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Exploring the Gender Difference in Multiple Job-holding

by

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(Revised)

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Exploring the Gender Difference in Multiple Job-holding

Abstract: This paper examines the determinants of the gender gap in multiple job-holding in Australia using all 18 waves of the *Household, Income and Labour Dynamics in Australia* survey, covering the period 2001 to 2018. In Australia, like most high-income countries, the multiple job-holding rate is higher for females compared to males. Building on previous research, the empirical analysis focuses on the role played by factors such as wage rates, hours worked, household wealth, job security, education, demographics and demand conditions. Probit regression points to a large, negative and highly statistically significant effect of hours worked in the primary job on the probability of holding a secondary job. This effect is larger (more negative) for females. A decomposition suggests that a large share of gender gap in multiple job-holding (c. 90 per cent) can be attributed to the gender gap in the hours worked in the primary job. This suggest that future research aimed at understanding why females work fewer hours in their primary jobs, yet have a higher multiple job-holding rate, will likely lead to a better understanding of the position of women in the labour market.

JEL: J21, J22, J8

Keywords: Multiple job-holding, gender, micro-data, Australia

Exploring the Gender Difference in Multiple Job-holding

1 INTRODUCTION

Over the past two decades there has been significant change in the organisation and regulation of working time in most high-income countries. In a number of countries (including Australia and the UK) reforms have led to an expansion of what may be termed “non-standard employment”. This includes the rise in the numbers employed in casual, temporary and non-permanent contract jobs (Rubery *et al.*, 2005; Campbell, 2018; Lab and Wooden, 2020). There has also been an increase in the numbers employed on a part-time basis who would prefer to work more hours—a form of “under-employment” (Koumenta and Williams, 2019; Birch and Preston, 2020). Understanding the causes and consequences of non-standard employment is of considerable interest in industrial relations and labour economics. Some researchers have focused on the role played by supply-side factors in non-standard employment decisions, such as preferences and choice (Taylor, 2017). Other researchers have considered demand-side factors, such employer-led flexibility and non-pecuniary benefits (Moore *et al.*, 2018; Briken and Taylor, 2018; Koumenta and Williams, 2019; Rubery *et al.*, 2005; Rubery *et al.*, 2015). Clearly, given the growth in non-standard employment, research of this type is both needed and important.

Multiple job-holding is the situation where an individual is employed concurrently in two or more jobs. We believe that multiple job-holding should be considered as a further type of non-standard employment, despite attracting only limited attention in this growing literature. This relative lack of interest is surprising since one might expect multiple job-holding to be systematically related to under-employment and other forms of non-standard employment. We also believe that understanding the determinants of multiple job-holding is particularly relevant in the context of the recently announced “living hours” campaign (Felstead *et al.*, 2020).

Concern about high levels of under-employment and unpredictable working-time arrangements has led to calls for employment contracts with a guaranteed minimum of 16 hours per week. One would expect that if this guarantee became a legal requirement, it would have an impact on employment decisions relating to multiple job-holding.

In most countries multiple job-holding is not a niche activity. Empirical evidence suggests that few multiple job-holders have more than one additional job. Therefore, it is common practise in the multiple job-holding literature to use the terms “primary job” (or 1st job) and “secondary job” (or 2nd job). It is usually the case the job with the most hours worked is assumed to be the primary job. However, it is also possible to make the distinction between primary and secondary jobs based on hourly wages (i.e. the job with the highest wage being the primary job) or weekly/monthly/yearly earnings (i.e. the job with highest earnings in a given period being the primary job). It is also important to note that both types of jobs may be waged employment (employee) or self-employment or a combination of the two. This suggests that there may be considerable diversity in the type of work multiple job-holders do in terms of earnings, hours and job type.

To date, the majority of studies that have empirically examined the determinants of multiple job-holding are based in standard labour supply theory (see Killingsworth, 2009). As discussed below in more detail, this theory suggests that there are two main motives for multiple job-holding (Conway and Kimmel, 1998). The first is a “financial motive”. The central premise is that the earnings from the primary job are insufficient to meet individual, family or household needs. This may be caused by an “hours constraint”, where workers are restricted in the number of hours they may work in their primary job. It may also be caused by a “low pay constraint”, where workers are paid an hourly wage (or salary) in their primary job that is too low. If a worker is employed in a job characterised by low pay and/or low hours, one option is to take on a secondary job as a way of increasing total earnings.

The second motive relates to “non-pecuniary benefits” associated with multiple job-holding. This motive covers a range of factors not directly related to financial remuneration. For example, a secondary job may serve as a path to a new career that is not possible via the primary job. A secondary job may also reduce the hardship associated with losing one’s primary job, especially if the hours in the secondary job are flexible upwards. It is important to note that it is possible that a secondary job is a non-paying job. One reason people may take such jobs is that they derive direct satisfaction from the work itself. This motive is quite different to the financial motive, where it is assumed that the main reason for working a secondary job is the increased consumption that the additional earnings provide. While early studies tried to distinguish the relative importance of the financial and non-pecuniary benefits motives, current research tends to treat “working for no pay” as volunteering, which is now a distinct literature (Lup and Booth, 2019). More recent multiple job-holding research has focussed on the effects of multiple job-holding on career progression (Panos *et al.*, 2014). Others have examined the health outcomes of multiple job-holders (Bouwhuis *et al.*, 2019).

