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Intensity of Moonlighting in Greece: A Finite Mixture Approach

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Abstract

This paper examines the intensity of moonlighting among highly educated Greeks using a unique dataset of about 400 moonlighters in tertiary distance learning. We distinguish between higher-intensity and lower-intensity moonlighters taking into consideration observed and unobserved heterogeneity between the two groups. Our findings suggest that both demographic and work-related characteristics drive the number of "extra" jobs one may hold. However, when we split the sample into low- and high-intensity moonlighters, an asymmetry appears in the driving forces of each group's behaviour. For lower-intensity moonlighters, family and monetary characteristics are the decisive factors of their behaviour, while for higher-intensity moonlighters, work experience appears to be the main driver. Our findings suggest that moonlighters in tertiary education are not a unified group of employees. Therefore, institutions and organizations employing moonlighters should in principle be able to distinguish between the different groups of moonlighters and exercise different selection criteria. If the purpose is to recruit top-notch moonlighters serving teaching needs in cutting-edge technology, e.g. IT specialists, molecular biologists, banking sector executives and managers, then the selection criteria should be in favor of past and current work experience. However, if the purpose is to recruit moonlighters serving teaching needs in non-cutting-edge technology, then family and monetary criteria should be adopted in the selec-

tion process.

Keywords

Moonlighting, Intensity, Finite Mixture Poisson, Greece

JEL Classification: J22, J24

1. Introduction

Moonlighting, or Multiple Job-Holding (MJH)[1], refers to "*the simultaneous holding of two or more jobs at a single time by an individual*" (Nunoo et al., 2018). Typically, relevant research investigates the incidence of moonlighting (the "extensive" nature of moonlighting), i.e. the probability for a worker to hold more than one job. In countries with more mature labor markets and higher rates of moonlighting, a strain of the literature has focused on the motives to moonlight (Heineck, 2009; Kimmel & Powell, 1999; Kimmel & Conway, 2001; Conway & Kimmel, 1998). Additionally, there are numerous studies examining moonlighting among specific occupations (Bell & Roach, 1990; Biglaiser & Ma, 2007; Hilty Eleanor, 2008; Raffel & Groff, 1990). While such issues are worth investigating, there is no research work examining the "intensive" nature of moonlighting, i.e. how many extra jobs a worker may hold. Such an issue can be of special interest as it will provide further information regarding the functioning of the labor market and a better understanding of the labor supply.

Focusing on Greece, moonlighting is a form of atypical employment that, until recently, has attracted little attention. Only after the outbreak of the economic depression in 2009, is MJH considered an interesting topic, mostly as a means of reducing unemployment and increasing disposable family (future) income. Moreover, MJH is not a very popular form of employment in Greece, at least according to the official statistics. It is indicative that the MJH rate in 2023 is estimated at around 1.4%, when in 2018, it was 2.3%. This decrease may be a combination of the simultaneous decline in the number of moonlighters along with the increase in total employment and to a certain point could be explained by the rise in average GDP per capita during the past two years.

There are also certain institutional barriers that affect the size of moonlighting in Greece. The segmented and labyrinthine legal framework governing the Greek labor market sets different rules regarding the possibility of working for multiple employers. The latter is allowed depending on the basic characteristics

[1]Moonlighting can also be found in the relevant literature as supplementary income-generating activity, secondary employment, side job, dual jobs holding, double work, and multiple job holding (Betts, 2006; Hausken & Ncube, 2018a, 2018b; Timothy & Nkwama, 2017; Urwick & Kisa, 2014). In this paper moonlighting and multiple job holding will be used interchangeably to refer to the same thing, namely the existence of more than one job.

of the primary job, such as its type (salaried/self-employed), its sector (public, private), working hours (full or part-time), and even the occupation one exercises[2].

Another interesting feature of (Greek) moonlighters is that a sizeable share concerns highly qualified people. Data from Eurostat's Labour Force Survey reveal that in Greece, over time, 40% of moonlighters hold at least a university degree and they are occupied in the so-called high-skilled occupations. In 2022, out of those who declared they had a second job, 40% held a higher education degree, while in 2018, the corresponding figure was around 34%.

