 0.0026 | |
| Manufac2 | 0.0022 | 0.0033 | | 0.0537 | |
| Transp | 0.0008 | 0.0013 | | 0.0205 | |
| Wholret2 | 0.0116 | 0.0172 | | 0.2967 | |
| Finance2 | 0.0015 | 0.0020 | | 0.0358 | |
| Servind2 | 0.0206 | 0.0306 | | 0.5217 | |
| Public2 | 0.0008 | 0.0013 | | 0.0205 | |
| Sample size | 10 106.0000 | 6347.0000 | 3759.0000 | 391.0000 | 5890.0000 |

Table 3. *Sample means for men aged 18–55 in the May 1991 CPS (outgoing rotations only)*

| Variable | All men | Working men | Non-working men | Working men who hold two jobs | Working men who hold only one job |
|---|---|---|---|---|---|
| Age | 35.5737 | 35.4924 | 35.7723 | 35.9576 | 35.4730 |
| Black | 0.0835 | 0.0737 | 0.1074 | 0.0485 | 0.0755 |
| Married | 0.5974 | 0.6255 | 0.5288 | 0.6707 | 0.6217 |
| Wdivsep | 0.1020 | 0.1006 | 0.1055 | 0.0949 | 0.1011 |
| Nevmar | 0.3005 | 0.2739 | 0.3657 | 0.2343 | 0.2772 |
| Kids1to6 | 0.2041 | 0.2168 | 0.1731 | 0.2727 | 0.2124 |
| Kid6to13 | 0.2642 | 0.2717 | 0.2458 | 0.2788 | 0.2713 |
| Kids13p | 0.1597 | 0.1515 | 0.1797 | 0.1394 | 0.1524 |
| Kidinfam | 0.4609 | 0.4722 | 0.4332 | 0.4909 | 0.4704 |
| Education | 13.2420 | 13.3183 | 13.0557 | 14.1859 | 13.2598 |
| Enroll | 0.0578 | 0.0355 | 0.1122 | 0.0263 | 0.0361 |
| College | 0.3897 | 0.3890 | 0.3915 | 0.4626 | 0.3834 |
| Graduate | 0.1091 | 0.1113 | 0.1037 | 0.1838 | 0.1066 |
| Neast | 0.2445 | 0.2358 | 0.2657 | 0.1677 | 0.2412 |
| Mwest | 0.2372 | 0.2433 | 0.2221 | 0.2949 | 0.2391 |
| South | 0.2940 | 0.2938 | 0.2945 | 0.2828 | 0.2950 |
| West | 0.2243 | 0.2270 | 0.2177 | 0.2545 | 0.2247 |
| Metro | 0.7417 | 0.7515 | 0.7177 | 0.6566 | 0.7581 |
| Metdk | 0.0164 | 0.0160 | 0.0173 | 0.0263 | 0.0152 |
| Ucontr | 0.0127 | 0.0180 | | 0.0182 | 0.0178 |
| Govt1 | 0.1233 | 0.1604 | | 0.2303 | 0.1536 |
| Govt2 | 0.0057 | 0.0069 | | 0.1071 | |
| Moonl | 0.0530 | 0.0675 | | 1.0000 | |
| Hoursp | 41.6856 | 41.6856 | | 41.4116 | 41.7055 |
| Hourss | 14.8283 | 14.5615 | | 14.8283 | |
| Hrlypayp | 12.4923 | 12.4923 | | 12.6165 | 12.4795 |
| Hrlypays | 13.7721 | 13.1734 | | 13.7721 | |
| Unearn | 325.9357 | 326.2322 | 325.2169 | 276.0855 | 329.4368 |
| Missinc | 0.2106 | 0.2158 | 0.1978 | 0.5535 | 0.1949 |
| Parts | 0.0500 | 0.0643 | | 0.9434 | |
| Partp | 0.0584 | 0.0823 | | 0.0949 | 0.0807 |
| Fulls | 0.0030 | 0.0032 | | 0.0566 | |
| Fullp | 0.6511 | 0.9177 | | 0.8081 | 0.9193 |
| Manage1 | 0.2323 | 0.2450 | | 0.3374 | 0.2391 |
| Tech1 | 0.1841 | 0.2003 | | 0.1960 | 0.2004 |
| Service1 | 0.0923 | 0.1033 | | 0.1192 | 0.1016 |
| Farming1 | 0.0455 | 0.0288 | | 0.0465 | 0.0290 |
| Craft1 | 0.1856 | 0.1991 | | 0.1535 | 0.2020 |
| Labour1 | 0.1984 | 0.2234 | | 0.1475 | 0.2279 |
| Manage2 | 0.0157 | 0.0186 | | 0.2909 | |
| Tech2 | 0.0102 | 0.0128 | | 0.1899 | |
| Service2 | 0.0062 | 0.0088 | | 0.1151 | |
| Farming2 | 0.0085 | 0.0109 | | 0.1576 | |
| Craft2 | 0.0071 | 0.0095 | | 0.1293 | |
| Labour2 | 0.0060 | 0.0077 | | 0.1131 | |
| Agric1 | 0.0408 | 0.0219 | | 0.0444 | 0.0217 |
| Mncons1 | 0.0103 | 0.0115 | | 0.0040 | 0.0120 |
| Manufac1 | 0.1980 | 0.2424 | | 0.1939 | 0.2446 |
| Transp1 | 0.0868 | 0.1054 | | 0.0909 | 0.1063 |
| Wholret1 | 0.1852 | 0.1943 | | 0.1657 | 0.1960 |
| Finance1 | 0.0464 | 0.0498 | | 0.0485 | 0.0497 |
| Servind1 | 0.2138 | 0.2187 | | 0.2889 | 0.2146 |
| Public1 | 0.0490 | 0.0640 | | 0.1030 | 0.0604 |
| Agric2 | 0.0079 | 0.0103 | | 0.1475 | |
| Mncons2 | 0.0004 | 0.0006 | | 0.0081 | |
| Manufac2 | 0.0030 | 0.0041 | | 0.0566 | |
| Transp2 | 0.0021 | 0.0026 | | 0.0384 | |
| Wholret2 | 0.0121 | 0.0156 | | 0.2263 | |
| Finance2 | 0.0024 | 0.0024 | | 0.0444 | |
| Servind2 | 0.0193 | 0.0245 | | 0.3576 | |
| Public2 | 0.0026 | 0.0032 | | 0.0485 | |
| Sample size | 9330.0000 | 6620.0000 | 2710.0000 | 495.0000 | 6173.0000 |

men have second jobs in managerial/professional occupations.

These data reveal that there is a potentially serious problem that must be addressed. The variable *MISSINC*, which appears in both Tables 2 and 3, is a binary variable equal to one if the respondent did not report his/her total family income or reported working but did not report the earnings from one or both jobs. Total family income is important because it is used to calculate non-earned income which is a theoretical determinant of labour supply and of dual-job holding (Shisko and Rostker, 1976). Therefore, it is necessary for all individuals in this analysis to have data on this variable. Missing data are generally not a problem if they are missing in a random fashion, in other words if there is no systematic variation in the missing variable. Tables 2 and 3 reveal that the failure to report total family income is clearly related to moonlighting behaviour. For example, of the full sample of women 15% do not report their family income while 47% of women who hold more than one job do not report their income. A similar pattern is evident for men. Over half the men who moonlight do not report either their total family income of their hourly earning on one or both jobs. That a larger proportion of moonlighters do not report their income/earnings is perhaps not surprising. Individuals who hold more than one job may be paid in cash and thus may choose not report the earnings from the second job to the IRS. If this is the case, they may be reluctant to reveal their total family income. In fact, the IRS estimated that in 1992 between US$ 110 to 27 billion in tax revenues went uncollected due to income tax cheating. Most of this is believed to be the culmination of small amounts of unreported income from individuals many of whom moonlight (Samuelson, 1994). Others have corroborated that the bulk of income tax non-reporting is the result of individuals not reporting their income from legal activities and that moonlighting for cash income is typically a large portion of the uncollected tax revenues (Ingrassia, 1982). Moreover, moonlighting has become a significant portion of what is termed the 'subterranean economy' where workers pursue legal and illegal ways to evade taxes (Bawly, 1984).