It is our view that little is known about the determinants of multiple job-holding in contemporary labour markets characterised by high levels of part-time work, independent contracting, zero-hour jobs and non-permanent employment contracts. This is particularly true with respect to the gender dimension of multiple job-holding. In most high-income countries the multiple job-holding rate is higher for females than for males. In the UK, for example, around 4.5 per cent of employed females hold a secondary job while the share for males is around 3.0 per cent (ONS, 2020 for December 2019). In the US, the corresponding shares are 5.6 per cent and 4.7 per cent, respectively (BLS, 2020). Research suggests that non-standard workers may be disadvantaged in the labour market and experience less favourable wage and working conditions (OECD, 2019). Therefore, understanding the determinants of multiple job-holding, and the factors giving rise to the gender gap in multiple job-holding, is an important

research objective. If it is the case that the gender gap arises as a result of gender differences in the way primary jobs are organised, and that the gap is predominantly driven by an hours or income constraint in the primary job, this may have important policy implications for working time regulation and regulation concerning social protection.

There is a sizeable gender gap in multiple job-holding in Australia. Figure 1 shows the “crude” multiple job-holding rate for males and females aged 20-64 for the period 2001 to 2018, calculated from the *Household, Income and Labour Dynamics (HILDA) Survey* (discussed in more detail below). This crude rate is simply the number of males or females aged 20-64 who work more than one job as a percentage of all males or females aged 20-64. The figure confirms that the female rate is considerably higher than the male rate, with the absolute gap not changing much in this period. In addition, the trend lines in Figure 1 suggest that neither the male nor female multiple job-holding rate changed much in the last two decades. The crude multiple job-holding rate does not take into consideration the fact that to have a secondary job an individual must have a primary job. Therefore, it is a less than ideal measure of multiple job-holding for comparative purposes.

Figure 2 shows the “conditional” multiple job-holding rate for males and females. This conditional rate is the rate commonly reported in studies. It shows the number of males or females who work more than one job as a percentage of the number of males or females who are employed. That is, the rate is conditional on the individual having at least one job. The pattern over time in Australia (for those aged 20-64 years) is similar to that observed in Figure 1. It confirms that there is a sizeable, yet unchanging, gender gap in multiple job-holding. It is, however, worth noting that the estimates shown in Figure 2 are, in a strict sense, not directly comparable since there is a sizeable difference between the employment rates of males and females. Therefore, Figures 1 and 2 should be considered together.

In this paper we empirically examine the determinants of the gender gap in multiple job-holding in Australia using all 18 waves of the HILDA Survey. Australia is a valuable case study of international interest because, relative to most other high-income countries, it has a high incidence of non-standard employment (OECD, 2019). It also has a high incidence of multiple job-holding and a large gender gap in multiple job-holding. The remainder of the paper is organised as follows. Section 2 is a critical review of the relevant literature concerned with multiple job-holding. Section 3 presents a statistical methodology, based on probit regression, aimed at identifying the determinants of the gender gap in multiple job-holding. The results of this analysis are presented in Section 4. A conclusion follows in Section 5.