Moreover, highly educated workers tend to hold a second job that is also demanding and usually closely related to their primary job. Considering the rapid development of digitization and remote work, which became quite popular during the COVID-19 pandemic, the opportunities to moonlight for highly skilled people are more, compared to lower skilled people. All these suggest that moonlighters can hardly be considered a homogeneous group, as their level of education affects their opportunities to moonlight and therefore their probability of holding multiple jobs.

In this context, this paper contributes to the existing literature as follows. First, using a unique dataset from an online survey, which was conducted on tertiary education distance learning teaching staff in the Spring/Summer of 2022 based on a purpose-built questionnaire, we measure the intensity of moonlighting, as approximated by the number of extra—other than the primary—jobs a worker holds. Second, we model this intensity and investigate the factors that influence the number of extra jobs. Third, we empirically show that multiple job holders are not homogeneous regarding their intensity to moonlight and use appropriate statistical modelling to distinguish between high- and low-intensity moonlighters.

The remainder of the paper is organized as follows. The following Section 2 provides a brief overview of the literature on the motives underlying moonlighting. Section 3 describes the survey data and provides a descriptive analysis of the moonlighting intensity. Section 4 explains the statistical approach to model moonlighting intensity, which is based on a finite mixture count model, while results are presented and discussed in Section 5. Finally, Section 6 concludes the paper.

2. Literature Review

Most of the research on moonlighting has focused on its motives and not on its intensity. To the best of our knowledge, this paper is the first one that examines intensity. Therefore, there is no specific theory on the topic of intensity but, to a

[2]Within this context, the possibility of parallel employment in the private sector was recently legislated as a compliance of the national legislation with the European directive 2019/1152. It is indeed characteristic that the broader framework within which the legislator includes the possibility of parallel employment is the improvement of working conditions, by promoting a more transparent and predictable employment, while ensuring the adaptability of the labor market.

certain extent, it can be linked to the well-developed theory regarding moonlighting motives.

The main distinction in the theory explaining moonlighting is between individuals who cannot work more hours in their primary job, i.e. face time constraints set by their employer, and thus if they want to increase their labor supply, they can only do that by multiple job holding. On the other hand, some workers do not face time constraints in their primary jobs but might choose to moonlight as they do not consider primary and secondary jobs as perfect substitutes. Moreover, the underlying theory also takes into consideration the positive and negative aspects of moonlighting. In particular, moonlighting can help individuals to increase their income and smooth their consumption in periods of financial downturns, as well as it can also provide an opportunity to acquire new skills. However, holding multiple jobs can reduce productivity in the primary job and lead to increased stress and burnout.

Initially, the choice of workers to hold a second (or in general more than one) job was explained within a purely neoclassical framework. Within this context, a worker who faces hour constraints in her/his primary job, and therefore cannot increase her/his earnings, will choose to increase her/his labor supply by finding a second job (Perlman, 1966; Shishko & Rostker, 1976). Such constraints are usually related to working time regulations, the type of work (part-time employment or short-term contracts) or even to the structure of the tax system. In this case, the most profound reason behind moonlighting is financial motivation, as individuals either need additional income to cover their current needs (Averett, 2001; Sussman, 1998; Cohen, 1994; Stinson, 1990) or may use moonlighting, complementary to precautionary savings, as a means to smooth out the temporary consequences of negative financial shocks (Guariglia & Kim, 2004).

In some cases, moonlighting is related to the level of insecurity in the primary job. When there is instability in the primary job, moonlighting can be used to protect against potential labor market exits (Wright et al., 1997). On the contrary, empirical work in the UK has found that moonlighting is more prevalent in the public sector and among workers with permanent contracts (Wu et al., 2009). This suggests that workers decide to take up an additional job, and perhaps affect productivity on their primary job, only when they have a minimum level of security on their primary job.

Additionally, moonlighters may use the second job to gain experience and enhance their human capital and, in some cases, as a steppingstone to a new career path (Paxson & Sicherman, 1996; Panos et al., 2014). Closely related to this is the approach that the decision to moonlight depends on the quality of the primary as well as the additional job (Schwarze, 1991). However, the relationship between job quality and the probability to moonlight is not clear, as it may depend on the relationship between working conditions and the marginal utility of leisure.