Deleting the individuals who did not report total family income leaves a sample size of 7365 men and 8573 women.[7] To create non-earned income, one nets out of the individual's total earnings from the total family income variable.[8] Tables 4 and 5 present the sample means for this reduced sample.[9] In what follows, this reduced sample is referred to as the estimating sample since it is the sample that will be used to estimate the econometric models. However, before discussing the econometric models, the missing data problem is addressed in more detail.

### *Addressing the missing income problem*

Deleting those individuals with missing total family income disproportionately reduced the size of the size of the moonlighting sample. For example, 5.8% (6.8%) of working women (men) reported moonlighting in the full sample, but in the estimating sample that proportion falls to only 4% (4.3%). This may lead to a sample which is not representative of all moonlighters. As can been seen when comparing the sample means between the two samples of women (comparing Tables 2 and 4) the proportion of married female moonlighters increases substantially as does the proportion of those with children in the family and the percent of those enrolled in school. Similar patterns emerge from men when comparing Tables 3 and 5. A statistical analysis of the differences in the mean characteristics of the moonlighters in the full and estimating samples demonstrates that for men, marital and child status are statistically different between these groups as are unearned income, hourly earnings on the second job and the proportion working full time on the primary job. For women, the marital status, child status, education, hours of work on both job, enrollment in school and the proportion who

[7] It was also necessary to eliminate from the sample those individuals who reported their moonlighting work hours but failed to report their primary job work hours or who reported their wages but not their hours (or vice-versa) for either job. However, these individuals were a small proportion of the sample (less than 1%).

[8] When creating the non-earned income variable, it was discovered that there were several individuals (both men and women) who had a negative value for unearned income. Further inspection of the data for these individuals revealed that all of them were moonlighters. Because the sample of moonlighters is relatively small, it was necessary to examine these cases more closely. Unearned income is defined here as total family earnings minus the earnings of the individual on their first job and second job if applicable. Careful scrutiny revealed that the vast majority of these individuals had negative unearned income equal to the value of their earnings on the second job. This suggests that when these individuals reported family earnings, they did not report their moonlighting earnings. Thus, their unearned income was set to zero. Several more individuals had unearned incomes that were just slightly negative, suggesting the same type of problem. Therefore, their unearned income was also set to zero. However, individuals with negative unearned income smaller than US$15 were deleted from the sample.

[9] There are two alternative approaches to dealing with the missing unearned income problem. One is to match up the individuals from the May CPS sample to the March CPS sample. In the March CPS more detailed income information is available. This is advantageous because then individuals could also be eliminated from the sample whose sources of unearned income were labour supply conditioned. However, this also leads to a significant loss of data as not all individuals can be matched back this way. A second alternative is to define an individual's unearned income as simply the earnings of other individuals in the household. This has the potential to seriously understate an individual's unearned income. Because of these shortcomings, neither of these alternatives was pursued in this research.

Table 4. *Women, 1991 CPS. Sample means: estimating sample*

| Variable | All women | Working women | Non-working women | Working women who hold two jobs | Working women who hold only one job |
|---|---|---|---|---|---|
| Age | 35.5511 | 35.7307 | 35.2796 | 34.7476 | 35.7715 |
| Black | 0.1066 | 0.1011 | 0.1149 | 0.0874 | 0.1017 |
| Married | 0.6890 | 0.6890 | 0.6890 | 0.6214 | 0.6918 |
| Wdivsep | 0.1190 | 0.1277 | 0.1058 | 0.1748 | 0.1257 |
| Nevmar | 0.1920 | 0.1833 | 0.2052 | 0.2039 | 0.1824 |
| Kids1to6 | 0.2605 | 0.2155 | 0.3285 | 0.1893 | 0.2165 |
| Kid6to13 | 0.3421 | 0.3203 | 0.3751 | 0.3981 | 0.3171 |
| Kids13p | 0.2108 | 0.2098 | 0.2122 | 0.3107 | 0.2057 |
| Kidinfam | 0.5959 | 0.5683 | 0.6377 | 0.6699 | 0.5641 |
| Education | 13.0149 | 13.3827 | 12.4587 | 13.8592 | 13.3629 |
| Enroll | 0.0615 | 0.0461 | 0.0847 | 0.0680 | 0.0452 |
| College | 0.3870 | 0.4197 | 0.3376 | 0.5388 | 0.4147 |
| Graduate | 0.0751 | 0.0922 | 0.0492 | 0.1068 | 0.0916 |
| Neast | 0.2461 | 0.2490 | 0.2418 | 0.2233 | 0.2501 |
| Mwest | 0.2314 | 0.2405 | 0.2178 | 0.2767 | 0.2390 |
| South | 0.3044 | 0.3009 | 0.3098 | 0.2621 | 0.3025 |
| West | 0.2180 | 0.2096 | 0.2307 | 0.2379 | 0.2085 |
| Metro | 0.7359 | 0.7413 | 0.7277 | 0.6650 | 0.7445 |
| Metdk | 0.0168 | 0.0180 | 0.0149 | 0.0291 | 0.0176 |
| Ucontr | 0.0138 | 0.0229 | | 0.0243 | 0.0228 |
| Govt1 | 0.1508 | 0.2129 | | 0.2524 | 0.2113 |
| Govt2 | 0.0036 | 0.0058 | | 0.1456 | |
| Moonl | 0.0240 | 0.0399 | | 1.0000 | |
| Hoursp | 21.3240 | 35.4216 | | 30.4806 | 35.6270 |
| Hourss | 0.2678 | 0.4449 | | 11.1456 | |
| Hrlypayp | 5.6627 | 9.4064 | | 9.4805 | 9.4034 |
| Hrlypays | 0.2261 | 0.3755 | | 9.4085 | |
| Unearn | 442.9462 | 461.9705 | 414.1700 | 368.1942 | 465.8692 |
| Parts | 0.0231 | 0.0384 | | 0.9612 | |
| Partp | 0.1627 | 0.2703 | | 0.4951 | 0.2609 |
| Fulls | 0.0009 | 0.0016 | | 0.0388 | |
| Fullp | 0.4393 | 0.7297 | | 0.5049 | 0.7391 |
| Manage1 | 0.2026 | 0.2751 | | 0.2476 | 0.2763 |
| Tech1 | 0.3724 | 0.4569 | | 0.5000 | 0.4551 |
| Service1 | 0.1530 | 0.1573 | | 0.1699 | 0.1568 |
| Farming1 | 0.0107 | 0.0043 | | 0.0049 | 0.0042 |
| Craft1 | 0.0191 | 0.0225 | | 0.0243 | 0.0224 |
| Labour1 | 0.0755 | 0.0839 | | 0.0534 | 0.0852 |
| Manage2 | 0.0066 | 0.0109 | | 0.2670 | |
| Tech2 | 0.0110 | 0.0182 | | 0.4466 | |
| Service2 | 0.0051 | 0.0085 | | 0.2039 | |
| Farming2 | 0.0002 | 0.0004 | | 0.0097 | |
| Craft2 | 0.0002 | 0.0004 | | 0.0097 | |
| Labour2 | 0.0014 | 0.0023 | | 0.0583 | |
| Agric1 | 0.0132 | 0.0066 | | 0.0049 | 0.0067 |
| Mncons1 | 0.0014 | 0.0021 | | 0.0000 | 0.0022 |
| Manufac1 | 0.1080 | 0.1306 | | 0.0777 | 0.1328 |
| Transp1 | 0.0334 | 0.0479 | | 0.0437 | 0.0480 |
| Wholret1 | 0.1884 | 0.2050 | | 0.1602 | 0.2069 |
| Finance1 | 0.0679 | 0.0891 | | 0.0922 | 0.0890 |
| Servind1 | 0.3756 | 0.4606 | | 0.5680 | 0.4561 |
| Public1 | 0.0356 | 0.0484 | | 0.0485 | 0.0484 |
| Agric2 | 0.0002 | 0.0004 | | 0.0097 | |
| Mncons2 | 0.0000 | 0.0000 | | 0.0000 | |
| Manufac2 | 0.0016 | 0.0027 | | 0.0631 | |
| Transp2 | 0.0006 | 0.0010 | | 0.0243 | |
| Wholret2 | 0.0069 | 0.0114 | | 0.2865 | |
| Finance2 | 0.0008 | 0.0014 | | 0.0291 | |
| Servind2 | 0.0135 | 0.0223 | | 0.5437 | |
| Public2 | 0.0007 | 0.0012 | | 0.0291 | |
| Sample size | 8573.0000 | 5161.0000 | 3412.0000 | 206.0000 | 4955.0000 |