Figure 1: Crude Multiple Job-Holding Rate, Age 20-64, Australia, 2001-2018

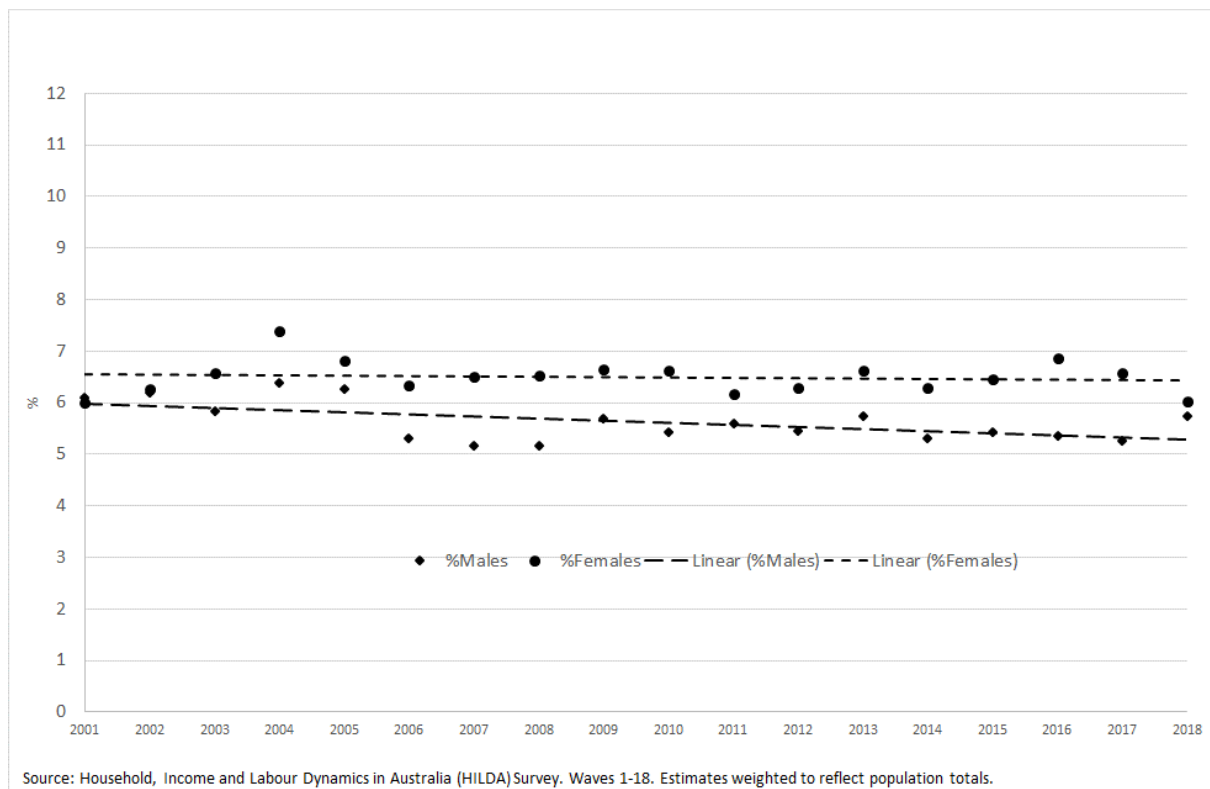
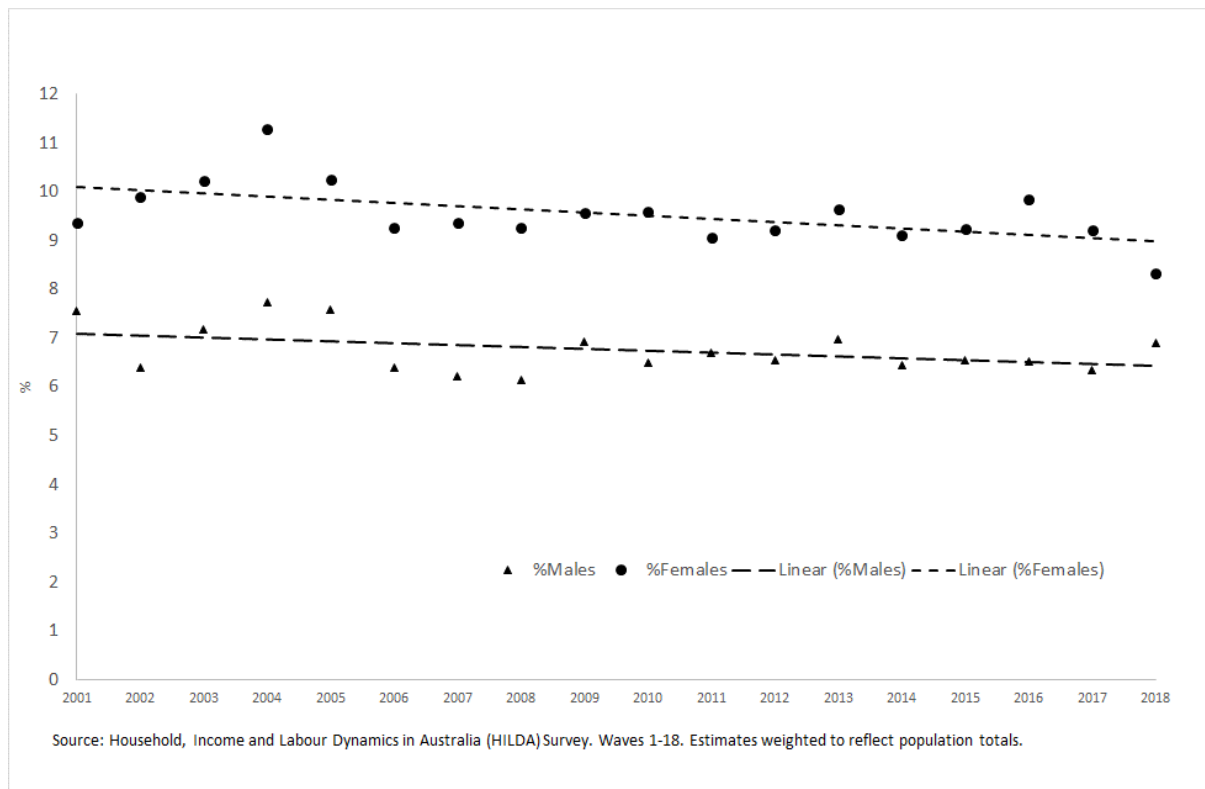


Figure 2: Conditional Multiple Job-Holding Rate, Age 20-64, Australia, 2001-2018



2 LITERATURE REVIEW

In most studies of multiple job-holding the decision to hold a secondary job is treated, primarily, as a labour supply decision. Two key motives are thought to underpin this decision: (1) the *financial motive* and (2) the *non-pecuniary benefits motive*. The first, attributable to Shishko and Rostker (1976), is the focus of much early research into multiple job-holding. Central to this motive is the assumption that individuals face an hours constraint on their primary job. Simply put, individuals wish to work more hours than are offered by their employers. This in turn generates an income (or budget) constraint for jobs with hourly pay. To meet their financial needs, individuals may work a secondary job, even if the hourly wage is lower than in their primary job. It follows that, empirically, there will be a negative relationship between the hourly wage (or equivalent) and the probability of having a secondary job, holding constant the number of hours worked in the primary job. Likewise, empirically,

there will be a negative relationship between the number of hours worked and the probability of having secondary job, holding constant the hourly wage.

A key factor moderating these wage and hours constraints is “non-labour income”. Non-labour income is thought to be particularly important in labour supply decisions (see Killingsworth, 2009). It is, however, difficult to measure non-labour income in social surveys, leading to compromises in empirical analyses. In its simplest interpretation, non-labour income is total household income from any source other than employment. It includes such income sources as capital gains, dividends, interest, property rent, transfer payments, gifts, and prizes. It is also referred to as “non-earnings income”, “property income” or “virtual income”. The precise definition of non-labour income used in any empirical research is problem-specific. The relevant non-labour income for modelling the probability that an individual holds a secondary job is total household income minus the earnings that the individual receives from their secondary job (if they have one) plus the earnings that the individual receives from their primary job plus the earnings of all other household members. With this definition it is assumed that earnings from the individual’s primary job, and the earnings of other household members, are exogenous. One can think of non-labour income as a form of, or proxy for, wealth, with wealthier households having less need for the additional earnings generated by working a secondary job. Empirically one would expect to find a negative relationship between non-labour income and the probability of an individual having secondary job, holding constant the hourly wage and the hours worked in the primary job.