Moreover, moonlighting can also be explained under a framework where the

primary and the additional jobs are not perfect substitutes and the assumption that there are nonpecuniary benefits and costs from the extra job. For example, working in the primary job may provide the worker with the necessary credentials to acquire a higher-paying second job. Last but not least, there are cases where individuals may derive satisfaction from their second job that is not received from their primary employment (e.g. some people may be office workers in their first job but in the evening they might perform in a theatrical play or sing in a band). In this case, job heterogeneity can drive the decision of an individual to moonlight or not (Dickey et al., 2011; Böheim & Taylor, 2004).

3. Survey and Basic Descriptive Statistics

The data used in this paper is from an online survey among the collaborating educational staff and the faculty of the School of Social Sciences of the Hellenic Open University (HOU). Due to the fact that people typically hired by HOU to deliver its distance learning classes already have another job, it offers a unique case to examine the intensity of moonlighting for highly skilled workers. HOU's School of Social Sciences has 13 faculty members and more than 1000 collaborating educational staff, most of whom are potential moonlighters. An online self-designed questionnaire was sent out in the Fall/Summer 2021, asking questions regarding specific demographic characteristics (gender, age, place of residence, marital status, and number and age of children). Moreover, there were questions regarding their expectations (ex-ante and ex-post), satisfaction, and job characteristics in HOU. Finally, they were asked for information regarding their primary job as well as other jobs besides their primary and that in HOU. Overall, we received 404 valid questionnaires, out of which only 10 were from non-moonlighters. In general, the questionnaire was kept as short and simple as possible, and we tried to avoid asking difficult questions, at least at the beginning of the questionnaire[3]. Moreover, relevant questions, e.g. expectations and their actual fulfillment, were asked together. All questions were worded in a neutral manner so as not to guide the respondent. In addition, the questions were formulated in a way that was easy to understand, even by a non-expert. Finally, we used the same five-point scale in all related questions, and when we asked for a hypothetical answer, it referred to a realistic scenario.

When data from self-defined questionnaires are collected, two criteria should be assessed before any analysis. The first has to do with the validity of the questionnaire and the second with its reliability. Validity examines the extent to which the questions used measure what they are supposed to measure, while reliability examines the degree of consistency of the answers provided. To test the validity of the questionnaire, we calculate the correlation between certain variables for which we know its sign a priori from the relevant theory. The yielded results are in line with the relevant theory, reassuring us that we do in fact measure what we

[3]We strategically asked questions related to monetary information at the very end of the questionnaire to prevent drop outs.

claim to measure. To test the overall reliability of the questionnaire, Cronbach's alpha and McDonald's omega were estimated[4]. Table 1 presents these results for the overall questionnaire as well as for specific subsections of the questionnaire. Both Cronbach's alpha and McDonald's omega values' range indicate strong internal consistency.

Taking a first look at the sample, almost 30% are women and 75% are married, while around one-quarter state they are responsible for at least one child aged less than 6 years. 62% are working in academia (Faculty members, seasonal lecturers, etc.), 18% are civil servants, 9% are self-employed, and 5% are private sector employees. The average HOU collaborating educational staff has almost 16 years of working experience and on average spends 34.5 hours per week on her/his primary job[5] and around 8 hours at HOU. Interestingly, on average, almost 6.5% of their family income comes from sources other than work. Finally, it is worth mentioning that the average net compensation from their primary job is circa 2200 euros per calendar month. While this might seem a lot given that the average salary in Greece is significantly lower, one should keep in mind that all individuals are highly educated (Ph.D. holders) and are employed in well-paid primary jobs. The descriptive statistics of the primary variables used in our analysis are presented in Table 2.

In order to measure the intensity of moonlight we use the number of extra jobs an individual holds other than his/her primary job. Faculty members, due to

Table 1. Reliability tests.

	Cronbach's alpha	McDonald's omega
Overall questionnaire	0.827	0.825
	[0.804, 0.850]	[0.800, 0.851]
Expectations ex-ante	0.644	0.667
	[0.590, 0.697]	[0.620, 0.713]
Expectations ex-post	0.734	0.744
	[0.690, 0.778]	[0.706, 0.782]
Satisfaction	0.743	0.754
	[0.691, 0.794]	[0.703, 0.805]

95% confidence intervals in brackets. Bootstrapped bias-corrected confidence intervals with 150 replications. All tests significant at $p < 0.001$.