Table 5. *Men, 1991 CPS. Sample means: estimating sample*

| Variable | All men | Working men | Non-working men | Working men who hold two jobs | Working men who hold only one job |
|---|---|---|---|---|---|
| Age | 35.8220 | 35.9023 | 35.6302 | 34.9321 | 35.9455 |
| Black | 0.0788 | 0.0705 | 0.0984 | 0.0543 | 0.0712 |
| Married | 0.7283 | 0.7646 | 0.6417 | 0.8009 | 0.7630 |
| Wdivsep | 0.0455 | 0.0443 | 0.0483 | 0.0498 | 0.0441 |
| Nevmar | 0.2262 | 0.1911 | 0.3100 | 0.1493 | 0.1930 |
| Kids1to6 | 0.2505 | 0.2672 | 0.2107 | 0.3484 | 0.2636 |
| Kid6to13 | 0.3257 | 0.3365 | 0.2999 | 0.3303 | 0.3368 |
| Kids13p | 0.1989 | 0.1898 | 0.2208 | 0.2036 | 0.1891 |
| Kidinfam | 0.5695 | 0.5858 | 0.5304 | 0.6290 | 0.5839 |
| Education | 13.1833 | 13.2606 | 12.9986 | 14.0814 | 13.2241 |
| Enroll | 0.0652 | 0.0403 | 0.1247 | 0.0407 | 0.0402 |
| College | 0.3819 | 0.3809 | 0.3845 | 0.4480 | 0.3779 |
| Graduate | 0.1052 | 0.1067 | 0.1017 | 0.1810 | 0.1034 |
| Neast | 0.2516 | 0.2452 | 0.2668 | 0.2036 | 0.2471 |
| Mwest | 0.2382 | 0.2452 | 0.2213 | 0.3167 | 0.2421 |
| South | 0.2965 | 0.2951 | 0.2999 | 0.2443 | 0.2974 |
| West | 0.2137 | 0.2144 | 0.2121 | 0.2353 | 0.2135 |
| Metro | 0.7336 | 0.7430 | 0.7111 | 0.6878 | 0.7455 |
| Metdk | 0.0159 | 0.0152 | 0.0175 | 0.0271 | 0.0147 |
| Ucontr | 0.0128 | 0.0181 | | 0.0136 | 0.0183 |
| Govt1 | 0.1252 | 0.1634 | | 0.2398 | 0.1600 |
| Govt2 | 0.0034 | 0.0048 | | 0.1131 | |
| Working | 0.7048 | 1.0000 | | 1.0000 | 1.0000 |
| Moonl | 0.0300 | 0.0426 | | 1.0000 | |
| Hoursp | 29.3485 | 41.6398 | | 40.3529 | 41.6970 |
| Hourss | 0.4191 | 0.5947 | | 13.9683 | |
| Hrlypayp | 8.9450 | 12.6912 | | 12.0780 | 12.7185 |
| Hrlypays | 0.3825 | 0.5426 | | 12.7455 | |
| Unearn | 326.0231 | 326.1562 | 325.7052 | 252.3801 | 329.4368 |
| Parts | 0.0288 | 0.0408 | | 0.9593 | |
| Partp | 0.0580 | 0.0823 | | 0.1403 | 0.0797 |
| Fulls | 0.0012 | 0.0017 | | 0.0407 | |
| Fullp | 0.6468 | 0.9177 | | 0.8597 | 0.9203 |
| Getexp | 0.0014 | 0.0017 | | 0.0407 | |
| Flaghrs | 0.0000 | 0.0000 | | | |
| Manage1 | 0.2295 | 0.2435 | | 0.3167 | 0.2402 |
| Tech1 | 0.1798 | 0.1934 | | 0.1991 | 0.1932 |
| Service1 | 0.0900 | 0.1017 | | 0.1493 | 0.0996 |
| Farming1 | 0.0426 | 0.0254 | | 0.0226 | 0.0256 |
| Craft1 | 0.1908 | 0.2067 | | 0.1538 | 0.2091 |
| Labour1 | 0.2019 | 0.2292 | | 0.1584 | 0.2324 |
| Manage2 | 0.0087 | 0.0123 | | 0.2851 | |
| Tech2 | 0.0054 | 0.0075 | | 0.1765 | |
| Service2 | 0.0038 | 0.0054 | | 0.1267 | |
| Farming2 | 0.0033 | 0.0046 | | 0.1086 | |
| Craft2 | 0.0048 | 0.0067 | | 0.1493 | |
| Labour2 | 0.0046 | 0.0065 | | 0.1538 | |
| Agric1 | 0.0392 | 0.0195 | | 0.0271 | 0.0191 |
| Mncons1 | 0.0114 | 0.0125 | | 0.0000 | 0.0131 |
| Manufac1 | 0.2026 | 0.2508 | | 0.2172 | 0.2523 |
| Transp1 | 0.0877 | 0.1073 | | 0.0860 | 0.1082 |
| Wholret1 | 0.1833 | 0.1894 | | 0.1629 | 0.1905 |
| Finance1 | 0.0475 | 0.0505 | | 0.0633 | 0.0499 |
| Servind1 | 0.2048 | 0.2123 | | 0.2896 | 0.2089 |
| Public1 | 0.0490 | 0.0643 | | 0.1041 | 0.0626 |
| Agric2 | 0.0027 | 0.0039 | | 0.0905 | |
| Mncons2 | 0.0001 | 0.0002 | | 0.0045 | |
| Manufac2 | 0.0026 | 0.0037 | | 0.0860 | |
| Transp2 | 0.0012 | 0.0017 | | 0.0407 | |
| Wholret2 | 0.0071 | 0.0100 | | 0.2308 | |
| Finance2 | 0.0005 | 0.0008 | | 0.0181 | |
| Servind2 | 0.0122 | 0.0171 | | 0.4027 | |
| Public2 | 0.0014 | 0.0019 | | 0.0452 | |
| Sample size | 7365.0000 | 5191.0000 | 2174.0000 | 221.0000 | 4970.0000 |

Table 6. *Reasons for moonlighting by gender and reported income status*

| Reasons for moonlighting | % Men | | % Women | |
|---|---|---|---|---|
| | Full sample | Sub-sample (only those who reported income) | Full sample | Sub-sample (only those who reported income) |
| To meet regular household expenses | 29.4 | 34.7 | 37.3 | 35.0 |
| To pay off debts | 10.7 | 11.4 | 10.8 | 10.7 |
| To save for the future | 10.7 | 11.9 | 8.7 | 7.8 |
| To get experience in a different occupation or build a business | 7.2 | 4.6 | 8.5 | 7.3 |
| To help out a friend or relative | 3.9 | 2.7 | 4.9 | 4.9 |
| To get extra money to buy something special | 7.6 | 8.7 | 8.2 | 10.7 |
| Enjoys the work on the second job | 16.6 | 13.7 | 10.3 | 11.2 |
| Other | 14.0 | 12.3 | 11.3 | 12.6 |
| *N* | 487 | 219 | 389 | 206 |

have attended graduate school, work part time on the primary job, or work full time on the primary job are all statistically different between the two samples. Interestingly, for women none of the pecuniary variables are statistically different across the two samples.[10]

Since the focus of this study is primarily why individuals moonlight, it is also important to determine if the reasons reported by individuals as to why they moonlight differ according to whether or not individuals reported their total family income. Table 6 presents the reasons given for moonlighting by gender and reported income status.[11] From this table, it is evident that for women the reasons given for moonlighting do not appear to differ substantially between the full sample (which includes persons who did not report their income) and the sub-sample of those who did. For men, there are some striking differences. The proportion of men who report moonlighting for the reasons that most likely indicate heterogeneous jobs (to get experience in a different occupation or build as a business) drop noticeably while the proportion of those moonlighting to meet expenses (which is likely associated with an hours constraint on the primary job) increases substantially. Perhaps men who moonlight because the jobs are heterogeneous are also more likely to be paid in cash and thus not report their earnings. Clearly the non-random fashion in which income is not reported has changed the composition of the moonlighting sample. Therefore, the results of this analysis should be interpreted with caution.[12]

## IV. EMPIRICAL METHOD AND RESULTS

This section is divided into three parts. To explore the reasons underlying why an individual moonlights, a bivariate probit model of moonlighting is specified and estimated. Then, the hypothesis that multiple motives for moonlighting exist is explored. And finally, the hourly earnings differential between male and female moonlighters is decomposed using the standard Oaxaca (1976)/Blinder (1979) decomposition to ascertain the proportion of the difference in hourly earnings that can be explained by differences in the characteristics (endowments) of the female and male moonlighters. The method and results from exploring each of these issues is described below.