The second motive for multiple job-holding relates to non-pecuniary benefits. These are features or characteristics of a job that individuals value beyond the earnings they receive. In other words, a secondary job may be valued “in its own right” because it may enhance employment flexibility, create new experiences, expand (or create) social networks or act as a stepping stone to a new career. A specific example would be an individual who holds a

secondary job because they enjoy the camaraderie of their co-workers, which may or may not be the case in their primary job. Unlike hours worked, wage rates and non-labour income, the non-pecuniary benefits of multiple job-holding are not straightforward to measure. One could include attitudinal questions on social surveys aimed at measuring the benefits associated with having a secondary job not related to money. However, we are aware of few surveys that include such questions. More importantly, such questions are not included in the HILDA survey that we use in the empirical analysis in this paper. Lacking such direct information, the best the researcher can do is hypothesise that the value of these non-pecuniary benefits varies by observable characteristics, including education, age and marital status.

In a related point, most empirical studies of multiple job-holding employ regression modelling. A key variable usually included in the regression as an explanatory factor is a measure of earnings from the primary job. Likewise, most empirical studies include, as control variables, measures such as age, education and marital status. Some studies also include other variables such as the occupation, industry and sector of the primary job. To date, research has been quite diverse with respect to these “other variables” and the findings concerning the determinants of multiple job-holding mixed. Amuedo-Dorantes and Kimmel (2009), Wu *et al.* (2009) and Atherton *et al.* (2016), for example, find that education increases the probability of holding a secondary job. This contrasts with Averett (2001) and Panos *et al.* (2014) who find no effect of education. The effect of marriage is also not clear. For example, Wu *et al.* (2009) and Atherton *et al.* (2016) find that being married increases the probability of holding a secondary job for males but decreases it for females. With respect to the effect of children, Amuedo-Dorantes and Kimmel (2009) find that the presence of young children reduces the probability of holding a job for males but has no effect for females. On the other hand, Wu *et al.* (2009) find that young children increases the probability for males but decreases it for females. The results for age are similarly very mixed. Wu *et al.* (2009), for example, find

that the probability of holding a secondary job decreases with age for both male and females. Atherton *et al.* (2016) find no relationship between age and multiple-job holding for males and a positive relationship for females. In Averett (2001) the opposite age effect holds; a positive relationship for males and no relationship for females.

It is our view that the mixed findings observed in the literature derives, in part, from the inclusion of these “other variables”. In short, we contend that the inclusion of these other variables in regression models of multiple job-holding is potentially problematic. These variables are, in a sense, “already controlled for” through the inclusion of earnings. It is well documented that age, education and marital status, as well as occupation, industry and sector, are highly correlated with earnings. The inclusion of earnings and these other variables in a regression may, effectively, “double count” the effects of these variables. Furthermore, there is a risk of collinearity given that these variables are usually highly correlated with earnings.

Put simply, we believe that only variables that are not highly correlated with the hourly wage rates should be included as control variables in regression models of multiple job-holding. If other variables are included the interpretation of their effects should be independent of their effect through earnings. A specific example will help clarify this methodological point. Within the literature it is established that there is a strong positive correlation between education (e.g. years of schooling completed) and earnings (e.g. hourly wage rate), since education is thought to be a central “human capital” variable. Education is, however, also likely correlated with individual perceptions, or attitudes towards, the non-pecuniary benefits of jobs. For such variables to be included in a regression of multiple job-holding the researcher needs to generate credible hypotheses as to why such variables should have a sizeable effect on the probability of having a secondary job that is independent of the effect through earnings.

Bell *et al.*’s (1997) hypothesis that multiple job-holding may be a “hedge” against unemployment (see also, Zangelidis, 2014) provides another useful example of the

methodological point, and of the non-pecuniary benefits of multiple job-holding. An individual may have a secondary job if they believe that their primary job has a high risk of termination. In a sense, multiple job-holding may cushion the financial impact of losing one's main source of earnings, especially if there is scope for increasing the number of hours worked in the secondary job. More generally, this type of hedging behaviour is suggestive of a link between job security and multiple job-holding. In contemporary labour markets characterised by low levels of job security, this hedging effect may be of considerable importance in explaining the incidence of multiple job-holding.

The discussion in the section so far has been concerned with what can be termed “supply-side” determinants in so much as they relate to the behaviour of employees. However, there are also likely important “demand-side determinants” of multiple job-holding. Such determinants relate to the behaviour of employers. It includes such factors as hiring practices, preferences for temporary or casual contracts, preferences for nonstandard work hours, job requirements, workplace policies, market competitiveness, desired skill mix of workers, profitability and regulation. For example, Renna's (2006) cross-country analysis of nine OECD countries suggests that multiple job-holding is affected by regulatory arrangements concerning working time. However, it is difficult to examine the importance of demand-side determinants with survey data for a single country. One way around this is to examine demand conditions in regional labour markets. Such an approach is commonly undertaken via the use of dummy variables capturing place of residence. Wu *et al.*'s (2009) study of multiple job-holding in the UK shows that multiple job-holding is higher in the south of England than it is in the omitted regions (Wales, Scotland and Northern Ireland). This may reflect demand differences and a greater opportunity for additional employment in the south of England. An alternative approach to studying the importance of demand side determinants is to follow Hirsch *et al.* (2017) who

seek to explain the incidence of multiple job-holding within and across metropolitan and non-metropolitan areas in the USA.