[4]McDonald's omega (McDonald, 1999) is also known as Raykov's rho (Raykov, 1997). Cronbach's alpha, which can be considered as a special case of McDonald's omega, relies on some strong assumptions, which are not necessary in the case of McDonald's omega (Hayes & Coutts, 2020; McNeish, 2018). When these assumptions are satisfied the two measures should produce equivalent results.

[5]It is worth mentioning that working hours in the primary job vary from very low (one hour per week) to very high (100 hours per week). We excluded those observations by censoring the variable between 20 and 80 hours per week. Results did not change significantly; thus, we kept these observations in the estimation sample as they might better represent reality.

Table 2. Summary statistics.

	N	Mean	Std. dev.
Dependent variable			
Number of other jobs than primary	404	3.319	2.072
Independent variables			
Has children < 6 years old	404	0.248	0.432
Work experience (years)	404	15.841	9.649
Weekly hours working in primary job	404	34.548	15.707
Weekly hours working in second job	404	7.851	6.892
Non-work income (% of total income)	404	6.521	14.998
Log salary in primary job	336	7.52	0.541
Primary occupation			
University faculty	404	0.475	0.5
Other teaching staff	404	0.178	0.383
Other researcher	404	0.035	0.183
Public servant	404	0.168	0.375
Employee in the private sector	404	0.045	0.207
Self-employed	404	0.084	0.278
Other	404	0.015	0.121

the nature of their primary job, can hold more than one extra job as they may e.g. participate in paid research projects, provide various teaching services, do consulting, etc. We believe that such a measure can offer a good proxy to quantify the intensity of moonlighting. On average, participants in our survey have 3.3 jobs and only 10 individuals have only one job, namely that in HOU. The majority (27% of the sample) has two extra jobs, and the second largest group (19.3% of the sample) has three jobs (see **Figure 1**). Interestingly, around 15% of our sample holds more than five jobs. From this we can infer that there is a considerable variation in the intensity of moonlighting and our measure seems to offer a valid proxy.

4. Method

As previously stated, in order to measure the intensity of moonlighting we use the number of extra jobs an individual holds. Our variable of interest is a count, and it has strictly non-negative values. The first step is to consider that such a variable follows the Poisson distribution. If the mean of our variable is denoted by μ, to ensure that $\mu > 0$ a Poisson regression can be defined as $\mu \equiv \mathrm{E}(y \mid x) = \exp(x'\beta)$. The corresponding probability mass function is:

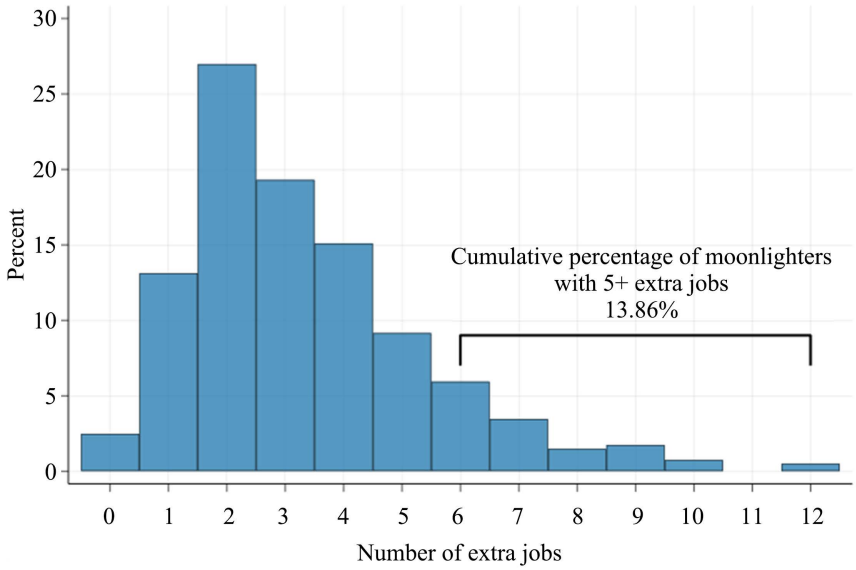

Figure 1. Distribution of number of extra jobs.

$$Pr(Y=y)=\frac{e^{-\mu}\mu^{y}}{y!}, y=0,1,2,\cdots \tag{1}$$

and the log-likelihood to maximize is given by

$$\ln L=\sum_{j=1}^{n}\left\{-e^{x_j\beta}+x_j\beta y_j-\ln(y_j!)\right\} \tag{2}$$

Since this is not a linear model, the coefficients can only yield the sign (direction) of the marginal effect. In order to quantify the effect of each independent variable, we estimate Average Marginal Effects (AMEs). The marginal effect of a unit change in a continuous regressor equals $\partial E(y|x)/\partial x_j=\beta_j e^{x'\beta}$. The formula of the marginal effect suggests that it is a function of the evaluation point, but the AME is equal to $\hat{\beta}_j\bar{y}$. For discrete variables, the marginal effects are calculated using the finite difference method, i.e. the change in the outcome when the variable value changes from 1 to 0.