### *Modelling the probability of moonlighting*

As noted in the introduction, the growth in moonlighting behaviour during the 1980s was due almost exclusively to an increase in the number of women moonlighters. To address the issue of whether or not the factors that determine if one moonlights differ by gender, a bivariate probit model of the decision to hold one of two jobs is specified and estimated. This model is appropriate here because the decision to participate in the labour force as well as the decision to hold more than one job are estimated simultaneously. It also permits that parameters governing the decision to be

[10] The details of this analysis are available from the author upon request.
[11] Sample sizes here are slightly different than those reported in Tables 4 and 5. This is because some moonlighters did not report why they held two jobs.
[12] Paxson and Sicherman (1994) also note this problem with data from both the CPS and the PSID. They state that 'It may also be that the likelihood of having missing data is correlated with the true second-job wage, and so the numbers presented below must be treated extremely cautiously,' (Paxson and Sichieman, 1994: 6).

in the labour force to differ from those determining whether or not an individual works at more than one job.[13]

The bivariate probit model can be described as follows. Consider an individual making two potentially related decisions as described by Equations 1 and 2 below:

$$y_1^* = \beta_1' x_1 + \varepsilon_1, y_1 = 1 \quad \text{if } y_1^* > 0, 0 \text{ otherwise} \qquad (1)$$

$$y_2^* = \beta_2' x_2 + \varepsilon_2, y_2 = 1 \quad \text{if } y_2^* > 0, 0 \text{ otherwise} \qquad (2)$$

where Equation 1 represents the decision to work two jobs, and Equation 2 represents the decision to participate in the labour force. Assume that $\varepsilon_1$ and $\varepsilon_2$ are normally distributed with means of zero and standard deviations of one, and that $\rho$ is the correlation between these two error terms. Note that in the case of multiple job-holding this study only observes $y_1$ if $y_2 = 1$. For instance, a person can only be observed working more than one job if they work one job. This means that $(y_1, x_1)$ is observed only when $y_2 = 1$. In other words, a non-working individual who moonlights is not observed.

Economic theory postulates that the decision to work in the labour force is a function of factors that determine the shape of an individual's budget constraint (wages, non-earned income) and factors that determine the shape of indifference curves (tastes and preferences). Therefore, any model of the probability of moonlighting must include the wages on the primary and secondary jobs as well as non-earned income as regressors. However, as is typical in most data sets, the wage on the primary job is only observed if the individual is working. The wage on the secondary job will only be observed for an individual who holds two jobs. Thus, for a significant proportion of the sample, one or both wage rates are unobserved. To obtain unbiased estimates of earnings for individuals two potential sources of selectivity bias must be addressed. Consider the following two earnings equations for those who are working:

$$\ln w_{pi} = \beta_p' Q_{pi} + u_{pi} \quad \text{iff } y_2^* > 0 \qquad (3)$$

$$\ln w_{si} = \beta_s' Q_{si} + u_{si} \quad \text{iff } y_1^* > 0 \text{ and } y_2^* > 0 \qquad (4)$$

Where the $w_{ih}$ represent earnings for group $h (h = p, s)$, $\beta_{ih}$ are $M_h \times 1$ vectors of unknown population parameters. The $Q_{ih}$ are $M_h \times 1$ vectors of explanatory variables that affect earnings; the $u_{hi}$ are identically, independently distributed normal variates, and $p$ and $s$ denote primary and secondary jobs respectively. However, each $u_{hi}$ is jointly distributed with each $\varepsilon_{ij}$ so that $\operatorname{cov}(u_{ih}, \varepsilon_{ij}) = p_{hj}$. The above equations define population earnings. A regression function for each sub-sample can be written as:

$$\ln w_{pi} = \beta_p' Q_{pi} + \Gamma_p \lambda_{pi} + v_{pi} \qquad (5)$$

$$\ln w_{si} = \beta_s' Q_{si} + \Gamma_s \lambda_{si} + \Gamma_p \lambda_{pi} + v_{si} \qquad (6)$$

where the $\lambda$ represents the selection terms as described in Maddala (1983).

Estimation of Equations 5 and 6 follows a two step procedure. First, maximum likelihood estimation is used to estimate the bivariate probit model of selection. This can be thought of as a reduced from model since it will not include earnings on either job as a regressor. Maximization of this function produces consistent estimates of the selection terms ($\lambda$). Inserting these into the appropriate earnings equations and estimating the earnings equations using OLS procedures consistent estimates of $\beta_1$ and $\beta_2$. Earnings can then be predicted for each individual using the following fitted equations.[14]

$$\ln w_{pi} = \beta_p' Q_{pi} \qquad (7)$$

$$\ln w_{si} = \beta_s' Q_{si} \qquad (8)$$

These predicted wages are used in a structural bivariate model of the decision to moonlight.

The results from the structural bivariate probit model of the decision to moonlight are presented in Table 7.[15] Note that the sample sizes are slightly higher than those reported in Tables 4 and 5. This is because a wage is estimated for those individuals who did not report their earnings on either the first of second (or both) jobs. The hours on the primary job is not used as an independent variable in the probability of moonlighting equation. This is because, as Conway and Kimmel (1994) note, these hours are endogenous if an individual moonlights because jobs are heterogeneous.[16]

Focusing first on the probability of labour force participation equation it can be seen that unearned income has a

[13] A univariate probit model of the decision to moonlight conditional on already being in the labour force could be estimated. However, a bivariate probit model may be particularly important for a sample of women because a sizeable number of women are not participating in the labour force, and the decision to participate and to take one or more than one job are likely to be highly correlated. Therefore, conditioning the estimates on those individuals already in the labour market may result in a loss of information.

[14] Note that the $\lambda$ are not used in obtaining the predicted wage values. This is because, as Maddala (1983: 237) notes, the whole sample is being used, not the sub-sample of workers only.

[15] The results from the first stage estimation of the wages on the primary job and the second job are available from the author upon request.

[16] The most correct way to model moonlighting behaviour would be to take into account the full structure of the budget constraint by using the non-linear budget set estimation method (Moffitt, 1986). The technique allows one to use the underlying structure of the budget constraint to estimate the labour supply elasticity. However, the structure of the budget constraint facing moonlighters makes estimation of this model difficult since the number of hours at which one switches from primary to secondary job is generally unknown and is exogenous if an individual is a constrained moonlighter, but endogenous if one moonlights because the jobs are heterogeneous. This type of model is beyond the scope of this paper though currently being pursued by the author.