Finally, most empirical studies include gender as an “explanatory factor” with the typical approach controlling for male and female differences in the incidence of multiple job-holding by including a dummy variable for sex. A few studies occasionally estimate separate regressions for males and females (see, Averett, 2001; Heineck and Schwarze, 2004; Amuedo-Dorantes and Kimmel, 2009; Wu *et al.*, 2009; Zangelidis, 2014; Atherton *et al.*, 2016). The key finding in these studies is that multiple job-holding is higher for females than for males after other factors thought to have an impact on multiple job-holding are held constant. While this finding is not in dispute, gender is not an “explanatory factor”. This identified gender effect simply creates another research question concerned with “why” multiple job-holding is higher for female compared to males. To the best of our knowledge there is no study that explicitly seeks to understand, through statistical analysis, why the incidence of multiple job-holding differs for males and females. It is this question that this paper primarily seeks to address.

In summary, previous research points to six key hypotheses relating to multiple job-holding. The first is a *low pay* hypothesis, relating to the hourly wage rate that the individual is paid in their primary job. The second is an *hours constraint* hypothesis, relating to the number of hours of work in a given time period available to the individual. The third is a *wealth* hypothesis, relating to non-labour income of the household in which the individual is a member. The fourth is a *job security* hypothesis, relating to risk that the individual’s primary job will terminate. The fifth is a *demand-side differences* hypothesis, relating to market differences proxied by the individual’s place of residence. The sixth hypothesis relates to *socio-economic and demographic differences* between individuals such as age, education, marital status and children. The rest of this paper is concerned with trying to distinguish the relative importance of these hypotheses in the explanation of the gender gap in multiple job-holding.

3 METHOD

3.1 Data

The analysis carried out in this paper is based on 18 waves of the *Household, Income and Labour Dynamics in Australia* (HILDA) Survey, covering the period 2001 to 2018. HILDA is a large-scale survey that has collected detailed socio-economic information for nearly half a million individuals of all ages from over 270 thousand respondents. Not only is the sample size of HILDA large, it is also a longitudinal survey in the sense that respondents are usually interviewed more than once. Of the nearly 14,000 respondents interviewed in Wave 1, 62 per cent were also interviewed in Wave 18. Therefore, HILDA has a large built-in panel that allows researchers to track individuals over time. HILDA is somewhat unique in the sense that all household members aged 15 and older are interviewed, which allows researchers to explore relationship across related (and unrelated) members of households. The survey includes a set of weights which helps ensure that estimates are representative of the Australian population as a whole for any year between 2001 to 2018.

In our analysis the sample is restricted to employed individuals aged 20 to 64 residing in private dwellings. Non-private dwellings include old-age homes, hospitals and prisons. This results in a sample of 152,246 individuals or an average of around 8,500 individuals per year. The analysis is restricted to this age group since the majority of employment is in this age range. More specifically, across the 18 waves of HILDA, 90.3 per cent of individuals who are employed fall within this age group. The employment share for this age group has not changed much across the 18 years covered by HILDA (equal to 90.8 per cent in 2001 and 90.4 per cent in 2018). The employment share for individuals younger and older than 20-64 years are much lower; across the 18 waves of data the latter was equal to 7.0 per cent for those younger than 20 years and 2.7 per cent for those older than 64 years. Given the low employment shares for

these two age groups, it is not surprising that the multiple job-holding rates are also comparatively low. Only 5.1 per cent of individuals aged less than 20 report having a secondary job. The share for individuals aged 65 and older is even smaller at 0.5 per cent. By restricting the analysis to the 20-64 age group, we believe we are focussing on the group of people most relevant for understanding the determinants of multiple job-holding.

The sample used in our statistical analysis is smaller than 152,246 observations. In total, 15,025 observations (c. 10 per cent) are dropped because of incomplete or missing information related to the construction of the hourly wage, a key variable in our analysis. (A total of 14,742 observations report a gross weekly income from their main job of \$0. We are unable to ascertain why this is the case but possible reasons include serving as an unpaid volunteer, unpaid internship and job seeker requirements such as work for the Dole. A further 283 observations with observable wage data were missing information on the number of hours worked per week in their main job). The loss of 15,025 observations reduces the sample to 137,221 observations. It is unclear how much the exclusion of these observations biases our analysis. The robustness tests carried out in Section 4 suggest that this bias is likely not large.

3.2 Statistical Model

The analysis in this paper is based on statistical model of the form:

$$Prob (MJH_{it} = 1) = f(WageI_{it}, HoursI_{it}, NonLabInc_{it}, JobSec_{it}, Region_{it}, Demog_{it}) \quad (1)$$

Where the subscript “i” denotes the individual who is generating the observation and the subscript “t” denotes the year (wave) that the observation refers to. The variables are defined as follows: *MJH*, a dummy variable coded “1” if the individual holds a secondary job (or holding more than two jobs) and coded “0” if they do not hold a secondary job (i.e. only have

one job); *Wage1*, the hourly wage rate the individual receives in their primary (first) job (in 2018 prices); *Hours1*, the number of hours the individual works in their primary (first) job; *NonLabInc*, (in 2018 prices) the individual's non-labour income, which is equal to the total income of the individual's household minus their earnings from their secondary (second) job, if they have one. *JobSec* is a set of variables intended to measure the job security of the individual's primary (first) job. *Region* is a set of variables describing the geographic location where the individual resides. *Demog* is a set of demographic variables (including education) thought to impact on multiple job-holding (discussed below).