While the Poisson regression can be used as a baseline model, we believe that there is unobserved heterogeneity in our sample that distinguishes individuals between low- and high-intensity moonlighters. In other words, we believe that there are certain unobserved characteristics that affect the number of extra jobs one might have. Such unobserved characteristics can be the ability to find a job, the level of networking, and many others. To this end, we need to incorporate unobserved heterogeneity in our model. While there are various ways to do that, we select to include in our model a discrete representation of unobserved heterogeneity, something known as Finite-Mixture Models (FMMs); see Deb and Holmes (2000), Deb and Trivedi (1997) and Cameron and Trivedi (2005, 2013). The primary advantage of using FMMs in our study is that while they do not have a variable to identify whether an individual is a high or low intensity moonlighter, they estimate the probability of belonging to either unobserved moonlight-

ing intensity group. Furthermore, FMMs can provide distinct regression estimates for each group and thus allow for different behaviors per group.

FMMs can be considered as flexible extensions to basic parametric models. They specify that the density of y is a linear combination of C different densities, where the c^{th} density is $f_c(y|\beta_c)$, $c=1,2,\cdots,C$. The density function for a C-component finite mixture is

$$f(y|x;z;\theta_1,\theta_2,\cdots,\theta_c;\pi_1,\pi_2,\cdots,\pi_c)=\sum_{j=1}^{C}\pi_j(z)f_j(y|x;\theta_j) \tag{3}$$

and the maximum likelihood is given by

$$\ln L=\sum_{i=1}^{N}\left\{\log\left(\sum_{j=1}^{C}\pi_j f_j(y|\theta_j)\right)\right\} \tag{4}$$

Since the dependent variable in our model is a count, we are using a Poisson mixture. Because we assume that there are two groups of moonlighters, regarding their intensity, we will estimate a two-component ($C=2$) Poisson mixture of Poisson (μ_1) and Poisson (μ_2). In our case, this represents the two "unobserved" populations in the sample, namely the high-intensity moonlighters whose outcomes are given by the distribution $f_1(y|\beta_1)$ and the low-intensity moonlighters with a distribution $f_2(y|\beta_2)$. The mixing fractions π_1 and $\pi_2=1-\pi_1$ are unknown parameters that are estimated from the maximization of Equation (4). We also estimate a model with three mixtures and compare it to the two-mixture model, but we fail to find a statistically better fit for the data. Similarly to the simple Poisson model, we estimate average marginal effects to quantify the effect of each explanatory variable, which now varies by intensity level.

5. Results

Table 3 illustrates the results of the simple Poisson regression model applied in order to capture the determinants of moonlighting intensity[6]. In these models the sign of the coefficients is the same as the sign of the Marginal Effects (MEs) and informs us only about the direction of the effect without giving an easily interpretable size of the effect. The coefficients in this model can be interpreted as a semi-elasticity since the conditional mean function has an exponential form. For example, the coefficient of having a child aged less than 6 years old (0.211) can be explained as follows: having a dependent child aged less than 6 years old is associated with a 21.1% increase in the number of extra jobs. The corresponding AME is 0.747, which means that having a dependent child is associated with 0.747 additional extra jobs.

The simple Poisson does not distinguish between high and low intensity moonlighters and assumes that the covariates affect the level of intensity in the same way for all moonlighters. Results suggest that, on average, the number of extra jobs increases 1) with job experience, 2) when having dependent children, and 3)

[6]Any difference in the number of answered questionnaires and observations used in the regression analysis is due to missing values on the independent variables, specifically the salary in the main job.

when working more hours in the primary job. The first finding is in accordance with human capital theory for highly skilled people; the second is expected since the financial needs increase in case of dependent children in the household; the third finding is more challenging to explain. One possible explanation is the heterogeneous job theory, as it can reflect that the primary and the other jobs are not perfect complements. Another explanation has to do with the fact that many participants in the survey are Faculty members and when they become Associate Professors or Full Professors, have an increased administrative workload, but due to their established experience they undertake more (and possibly heterogeneous) jobs.