Table 7. *Structural bivariate probit model of decision to work and moonlight for women and men*

| | Women | | Men | |
|---|---|---|---|---|
| Variable | Probability of labour force participation | Probability of moonlighting | Probability of labour force participation | Probability of moonlighting |
| Constant | −0.810 | −0.434 | 0.643 | −0.410 |
| | (0.178)*** | (1.437) | (0.209)*** | (0.314) |
| Predicted wage on primary job | 0.529 | −0.063 | −0.173 | 0.039 |
| | (0.190)*** | (0.763) | (0.189) | (0.230) |
| Predicted wage on secondary job | | −0.404 | | −0.105 |
| | | (0.384) | | (0.244) |
| Unearned income (100s of dollars) | 0.010 | −0.027 | 0.019 | −0.023 |
| | (0.003)*** | (0.010)** | (0.004)*** | (0.005)*** |
| Age | −0.017 | 0.007 | −0.014 | 0.012 |
| | (0.003)*** | (0.012) | (0.004)*** | (0.005)** |
| Black = 1 if black | −0.079 | 0.018 | −0.178 | 0.093 |
| | (0.049) | (0.112) | (0.061)*** | (0.089) |
| Mastat = 1 if married | −0.017 | 0.035 | 0.509 | −0.339 |
| | (0.058) | (0.111) | (0.063)*** | (0.089)*** |
| Wdivsep = 1 if widowed, divorced, separated | 0.214 | 0.038 | 0.354 | −0.261 |
| | (0.066)*** | (0.178) | (0.088)*** | (0.104)** |
| Kids1to6 = 1 if has kids younger than 6 | −0.488 | 0.239 | −0.032 | 0.070 |
| | (0.036)*** | (0.237) | (0.042) | (0.045) |
| Kid6to13 = 1 if has kids between 6 and 13 | −0.142 | 0.203 | 0.048 | −0.058 |
| | (0.032)*** | (0.052)*** | (0.036) | (0.038) |
| Kids13p = 1 if has kids older than 13 | −0.028 | 0.162 | −0.079 | 0.092 |
| | (0.036) | (0.092)* | (0.040)** | (0.043)** |
| Enroll = 1 if enrolled in school | −0.701 | 0.503 | −0.777 | 0.678 |
| | (0.071)*** | (0.219)** | (0.075)*** | (0.090)*** |
| College = 1 if in college | | 0.154 | | 0.054 |
| | | (0.143) | | (0.044) |
| Graduate = 1 if in graduate | | 0.179 | | 0.104 |
| | | (0.202) | | (0.077) |
| Metro = 1 if in metropolitan area | −0.064 | −0.078 | 0.132 | −0.144 |
| | (0.047) | (0.160) | (0.046)*** | (0.048)** |
| Metdk = 1 if did not report living area | 0.214 | 0.018 | −0.034 | 0.020 |
| | (0.114)* | (0.242) | (0.129) | (0.140) |
| West = 1 if live in west USA | −0.054 | 0.076 | 0.037 | −0.002 |
| | (0.042) | (0.075) | (0.048) | (0.066) |
| Mwest = 1 if live in the middle west | 0.118 | −0.027 | 0.129 | −0.060 |
| | (0.048)** | (0.131) | (0.050)** | (0.071) |
| South = 1 if live in the south | 0.066 | −0.058 | 0.044 | −0.056 |
| | (0.047) | (0.094) | (0.051) | (0.056) |
| Education | 0.055 | | 0.026 | |
| | (0.014)*** | | (0.013)* | |
| $\rho$ | −0.822 | | −0.988 | |
| | (0.336)** | | (0.023)*** | |
| $N$ | 8587 | | 7398 | |
| Log. likelihood | −6341.600 | | −5289.700 | |

*Notes*: *, ** and *** denote significance at 10%, 5%, and 1% respectively.

positive coefficient for both men and women suggesting that leisure is an inferior good. This result is counter-intuitive and may be related to the missing income problem that was discussed earlier. For women, the wage on the primary job is an important determinant of labour force participation, but for men it is statistically insignificant. Women with younger children and men with older children are less likely to work. For both men and women, having more education increases the probability of labour force participation although, holding education levels constant, those currently enrolled in school are less likely to be working.

The results of primary interest are those related to the probability of moonlighting (columns 2 and 4 of Table 7). Here unearned income has the expected negative sign and is significant for men and women. Neither wage

coefficient is significant for men or women. Women who are enrolled in school or who have older children over the age of thirteen are more likely to moonlight. For both men and women the correlation between the two decisions, to participate in the labour market and to take more than one job, is strong and negative. The bivariate probit model provides some insight into who is most likely to moonlight and indicates that the determinants of dual-job holding are fairly similar for men and women. However, this model cannot directly address the underlying motives for dual-job holding. The next section analyses motives for dual-job holding in more depth.

*Why do people moonlight?*

This section explores the hypothesis that there are multiple motives for moonlighting and that these motives vary between men and women. As mentioned in the introduction and supported by the data in Table 6, there are many reasons why an individual may choose to moonlight. The determination of whether of not an individual moonlights because they face an hours constraint or because their jobs are heterogeneous is important because it has implications for the level of utility which that individual can attain as illustrated in Fig. 1. In addition, establishing that multiple motives exist is important for policymakers who may not be concerned about labour market constraints.

One might hypothesize that men are more likely to face hours constraints, particularly if they are married and feel the traditional obligation to support their families. Boehner (1996) surmises that US workers are increasingly taking on second jobs in order to meet rising tax burdens. However, it could be argued that men are less likely to face hours constraints, since they are more likely to hold professional jobs. These types of jobs may lend themselves to moonlighting for a reason other than an hours constraint, such as the case of the university professor who testifies at a jury trial.

There is also some evidence that women are more likely to face hours constraints since women moonlighters are typically working two part-time jobs rather than one full-time and one part-time job as men do. This may reflect their desire for a more flexible work schedule perhaps to facilitate their child care needs. It may be the case that the primary job employer is willing to offer more hours (and thus no hours constraint is faced), but the offered hours are not flexible. In this case, women moonlighters may face a flexibility-constraint rather than an hours constraint. It also may be the case that women tend to moonlight with two part-time jobs because they cannot find a full time job (Ehrlich and Pollack, 1986). Working two part-time jobs can also be problematic because it is well known that part-time jobs pay less and offer fewer fringe benefits (Blank, 1990; Averett and Hotchkiss, 1995).

For purposes of this analysis two motives for moonlighting are distinguished between hours constraints and heterogeneous jobs. As noted earlier, the classification of individuals into each category has important implications for both policymakers and for economic models of dual-job holding. As summarized in Table 6, the CPS asked individuals to report why they moonlight and these self-reported reasons provide some indication of who faces an hours constraint. However, Figs. 1 and 2 make it clear that only individuals who have an hourly wage on the second job lower than that on the first job would face an hours constraint. Furthermore, not all individuals who face an hours constraint will moonlight. Unfortunately, the data do not always conform to the theory. Using the self-reported information from Table 6, the following reasons for moonlighting appear to be consistent with such a definition. An individual is most likely hours constrained if they moonlight because they need to meet regular household expenses, they want to pay off debts, they wish to save for the future or they want to buy something special. The other reasons, moonlighting to get experience for a different job, to help out a friend or relative or because they enjoy the work on the second job appear to be consistent with the heterogeneous jobs. Those who reported 'other' as a reason are also classified as holding heterogeneous jobs. Classifying hours constrained and heterogeneous jobs moonlighters in this manner result in 66% of the men and 63% of the women as hours constrained moonlighters.

However, economic theory predicts that moonlighters who face hours constraints on the first job should have hourly earnings on the second job less than the hourly earnings of the primary job. Of those moonlighters who self-report moonlighting for a reason that is classified as an hours constraint, only 36% of the men and 33% of the women have an hourly wage on the primary job greater than the hourly wage on the second job. Yet, 57% of male moonlighters and 52% of female moonlighters have hourly earnings on the primary job that exceed hourly earnings on secondary job. Theoretically speaking, all these individuals are hours constrained. Because no precise way of determining who is actually hours constrained exists, the following three definitions of hours constrained dual-job holders are used in this analysis:

(1) An hours constrained moonlighter is one who reports moonlighting for the following reasons: they need to meet regular household expenses, they want to pay off debts, they wish to save for the future or to buy something special.
(2) An hours constrained moonlighter is one whose earnings on the primary job are greater than those on the secondary job and who reports moonlighting for the following reasons: they need to meet regular household expenses, they want to pay off debts, they wish to save for the future or to buy something special.