If it assumed that the function “ f ” is cumulative normal, then Eq. (1) can be estimated as a standard “pooled cross-section” probit regression. With this specification, the emphasis is on evaluating the impact of the included explanatory variables (*Wage1*, *Hours1*, *NonLabInc*, *JobSec*, *Region* and *Demog*) on the probability (*Prob*) that an individual holds a secondary job using information from all 18 waves of HILDA.

We believe that Eq. (1) is a practical empirical framework to examine the determinants of multiple job-holding that is consistent with our discussion of previous research in Section 2. While this is an important objective, it is not the main objective of our empirical analysis. Our focus is on trying to understand why the incidence of multiple job-holding is higher for females compared to males. Some of this understanding may be obtained by estimating Eq (1) separately for females and males and comparing the results. Examining differences and similarities in the signs and magnitudes of the estimated statistical effects provides relevant information about the relative importance of explanatory factors. It is likely that some factors are more (less) important for females compared males. Therefore, our key hypothesis is that gender differences in these statistical effect, and the gender differences in the average values, helps “explain” the gender-gap in multiple job-holding.

3.3 Regression variables

Table 1 reports the definitions and summary statistics for the specific variables used in the regression analysis. The mean and standard deviations (for continuous variables) are shown along with the per cent shares for dummy and categorical variables. These statistics are calculated separately for males and females. The dependent variable, *MJH*, is a whether the individual reports having a secondary job (conditional on having a first job). This share is 9.7 per cent for females and 7.0 per cent for male or a gender gap of +2.7 percentage points (9.7%-7.0%). In percentage terms, this gap implies that the rate of multiple job-holding is about 40 per cent higher for females compared to males.

Table 1: Variables Included in the Regression Analysis

Mnemonic	Description	Mean [STD]	
		Male	Female
<i>MJH</i>	Dummy variable coded 1 if respondent having more than one job; coded 0 otherwise	7.0%	9.7%
<i>Wage1</i>	Respondent's hourly wage rate in first job in 2018 Australian dollars (AUD), bottom and top coded at the 5% and 95% levels	\$34.32 [\$14.7]	\$30.76 [\$12.6]
<i>Hours1</i>	Hours per week worked by respondent in first job	41.7 [12.5]	32.1 [13.1]
<i>NonLabInc</i>	Non-labour income: total weekly household income minus respondent's weekly earnings from first job (2018 AUD)	\$29,094 [\$21,794]	\$29,069 [\$22,497]
<i>PermCont</i>	Dummy variable coded 1 if respondent is employed on a permanent contract in first job; coded 0 otherwise. (Excluded category)	68.2%	64.4%
<i>SelfEmp</i>	Dummy variable coded 1 if respondent is self-employment (or an unpaid family worker) in first job; coded 0 otherwise	9.8%	5.1%
<i>FixedCont</i>	Dummy variable coded 1 if respondent is employed on a fixed term contract in first job; coded 0 otherwise	8.4%	9.8%
<i>CasualCont</i>	Dummy variable coded 1 if respondent is employed on a casual contract in first job; coded 0 otherwise	13.4%	20.3%
<i>OtherCont</i>	Dummy variable coded 1 if respondent is employed on another form of contract in first job; coded 0 otherwise	0.3%	0.3%
<i>Age</i>	Age of respondent at time of survey (years)	39.3 [11.9]	39.5 [11.9]
<i>OtherEduc</i>	Dummy variable coded 1 if respondent's highest qualification is high-school or less; coded 0 otherwise. (Excluded category)	33.8%	36.7%
<i>DipCert</i>	Dummy variable coded 1 if respondent's highest qualification is a post-school level diploma or certificate; coded 0 otherwise	37.6%	27.8%
<i>Univ</i>	Dummy variable coded 1 if respondent's highest qualification a degree or higher; coded 0 otherwise	28.6%	35.4%
<i>Married</i>	Dummy variable coded 1 if respondent is married or cohabitating; coded 0 otherwise	66.9%	65.4%

<i>NKids</i>	Number of children in the household (< age 15 years)	0.56 [0.9]	0.53 [0.9]
<i>NAdults</i>	Number of adults in the household (>= age 15 years)	2.5 [1.1]	2.5 [1.1]
<i>Urban</i>	Dummy variable coded 1 if the respondent resides in a main urban area; coded 0 otherwise	87.8%	87.9%
<i>NSW</i>	Dummy variable coded 1 if the respondent resides in New South Wales; coded 0 otherwise. (Excluded category)	33.0%	31.4%
<i>VIC</i>	Dummy variable coded 1 if the respondent resides in Victoria; coded 0 otherwise	25.6%	26.6%
<i>QLD</i>	Dummy variable coded 1 if the respondent resides in Queensland; coded 0 otherwise	19.3%	19.5%
<i>SA</i>	Dummy variable coded 1 if the respondent resides in South Australia; coded 0 otherwise	6.8%	7.2%
<i>WA</i>	Dummy variable coded 1 if the respondent resides in Western Australia; coded 0 otherwise	10.2%	9.9%
<i>TAS</i>	Dummy variable coded 1 if the respondent resides in Tasmania; coded 0 otherwise	2.0%	2.3%
<i>NT</i>	Dummy variable coded 1 if the respondent resides in Northern Territories; coded 0 otherwise	1.0%	1.2%
<i>ACT</i>	Dummy variable coded 1 if the respondent resides in Australian Capital Territory; coded 0 otherwise	2.0%	1.9%
Sample (N)		69,914	67,307

Notes:

(1) Standard deviations in parentheses.

(2) Estimates weighted to reflect population totals.