On the other hand, in general, the number of extra jobs decreases when the income of the primary job increases (income effect, in accordance with the financial motives theory). Finally, the number of extra jobs is lower for civil servants, employees in the private sector, and the remaining categories compared to Faculty members, who have a higher potential for holding extra jobs.

The aforementioned findings, which show indications of both heterogeneous jobs motives as well as financial motives, amplify our initial hypothesis that moonlighters are not homogeneous in terms of their intensity. Thus, **Table 4** illustrates the results of applying the 2-component Poisson mixture model. The corresponding AMEs are presented in **Table 5** and the interpretation is similar to that of the Poisson regression model. Based on the data provided, we can identify two classes (groups) of moonlighters: low-intensity and high-intensity ones. The former group holds an average of 2.9 jobs, while the latter group holds an average of 4.9 jobs. These two groups are statistically different (95% CI for μ_1 is [2.689, 3.268] and for μ_2 is [3.644, 6.080], respectively), indicating that they represent two distinct groups of people. Therefore, it is legitimate to identify these groups as low- and high-intensity moonlighters based on their average number of jobs held. Low-intensity moonlighters represent 78.8% of the population, while high-intensity moonlighters represent the remaining 21.2%. These are also visible in **Figure 2**, where from the predicted job distribution per group, low-intensity moonlighters are concentrated on the left and depict a higher percentage, while high-intensity moonlighters are more widely spread, but represent a lower fraction of our sample.

An additional feature of the 2-component Poisson is that it allows for the effect of the control variables to vary between the two groups, namely low- and high-intensity moonlighters. Focusing on the two groups' features arising from the model, we can conclude that dependent children have a positive effect only for low-intensity moonlighters, while experience has a positive effect only for high-intensity moonlighters. Interestingly, now working hours in the primary job are deemed statistically insignificant for both groups compared to the simple Poisson model. Furthermore, there are indications of heterogeneous jobs for low-intensity moonlighters as non-work income in the household is statistically significant and positive only for low-intensity moonlighters. However, wages in

Table 3. Determinants of moonlighting intensity—Poisson regression.

	Coefficients	Marginal effects
Female	0.066	0.225
	(0.079)	(0.273)
Married	−0.055	−0.187
	(0.088)	(0.304)
Has children < 6 years old	0.211***	0.747**
	(0.079)	(0.292)
Work experience (years)	0.009**	0.030**
	(0.004)	(0.014)
Weekly hours working in primary job	0.004*	0.013*
	(0.002)	(0.007)
Weekly hours working in second job	−0.003	−0.009
	(0.004)	(0.012)
Non-work income (% of total income)	0.003	0.009
	(0.002)	(0.007)
Primary occupation		
University faculty (*base category-omitted*)		
Other teaching staff	0.015	0.052
	(0.122)	(0.122)
Other researcher	0.152	0.577
	(0.233)	(0.233)
Public servant	−0.218**	−0.691***
	(0.087)	(0.087)
Employee in the private sector	−0.356*	−1.054**
	(0.186)	(0.186)
Self-employed	0.035	0.127
	(0.130)	(0.130)
Other	−0.413**	−1.190***
	(0.189)	(0.189)
Log salary in primary job	−0.139**	−0.468**
	(0.068)	(0.228)
Constant term	1.995***	
	(0.518)	
Log likelihood	−684.549	
N	336	

Standard errors in parenthesis; *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Table 4. Determinants of moonlighting intensity—2-component Poisson mixture (coefficients).