Table 8. *Probit model of the probability of being a constrained moonlighter for women and men*

| | Model 1[a] | | Model 2[b] | | Model 3[c] | |
|---|---|---|---|---|---|---|
| Variable name | Women | Men | Women | Men | Women | Men |
| Constant | −0.557 | 0.739 | −2.264 | −0.499 | −0.066 | −0.505 |
| | (0.970) | (0.694) | (1.034) | (0.691) | (0.913) | (0.682) |
| Age | 0.011 | −0.015 | −0.006 | 0.007 | −0.013 | 0.013 |
| | (0.013) | (0.012) | (0.013) | (0.012) | (0.012) | (0.012) |
| Black = 1 if black | 0.172 | 0.016 | 0.470 | 0.576 | 0.286 | 0.287 |
| | (0.378) | (0.414) | (0.330) | (0.426) | (0.340) | (0.454) |
| Mastat = 1 if married | −0.826 | −0.213 | −0.277 | −0.220 | 0.005 | 0.198 |
| | (0.239)*** | (0.286) | (0.232) | (0.267) | (0.215) | (0.263) |
| Kids1to6 = 1 if has kids | 0.344 | 0.153 | 0.294 | 0.213 | −0.088 | 0.029 |
| younger than 6 | (0.270) | (0.234) | (0.274) | (0.229) | (0.259) | (0.226) |
| Kid6to13 = 1 if has kids | −0.080 | 0.119 | −0.079 | 0.445 | −0.118 | 0.527 |
| between 6 and 13 | (0.208) | (0.215) | (0.206) | (0.212)** | (0.194) | (0.215)** |
| Kids13p = 1 if has kids | 0.270 | −0.154 | 0.109 | 0.011 | −0.234 | 0.182 |
| older than 13 | (0.224) | (0.247) | (0.223) | (0.254) | (0.208) | (0.252) |
| Enroll = 1 if enrolled | −0.300 | −0.037 | −1.021 | −0.775 | −0.683 | −0.915 |
| in school | (0.439) | (0.533) | (0.523)* | (0.607) | (0.431) | (0.531)* |
| Education | 0.033 | 0.038 | 0.089 | −0.012 | 0.023 | −0.015 |
| | (0.051) | (0.038) | (0.055)* | (0.039) | (0.048) | (0.038) |
| Metro = 1 if in metropolitan | 0.003 | −0.231 | 0.242 | −0.012 | 0.190 | 0.139 |
| area | (0.227) | (0.212) | (0.232) | (0.208) | (0.212) | (0.204) |
| West = 1 if live in west USA | 0.005 | −0.342 | −0.115 | −0.340 | −0.045 | −0.427 |
| | (0.285) | (0.278) | (0.295) | (0.277) | (0.269) | (0.276) |
| West = 1 if live in the middle | 0.107 | 0.102 | 0.242 | 0.071 | 0.200 | 0.004 |
| middle west | (0.272) | (0.283) | (0.283) | (0.269) | (0.262) | (0.276) |
| South = 1 if live in the south | 0.026 | −0.171 | 0.073 | −0.170 | 0.106 | −0.117 |
| | (0.286) | (0.284) | (0.288) | (0.276) | (0.271) | (0.280) |
| Occupation on second job is:[d] | | | | | | |
| Technical | 0.632 | 0.227 | 0.822 | 0.242 | 0.428 | 0.322 |
| | (0.242)*** | (0.264) | (0.275)*** | (0.263) | (0.236)* | (0.261) |
| Service | 0.985 | 0.239 | 1.151 | 0.270 | 0.349 | 0.171 |
| | (0.315)*** | (0.303) | (0.334)*** | (0.297) | (0.294) | (0.300) |
| Labour | 0.925 | 0.573 | 0.764 | 0.459 | 0.507 | 0.342 |
| | (0.459)** | (0.293)* | (0.464)* | (0.262)* | (0.428) | (0.271) |
| Unearned income | −0.023 | −0.039 | 0.003 | −0.024 | −0.019 | 0.007 |
| (100s of dollars) | (0.026) | (0.030) | (0.027) | (0.032) | (0.025) | (0.031) |
| Log. likelihood | −118.66 | −133.15 | −116.53 | −134.06 | −136.27 | −137.51 |
| Number of persons constrained | 129 | 145 | 68 | 79 | 107 | 127 |
| *N* | 206 | 221 | 206 | 221 | 206 | 221 |

*Notes*: *, **, and *** denote significance at 10%, 5%, and 1% respectively.
[a] Model 1 is where hours-constraints are self-reported.
[b] Model 2 is where hours-constraints are self-reported and hourly earnings on the first job are greater than hourly earnings on the second job.
[c] Model 3 is where hours-constrained is defined as one who has hourly earnings on the first job are greater than hourly earnings on the second job.
[d] Due to small sample sizes the benchmark occupation for these models in management/professional and farm and craft occupations.

(3) An hours constrained moonlighter is one with hourly earnings on the primary job greater than the hourly earnings of the second job.

To identify the characteristics of those individuals who are most likely to face hours constraints and to determine if these characteristics differ across the three definitions of constrained and across gender, a probit model is estimated where the dependent variable is equal to one if an individual reports moonlighting because of an hours constraint and zero otherwise. The model is estimated for each of the definitions of constrained described above. The sample for this model is limited to those individuals who are currently moonlighting since they were the only sample members asked these questions. The results are presented in Table 8 for both men and women.[17]

[17] Note that the number of hours work on the primary job is not concluded as a regressor. Kimmel and Conway (1995) note that for non-constrained moonlighters these hours may be endogenous. Therefore it is statistically inappropriate to include hours on the primary job

Two items are immediately notable when examining Table 8. First of all, for men, relatively few coefficients are statistically different from zero and which coefficients are significant differs across models. This suggests that it is difficult to discern which men, on average, face hours constraints. Second, the results for women are statistically different than those for men, as established by Wald tests, and present some consistent patterns. Occupation is particularly important for women when determining who is a constrained moonlighter. Women whose second job occupation is other than management/professional are more likely to be moonlighting due to an hours constraint. This is consistent with the notion that individuals who moonlight because the jobs are heterogeneous may also have some skill that is related to their first job (such as a management professional who consults on the side). In model one, marital status is significant indicating that married women are less likely to face a constraint on the primary job. Perhaps married women can rely on their spouse's earnings to relieve financial pressures. However, this effect disappears in models two and three.

The results from this exercise provide some important insights into the understanding of why individuals moonlight. In particular, they underscore the difficulty of painting a statistical portrait of the average constrained male moonlighter. However, the models do indicate that for women, the occupation on the second job provides some indication of the underlying motive for moonlighting. In addition, they highlight the difficulties inherent in trying to understand and model the motives for moonlighting. Specifically, there is a difference between the self-reported reasons individuals give for moonlighting and what the static labour/leisure model would predict.

The final aspect of moonlighting behaviour that is explored is the earnings of moonlighters. It is particularly important to understand something about the earnings determination of moonlighters because the majority of moonlighters report doing so due to some type of financial constraint. This is the focus of the next section.

### *Explaining the differences in wages for male and female moonlighters*

One final aspect of the gender differences in moonlighting which merits scrutiny is the difference in average wages earned by male and female moonlighters. As seen in Tables 4 and 5, the average male moonlighters earn nearly US$4 more per hour than the average female moonlighter. This is a sizeable difference, yet it is possible that it simply represents differences in the skills, education and experience of the individuals who moonlight. To understand the wage differential between male and female moonlighters the difference in mean log wages between the two groups is decomposed into an endowment effect and a coefficient effect. The standard Oaxaca (1976)/Blinder (1976) decomposition method is used to determine how much of the higher wage earned by male moonlighters is the result of greater productivity-enhancing endowments (such as education) and how much is the result of differential valuation of those endowments by employers. Differential valuation of endowments across demographic groups is often interpreted as evidence of discrimination.