Previous studies have found a negative relationship between the hourly wage rate and the probability of holding a secondary job. In our analysis, *Wage1*, has been calculated by dividing weekly earnings (in the week prior to the survey) by weekly hours “normally” worked. As the data cover an 18 year period, the consumer price index (CPI) was used to remove the effect of inflation. The wage rate in the first job is, therefore, measured in constant 2018 Australian dollars (AUD). As Table 1 shows, the average wage of females is AUD30.76 per hour. This is well below the average wage males of AUD34.42 per hour. This gender gap of AUD3.66 per hour, suggests a male-female wage gap of around 12 per cent.

Previous studies have also found a positive relationship between hours worked and the probability of having a secondary job. In our analysis, *Hours1*, is the respondent’s report of the number of hours they normally work in a given week. There is a sizeable gap between females and males with respect to hours worked. The average for females is 32.1 hours per week. This

is considerably below the average for males of 41.7 hours per week. This is a difference of 9.6 hours per week or more than a day a full-time within a week. In percentage terms, females work on average around 30 per cent fewer hours per week than males.

There is also a large difference in non-labour income, *NonLabInc*, between males and females. This is a key variable in labour supply theory. In our application, total household income is constructed by adding up the income in the household of all family members plus all transfer payments from the government and income from investments, property, etc. From this total, the individual's earnings from their secondary job (if they have one) is subtracted. It is important to note that included in non-labour income is the individual's earnings from their primary job. By doing this, it is assumed that earnings from the primary job is "exogenous". In other words, earnings from the individual's primary job are fixed. Therefore, it is not possible to increase earnings in the primary job through negotiating a higher hourly wage or working more hours or a combination of the two. Clearly this will not be the case for some individuals. However, we believe it is the case for the majority of workers in Australia. Evidence in support of this claim is presented below.

We believe that non-labour income measured in this way is the most relevant measure of "wealth" affecting decisions relating to multiple-job holding. It is an annual amount, and like the hourly wage rate, is expressed in constant 2018 Australian dollars. As Table 1 shows, the average amounts of non-labour income available for females and males are almost identical. For both groups, the average value of non-labour income is around AUD29,000 per year. The standard deviations are also very similar at AUD21,794 for males and AUD22,497 for females, suggesting that the spread or distribution of non-labour income is similar. While non-labour income is not in any way distributed "equally", the standard deviations suggest that the extent of inequality is similar for males and females. This similarity is not surprising since non-labour

income includes the earnings of all household members, with earnings being the dominant component of household income for most households

One would expect to find a relationship between job security and employment decisions. One hypothesis, that has not been widely tested in multiple job-holding research, is that there is a negative relationship between the job security associated with individual's primary job and the probability of holding a secondary job. In our analysis, job security is measured by set of four dummy variables based on a mutually exclusive and exhaustive five categorical variable. A key feature of this measure is the contract arrangements that govern the individual's primary job. The categories are: "Permanent contract" (*PermCont*); (2) "Self-employed" (*SelfEmp*) (3) "Fixed contract" (*FixedCont*); (4) "Casual contract" (*CasualCont*) and (5) "Other contract" (*OtherCont*). The excluded category in the regression is "Permanent contract". Our assumption is that permanent contracts are the most secure form of contract with the other four types of contracts being less secure, but to different degrees.

Examination of the percentage shares of each of the job security variables given in Table 1 suggest that a larger share of females compared to males are employed in "less secure" jobs. More specifically, 64.4 per cent of females and 68.2 per cent of males report being employed in a permanent contract in their primary job (*PermCont*). There is also a gender gap for fixed and causal contract jobs. With respect to fixed contracts jobs (*FixedCont*), 9.8 per cent of females and 8.4 per cent of males are employed on this basis. The shares for casual contract jobs (*CasualCont*) are 20.3 per cent for females and 13.4 per cent for males. There is little difference between females and males with respect to "other" contract types (*OtherCont*) but this share is very small for both groups (less than 1 per cent). It is interesting to note that there is a large gender gap in self-employment (*SelfEmp*). The self-employment share is 5.1 per cent for males and 9.8 per cent for males. In other words, the self-employment rate for males is nearly double that of females.

In terms of demographic variables, the regression equations include variables relating to the respondent's age, education, marital status and children. Research suggests that these factors are important in employment decisions. However, this is true with respect to the employment decision relating to an individual's primary job. Put slightly differently, such factors are important in the decision to work or not. It is less clear how important such variables are in the decision to hold a secondary job. There are two main reasons for this. The first is that in order to have a secondary job, by definition, you must have a first job. In other words, those individuals included in the analysis have all made the decision to work. Once this decision is made, one would expect demographic variables to be less important in subsequent employment decisions. The second reason is that these variables, especially education (and to a lesser extent age), have been shown to be important determinants of earnings. For example, research has repeatedly shown that there is a strong positive correlation between years of schooling and hourly earnings. Our empirical specification takes into consideration the impact of education on multiple job-holding in an indirect manner through the inclusion of the hourly wage in the individual's primary job. Therefore, the statistical effects of education is net of this effect it has on wage. In a sense it is a residual effect that likely captures a number of possible mechanism by which education impacts of multiple job-holding.

As Table 1 shows, there is little difference in the average age (*Age*) of males and females in our sample. Education is based on a three category measure of educational qualifications obtained: (1) "High school or less" (*OtherEduc*); (2) "Post-school level diploma or certificate" (*DipCert*); and (3) "Degree or higher qualification" (*Univ*). The excluded category in the regression analysis is "High school or less". As Table 1 suggests, the relative shares of these variables suggest that, at the mean, females have higher educational outcomes than males. For example, 35.4 per cent of females report having a degree or higher qualification while the share for males is lower at 28.6 per cent.