	Class 1 Low-intensity moonlighters	Class 2 High-intensity moonlighters
Female	−0.063	0.331
	(0.103)	(0.210)
Married	−0.014	−0.095
	(0.107)	(0.244)
Has children < 6 years old	0.282***	−0.053
	(0.105)	(0.243)
Work experience (years)	−0.001	0.029**
	(0.006)	(0.012)
Weekly hours working in primary job	0.003	0.002
	(0.003)	(0.006)
Weekly hours working in second job	0.000	−0.002
	(0.006)	(0.017)
Non-work income (% of total income)	0.006**	−0.005
	(0.002)	(0.009)
Primary occupation		
University faculty (*base category-omitted*)		
Other teaching staff	−0.278	0.517**
	(0.188)	(0.259)
Other researcher	−0.113	0.740*
	(0.240)	(0.436)
Public servant	−0.273**	−0.216
	(0.133)	(0.240)
Employee in the private sector	−0.498**	0.617
	(0.229)	(0.562)
Self-employed	−0.164	0.460
	(0.172)	(0.314)
Other	−0.273	−0.588
	(0.375)	(1.733)
Log salary in primary job	−0.167*	0.226
	(0.090)	(0.353)
Constant term	2.276***	−0.822
	(0.698)	(2.647)

Continued

Log likelihood	−669.444	
N	336	
Class probabilities	0.788***	0.212***
	(0.073)	(0.073)
Class means	2.978***	4.862***
	[2.689, 3.268]	[3.644, 6.080]

Standard errors in parenthesis; 95% confidence intervals in brackets; *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Table 5. Determinants of moonlighting intensity—2-component Poisson mixture (average marginal effects).

	Class 1 Low-intensity moonlighters	Class 2 High-intensity moonlighters
Female	−0.184	1.718
	(0.297)	(1.228)
Married	−0.042	−0.473
	(0.321)	(1.248)
Has children < 6 years old	0.900**	−0.252
	(0.356)	(1.153)
Work experience (years)	−0.003	0.143**
	(0.018)	(0.057)
Weekly hours working in primary job	0.010	0.011
	(0.008)	(0.028)
Weekly hours working in second job	0.000	−0.011
	(0.018)	(0.080)
Non-work income (% of total income)	0.017**	−0.022
	(0.007)	(0.044)
Primary occupation		
University faculty (*base category-omitted*)	…	…
Other teaching staff	−0.825	2.838*
	(0.515)	(1.598)
Other researcher	−0.365	4.591
	(0.739)	(3.532)
Public servant	−0.813**	−0.813
	(0.375)	(0.896)
Employee in the private sector	−1.335***	3.579
	(0.508)	(4.322)

Continued

Self-employed	−0.516	2.451
	(0.510)	(1.850)
Other	−0.812	−1.863
	(0.982)	(4.134)
Log salary in primary job	−0.498*	1.097
	(0.269)	(1.797)
N	336	

Standard errors in parenthesis; *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

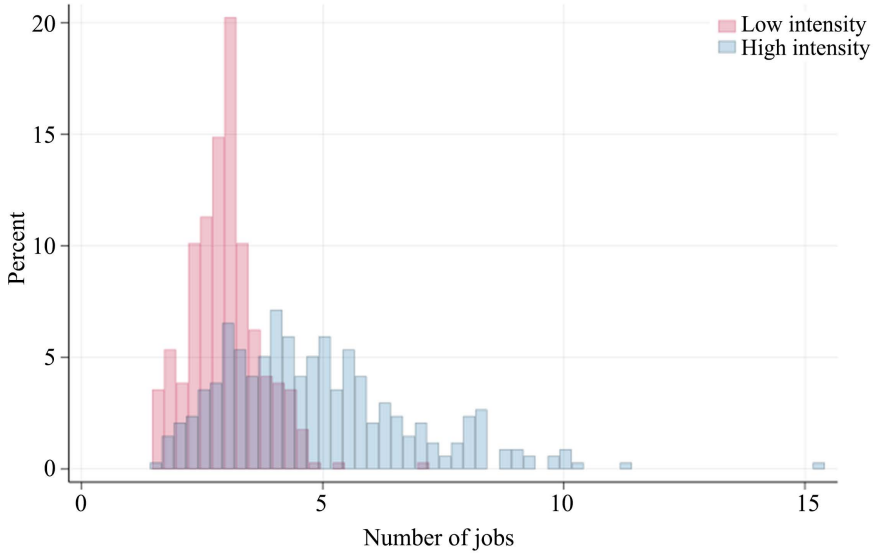

Figure 2. Distributions of predicted extra jobs for the two moonlighting intensity groups.

the primary job have a negative and statistically significant effect on low-intensity moonlighters, supporting the financial motives explanation. While these two results seem contradictory, one can argue that the negative effect of wages in the primary job outsizes the positive effect of non-work income, placing more gravity on the financial incentives theory.