To perform this decomposition, we use the wage equations specified in Equations 5 and 6. The difference in mean log wages between men and women moonlighters is decomposed as:

$$\begin{aligned}\overline{\ln w}^m - \overline{\ln w}^f &= 0.5(\hat{\beta}^m + \hat{\beta}^f)'(\bar{Q}^m - \bar{Q}^f) \\ &\quad + 0.5(\hat{\beta}^m - \hat{\beta}^f)'(\bar{Q}^m + \bar{Q}^f) \\ &\quad + (\hat{\Gamma}_p\lambda_p^m - \hat{\Gamma}_p\lambda_p^f) + (\hat{\Gamma}_s\lambda_s^m - \hat{\Gamma}_s\lambda_s^f) \quad (9)\end{aligned}$$

The first two terms on the right-hand side correspond, respectively, to the explained portion and the unexplained portion of the selectivity-corrected wage difference in log wages for male and female moonlighters. The first term, or explained portion, is usually referred to as the endowment effect and reflects differences in endowments (e.g. education, age) between men and women that might explain their wage differential. The second term, or unexplained portion, is referred to as the coefficient effect and is typically interpreted as that portion of the wage differential that measures discrimination.[18] The last two terms on the right hand side corresponds to the selectivity effect. Recall, that when estimating the moonlighting wages two potential sources of selectivity bias were controlled for: selection into the labour force, and once working, selection into the moonlighting labour force. In Equation 9, the superscripts $m$ and $f$ are used to denote female and male, while the subscripts $p$ and $s$ denote primary and second job. When the interest is in potential differences in employer treatment of two groups, such as women and men, Reimers (1983) suggests that the focus of the analysis should be on the differences in log wages corrected for selectivity. Therefore, the following decomposition is performed:

as a regressor. Hourly earnings on both jobs are also not included. This is because the relationship between hourly earnings on each job is used to define the dependent variable in models 2 and 3.

[18] This portion of the wage gap can also be caused by omitted variables in the wage function (Jones, 1983). Also, not possessing a natural means of justifying the 'non-discriminatory world' parameter estimates (see Cotton, 1988). Idson and Feaster (1990) and Holtmann and Idson (1993) were followed in using 0.5 as the weight factor.

Table 9. *Log wage regressions. Dependent variable = Log (hourly wage on the moonlighting job)*

| Variable | Men coefficient (standard error) | Women coefficient (standard error) |
|---|---|---|
| Constant | 2.1131 | 3.9600 |
| | (1.8237) | (4.3844) |
| Age in years | −0.0016 | −0.0407 |
| | (0.0545) | (0.0858) |
| Black = 1 | −0.2455 | 0.1467 |
| | (0.2450) | (0.2453) |
| Age*Education | 0.0021 | 0.0041 |
| | (0.0024) | (0.0025) |
| Married = 1 | 0.1056 | 0.1276 |
| | (0.3408) | (0.2489) |
| Widowed/Divorced/Separated = 1 | −0.1248 | 0.3238 |
| | (0.3851) | (0.3367) |
| Age*Age | −0.0003 | −0.0002 |
| | (0.0007) | (0.0010) |
| Education*Education | −0.0032 | 0.0071 |
| | (0.0047) | (0.0105) |
| Education | 0.0505 | −0.2618 |
| | (0.1504) | 0.3518) |
| Lives in metro area = 1 | 0.0951 | 0.0226 |
| | (0.1370) | (0.1864) |
| Metro don't know = 1 | −0.1752 | 0.3106 |
| | (0.3760) | (0.4189) |
| Lives in west = 1 | 0.1111 | −0.0385 |
| | (0.1697) | (0.1996) |
| Lives in middle-west = 1 | −0.1491 | −0.1140 |
| | (0.2012) | (0.1893) |
| Lives in south = 1 | −0.2332 | −0.0703 |
| | (0.1640) | (0.1977) |
| Occupation on secondary job Technical/Administrative | −0.2528 | −0.1358 |
| | (0.1875) | (0.1209) |
| Service | −0.3502 | −0.2878 |
| | (0.1890)* | (0.1391)** |
| Farming | −0.8681 | −0.9404 |
| | (0.2304)** | (0.4765)** |
| Craft | −0.4009 | −0.2177 |
| | (0.1918)** | (0.4259) |
| Labour | −0.4273 | −0.1329 |
| | (0.1889)** | (0.2246) |
| Industry of secondary job: Manufacturing | −0.2819 | −0.6875 |
| | (0.2343) | (0.3388)** |
| Transportation | −0.6260 | −0.4861 |
| | (0.2800)** | (0.4022) |
| Wholesale/retail trade | −0.6558 | −0.7474 |
| | (0.2088)*** | (0.2882)*** |
| Finance | 0.0150 | 0.0778 |
| | (0.3823) | (0.3550) |
| Service | −0.4193 | −0.5558 |
| | (0.1770)** | (0.2834)** |
| Public | −0.6754 | −0.2950 |
| | (0.2702)* | (0.3702) |
| Kids younger than 6 = 1 | 0.0480 | −0.1108 |
| | (0.1491) | (0.2892) |
| Kids between 6 and 13 = 1 | −0.2571 | 0.0694 |
| | (0.1372)* | (0.1639) |
| Kids above 13 = 1 | −0.0007 | −0.0411 |
| | (0.1610) | (0.1977) |
| Lambda-s (selection into moonlighting) | −0.1135 | 0.2800 |
| | (0.4492) | (0.6010) |
| Lambda-p (selection into labour force) | 0.1813 | −0.0686 |
| | (0.4218) | (0.5718) |
| *N* | 210 | 204 |

*Notes*: *, **, and *** denote significance at 10%, 5%, and 1% respectively.
Individuals with hourly earnings less than US$1 or greater than US$100 were not used to estimate wages.

Table 10. *Decomposition of the selectivity corrected log wage differential between male and female moonlighters*

| | Selectivity corrected log wage differential | Endowment effect | | Coefficient effect |
|---|---|---|---|---|
| | 0.5967 = | 0.0445 | + | 0.5523 |
| Contribution made by: | | | | |
| Constant | | 0.000 | | −1.8469 |
| Age in years | | −0.0012 | | 1.3596 |
| Black = 1 | | 0.0015 | | −0.0285 |
| Age*Education | | 0.0431 | | −0.9327 |
| Married = 1 | | 0.0207 | | −0.0157 |
| Widowed/Divorced/Separated = 1 | | −0.0123 | | −0.0513 |
| Age*Age | | −0.0018 | | −0.1898 |
| Education*Education | | 0.0164 | | −2.0678 |
| Education | | −0.0246 | | 4.3607 |
| Lives in metro = 1 | | 0.0017 | | 0.0490 |
| Metro don't know = 1 | | −0.0004 | | −0.0129 |
| Lives in west = 1 | | −0.0002 | | 0.0354 |
| Lives in middle-west = 1 | | −0.0052 | | −0.0104 |
| Lives in south = 1 | | 0.0018 | | −0.0413 |
| Occupation on secondary job = 1 | | | | |
| Technical/Administrative | | 0.0506 | | −0.0364 |
| Service | | 0.0231 | | −0.0106 |
| Farming | | −0.0773 | | 0.0038 |
| Craft | | −0.0426 | | −0.0144 |
| Labour | | −0.0275 | | −0.0318 |
| Industry of second job = 1 | | | | |
| Manufacturing | | −0.0130 | | 0.0313 |
| Transportation | | −0.0102 | | −0.0047 |
| Whole retail | | 0.0391 | | 0.0235 |
| Finance | | −0.0005 | | −0.0015 |
| Service | | 0.0679 | | 0.0648 |
| Public | | −0.0088 | | −0.0147 |
| Kids less than 6 = 1 | | −0.0049 | | 0.0428 |
| 6 < Kids < 13 = 1 | | 0.0069 | | −0.1177 |
| Kids > 13 = 1 | | 0.0023 | | 0.0105 |

$$\overline{\ln w}^m - \overline{\ln w}^f - ((\hat{\Gamma}_p\lambda_p^m - \hat{\Gamma}_p\lambda_p^f) + (\hat{\Gamma}_s\lambda_s^m)) = 0.5(\hat{\beta}^m + \hat{\beta}^f)'(\bar{Q}^m - \bar{Q}^f) + 0.5(\hat{\beta}^m - \hat{\beta}^f)'(\bar{Q}^m + \bar{Q}^f) \quad (10)$$

The parameter estimates from the wage equations are presented in Table 9. The standard set of demographic and human capital variables are included as well as controls for occupation and industry.[19] For occupation, the benchmark category is management/professional occupations while the industry benchmark is agricultural/mining industries.[20] Several findings are noteworthy. The adjusted $R^2$ for the women's equation is 0.19 while that for the men is 0.15. While these are lower that the $R^2$ typically reported for wage equations, they are comparable to those reported by Kimmel and Powell (1996) in their analysis of moonlighting wages in the USA and Canada. Interestingly, only occupation and industry explain earnings on the second job. None of the standard human capital variables are significant for either men or women although men with children aged 6–13 years earn significantly less than men with no children. This lack of significance may be a result of the small sample size; however, it is possible that the model's inability to explain the earnings of moonlighters is a function of the circumstances facing many moonlighters. Second jobs are often lower paying than primary jobs and the skills required may not be at all related to an individual's human capital. For example consider a school teacher who takes an evening job in retail sale to make ends

[19] Not possessing a true measure of previous labour market experience, and being mindful of the Age proxy versus Mincer's experience variable debate (see Blinder, 1976; Rosenzweig, 1976), the Education and Age variables are submitted into Mincer's experience expression as suggested by Blinder (1976: 19).