Finally, the highest effect stems from the occupation of the moonlighters, as can be seen from the relevant AME. Compared to Faculty Members, civil servants and employees have a lower number of extra jobs, but only in the low-intensity group. Teaching staff and researchers have on average more jobs, but only in the high-intensity group. These occupational differences, to some extent, can be explained by the different institutional frameworks governing each profession and setting different operating rules and restrictions.

6. Discussion and Conclusion

This paper contributes to the understanding of the nature of moonlighting among

highly educated Greeks by examining its intensity using data from an online survey, to which the distance learning teaching staff of the School of Social Sciences of the Hellenic Open University responded. The intensity of moonlighting is defined as the number of extra jobs other than the primary job an individual holds. We argue that there are two classes of individuals: those who have high moonlighting intensity, i.e., have many extra jobs, and those with lower moonlighting intensity. Our original hypothesis is supported by our results. A Finite Mixture Poisson model is estimated, identifying two classes of moonlighters. The first group, which is 78.8% of the sample, is the low-intensity moonlighters with about 3 extra jobs, while the second group, which is 21.2% of the sample and is holding on average around 5 extra jobs, is characterized as high-intensity moonlighters.

Interestingly, the effect of demographic and other labor supply-related characteristics differs between the two groups. It seems that family-related and monetary characteristics affect the number of extra jobs that low-intensity moonlighters hold, while work experience is significant for high-intensity moonlighters. Finally, the effect of the main job differs between the two groups, as compared to faculty members, civil servants and employees have a lower number of additional jobs, but only in the low-intensity group, while teaching staff and researchers have on average more jobs, but only in the high-intensity group. Exploring what drives the intensity of moonlighting contributes to a better understanding of this special group of employees, which has not been studied in detail in Greece and given the demographic projections and recent developments in remote working, will probably increase in the coming years.

Results suggest that both the financial motives and the heterogeneous job theory are related to low-intensity moonlighting. On the contrary, work experience increases the number of extra jobs for higher-intensity moonlighters, suggesting persistence in moonlighting, as increased working experience in terms of years and/or a higher number of extra jobs increase moonlighting intensity. This may suggest that there is a threshold regarding the level of moonlighting. Below that threshold are the low-intensity moonlighters, some of whom may hold an extra job due to hours constraints in their primary job or because they increase their utility from the extra job, and thus do not necessarily need many extra jobs. On the other hand, high-intensity moonlighters were found to be mostly driven by their work experience. A plausible explanation may be that work experience may act as a credential or proof of competence to get the extra jobs. It is also worth mentioning that the legal framework that varies depending on the primary job one may hold, has a significant impact on whether an individual becomes a high- or low-intensity moonlighter.

The presented research has several limitations. First, it is based on data that are self-reported on an online survey, a fact that can incorporate self-reporting bias, since they may not always provide accurate and complete information. Moreover, the survey may not capture the full complexity of the sample's moon-

lighting behavior. Qualitative research in the form of interviews could provide a more in-depth understanding of their moonlighting motivations and decision-making related to job satisfaction or career goals. Finally, the survey's data are time-sensitive, since moonlighting dynamics may change over time, thus our findings may not apply in the future. Certain policy implications emerge for the Hellenic Open University as an employer, which to a certain extent can be generalized to other moonlighters' employers. Moonlighters, even in tertiary education, are not a homogeneous group of employees. Therefore, institutions and organizations seeking to employ moonlighters should in principle be able to distinguish between the different groups of moonlighters and exercise different selection criteria. If the goal is to recruit exceptional professionals (as is the case for teaching in cutting-edge technology subjects, such as IT specialists, molecular biologists, banking sector executives and managers), then selection criteria should favor both past and current work experience. However, if the purpose is to recruit teaching staff in non-cutting-edge subjects, then past and current work experience can act as secondary criteria with lower contribution in the selection process.

HOU needs to assess more thoroughly the quality of its educational staff performance in their multiple jobs and explicitly map their reasoning behind the need to moonlight. For the group of moonlighters whose major incentive is the monetary one, practices like an increased class size and/or an increased number of master's thesis supervisions may be necessary to attract them. But for the high-intensity moonlighters, who from the results do not appear to have financial motives, a different approach might be more fruitful (for example giving more responsibilities, coordination duties, etc.).

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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