[20] Those whose industry or occupation could not be determined are also in the benchmark category.

meet. Teachers typically have college degrees, yet most retail sales jobs pay minimum wage and do not require a college education. Another factor which may explain the lack of explanatory power is that, as noted earlier, many of the individuals in the CPS do not report their total family income and/or their hourly earnings and non-reporting was not random. These individuals could not be used in this analysis since hourly earnings is the dependent variable in this analysis, and total family income is used to create the selection terms in the wage equations.[21]

Table 10 presents the decomposition of the selectivity corrected wage differential between men and women. The endowment effect is quite small; human capital endowments such as education and age account for about 7% of the total difference in wages between male and female moonlighters while the remaining 93% remains unexplained. This supports the results from the wage equations and suggests that the usual determinants of wages are far less important in determining a moonlighter's earnings on the second job.

## V. CONCLUSIONS

Several findings emerge from this paper that enhance the understanding of dual-job holding. First it is documented that when studying moonlighting behaviour one must be careful about the tendency of moonlighters to fail to report their income. It is found that single men without children, men who report moonlighting because jobs are heterogneous, and men with higher non-earned income are significantly less likely to report their income. Women who are single, who do not have children, who have more education, who are not enrolled in school and who work longer hours on both jobs are significantly less likely to report their family income. This highlights the need to use care when interpreting data on dual-job holding, particularly financial data. This is the first paper that comprehensively examines the non-reporting of income among multiple jobholders.

Second it is attempting to forge a closer link between two theoretical motivations for moonlighting and the reasons for dual-job holding reported by individuals. It is difficult to distinguish between different motives for moonlighting using an econometric model, particularly for men. However, the results from this analysis suggest that women whose second job is in an occupation other than managerial/professional are more likely to be constrained.

Finally, the structure of moonlighting wages is difficult to understand. The standard human capital variables are not significant in selectivity-corrected moonlighting wage equations for either men or women. In addition, the observed hourly wage differential between male and female moonlighters cannot be explained by differences in the characteristics of male and female dual-job holders. The lack of a link between the earnings of dual-job holders and their human capital characteristics suggests that those who moonlight due to financial hardship may have a difficult time using dual-job holding as a way out of poverty. Further research on understanding the structure of second job wages is important. One avenue for further research would be to explore the occupations of moonlighters in more detail since occupational variables tend to be significant in the wage equation.

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## REFERENCES

Abdukadir, G. (1992) Liquidity constraints as a cause of moonlighting, *Applied Economics,* **24**, 1307–10

Averett, S. L. and Hotchkiss, J. L. (1995) The probability of receiving benefits at different hours of work, *American Economic Review,* **85**, 276–80.

Bawly, D. (1994) *The Subterranean Economy*, New York; McGraw Hill Book Co.

Blank, R. (1990) Are part-time jobs bad jobs? In *A Future of Lousy Jobs? The Changing Structure of US Wages*, (ed.) G. Burtless, Washington, DC, The Brooking Institute, pp. 123–55.

Blinder, A. (1976) On dogmatism in human capital theory, *The Journal of Human Resources,* **11**, 8–22.

Bohener J. (1996) Webwire-house republican agenda for children, Congressional Press Release, 30 May.

Conway, K. S. and Kimmel, J. (1994) Male labour supply estimates and the decision to moonlight, unpublished paper.

Cotton, J. (1988) On the decomposition of wage differentials, *The Review of Economics and Statistics,* **70**, 236–43.

Ehrlich, E. and Pollock, M. (1985) 9 to 5 and then some: more women are moonlighting, *Business Week*, 25 August, 41.

Holtman, A. G. and Idson, L. T. (1993) Wage determination of registered nurses in proprietary and nonprofit nursing homes, *Journal of Human Resources,* **28**, 55–79.

Hunt, J. C., Hill, C. and Kiker, B. (1995) The effect of taxation on labour supply: the case of moonlighting, *Applied Economics,* **17**, 897–905.

Idson, T. L. and Feaster, D. J. (1990) A selectivity model of employer size wage differentials, *Journal of Labor Economics,* **8,** 99–122.

[21] It might be instructive to perform the wage analysis on subsets of moonlighters divided into hours constrained and heterogeneous jobs moonlighters. One might hypothesize that variables such as age and education are more likely to explain the earnings of individuals who moonlight because the jobs are heterogeneous. However, small sample sizes prohibit such an analysis with these data.

Ingrassia, S. (1992) Who's to blame for hidden economy, *The Washington Post,* 12 April, 14.

Jones, F. L. (1983) On decomposing the wage gap: a critical comment on Blinder's method, *Journal of Human Resources,* **28**, 126–30.

Kimmel, J. and Powell, L. (1996) A comparative analysis of moonlighting and related policy issues in Canada and the United States, mimeo.

Kimmel, J. and Conway, K. S. (1995) Who moonlights and why? Evidence from the SIPP, W. E. Upjohn Institute Staff Working Paper No. 95–40.

Kimmel, J. (1995) Moonlighting in the United States, *Employment Research,* **2**, 4–6.

Krishnan, P. (1990) The economics of moonlighting: a double self-selection model, *Review of Economics and Statistics,* **72**, 361–7.

Krishnan, P. (1993) Random parameters and self-selection models, *Empirical Economics,* **18**, 197–213.

Levenson, A. R. (1995) Where have all the part-timers gone? Recent trends and new evidence on dual-jobs, Milken Institute for Job and Capital Formation Working Paper 95–1.

Maddala, G. S. (1983) *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge, Cambridge University Press.

Moffitt, R. (1986) The econometrics of piece-wise linear budget constraints, *Journal of Business and Economic Statistics,* **4**, 317–28.

Oaxaca, R. (1973) Male/female wage differentials in urban labor markets, *International Economic Review,* **14**, 693–709.

O'Connell, J. F. (1979) Multiple job holding and marginal tax rates, *National Tax Journal,* **32**, 73–6.

Paxson, H. C. and Sicherman, (1994) The dynamics of dual-job holding and job mobility, National Bureau of Economic Research. Working Paper No. 4968.

Plewes, T. J. and Stinson Jr, F. (1991) The measurement and significance of multiple jobholding in the United States, *Statistical Journal,* **8**, 57–67.

Reimers, C. W. (1983) Labour market discrimination against Hispanic and Black men, *The Review of Economics and Statistics,* **65**, 570–9.

Rozenzweig, M. R. (1978) Nonlinear earnings functions, age and experience: A nondogmatic reply and some additional evidence, *Journal of Human Resources,* **11**, 23–7.

Samuelson, R. J. (1994) We are not a nation of tax cheats, *Newsweek,* 11 April, 58.

Shishko, R. and Rostker, B. (1976) The economics of multiple job holding, *American Economic Review,* **66**, 298–308.

Stinson, J. F. (1990) Multiple job-holding up sharply in the 1980s, *Monthly Labor Review,* **113**, 3–10.

Stinson, J. F (1996) Moonlighting by women jumped to record highs, *Monthly Labor Review,* **109**, 22–5.