Marital status (*Married*) is a dummy variable which captures whether the individual is legally married or cohabitating. There is only a small difference in this variable between females (65.4 per cent) and males (66.9 per cent). There are two variables relating to the number of individuals in the household. The first is the number of children in the household (*NKids*), where a child is defined as being a person aged 14 years or younger. The second variable is the number of adults in the household (*NAdults*), where an adult is defined as a person aged 15 years or older. One benefit of including *Nkids* and *NAdults* as variables in the regression is that it partially standardises non-labour income for differences in household composition.

In order to proxy labour demand conditions variables are included that indicate the individual's place of residence. Australia is a Commonwealth of six states and two territories. The first is a dummy variable that indicates if the individual lives in an "urban area" (*Urban*). An urban area includes state or territory capital cities, major urban centre and other urban areas as defined by the Australian Bureau of Statistics. The second is set of dummy variables that indicate the state/territory the individual lives: (1) "New South Wales" (*NSW*); (2) "Victoria" (*VIC*); (3) "Queensland" (*QLD*); (4) "South Australia" (*SA*); (5) "Western Australia" (*WA*); (6) "Tasmania" (*TAS*); (7) "Northern Territory" (*NT*) and "Australian Capital Territory" (*ACT*). The excluded category is "New South Wales". The distributions of these variables are similar for males and females. This is what one would expect given that the overall population sex-ratios do not differ markedly across the Australian states and territories.

The estimates in Table 1 suggest that there are some sizeable differences between males and females with respect to some of the variables thought to determine multiple job-holding. These regression estimates may be used to address the relative importance of these variable differences in explaining the difference in multiple-job holding between males and females. However, it must be stressed that this is not the same as addressing the determinants of

multiple-job holding. It is possible (and likely) that there are factors that are important in explaining why an individual holds a secondary job that are not important in explaining why there is a gender difference in multiple job-holding shares. The latter explanation is a combination of both the gender differences in the mean values of the explanatory variables and the gender differences in the coefficients of these explanatory variables.

The probit regressions estimated in this paper implicitly assume that the included explanatory factors are exhaustive in the sense that there are no other factors of importance that impact the probability of holding a secondary job. This assumption seems unlikely. Therefore, it may be the case that this specification suffers from “omitted variable bias”, which could result in biased estimates of the impact of the included explanatory factors on multiple job-holding. It is possible to partially address this concern with “fixed-effects” estimation (see Baltagi, 2013). Since HLDA has a panel dimension, both individual-specific and time-specific fixed-effects can be incorporated into the estimation. Fixed-effects are often viewed as a way of “controlling for” omitted variable bias, even though it is difficult to state what “missing” variables fixed-effects are effectively standing in for.

In our regressions, the dependent variable is a dummy variable. Essentially fixed-effects are also dummy variables, with one variable created for each individual observation and one variable created for each time period. In our application, this requires the estimation of several thousand coefficients. While this is computationally feasible, adding such a large number of variables to a probit regression is not recommended because of the so-called “incidental variables problem”. The problem is that the likelihood that a set of regressions coefficients will be biased increases substantially the larger the number of included variables, and this is especially the case in the probit regression (Fernandez-Val, 2009; Greene 2002). Given the very large number of coefficients needed to be estimated, and our inability to judge the accuracy of the resulting estimates, we have not pursued fixed-effects estimation in this paper.

4 RESULTS

The regression results are summarised in Table 2. Column (1) is for males and Column (2) is of females. The probit coefficients have been transformed into “average marginal effects”, which is the change in the probability of holding a secondary job associated with a one-unit change in the variable of interest. Multiplying an average marginal effect by 100 expresses them in percentage terms. This is now the standard way in which the effects of variables included in probit regression are presented.

Table 2: Determinants of Multiple Job-Holding; Probit Regression Estimates; Males and Females; Australia; 2001-2018; Marginal Effects

	(1) Males	(2) Females
<i>Wage1</i>	-0.0002*** [2.7]	-0.0001 [1.3]
<i>Hours1</i>	-0.003*** [34.1]	-0.004*** [35.3]
<i>NonLabInc(/1,000)</i>	-0.005*** [8.7]	-0.006*** [10.0]
<i>SelfEmp</i>	0.053*** [12.3]	0.069*** [10.5]
<i>FixedCont</i>	0.016*** [4.2]	0.028*** [6.3]
<i>CasualCont</i>	0.014*** [4.3]	0.017*** [5.3]
<i>OtherCont</i>	0.046** [2.0]	0.078*** [2.8]
<i>Age</i>	-0.0003*** [3.5]	-0.0008*** [8.0]
<i>DipCert</i>	0.021*** [8.4]	0.025*** [8.1]
<i>Univ</i>	0.056*** [17.6]	0.048*** [14.9]
<i>Married</i>	0.001 [0.5]	-0.015*** [5.7]
<i>NKids</i>	0.002** [2.1]	-0.012*** [8.9]
<i>NAdults</i>	0.001 [1.3]	0.007*** [6.3]
<i>Urban</i>	-0.032*** [9.38]	-0.026*** [7.1]
<i>VIC</i>	0.010***	0.008***

	[4.1]	[2.7]
<i>QLD</i>	-0.012***	-0.013***
	[4.8]	[4.0]
<i>SA</i>	-0.002	-0.006
	[0.6]	[1.4]
<i>WA</i>	-0.001	-0.000
	[0.3]	[0.0]
<i>TAS</i>	-0.009	-0.012*
	[1.43]	[1.7]
<i>NT</i>	0.058***	0.093***
	[4.6]	[6.6]
<i>ACT</i>	-0.006	0.025***
	[1.0]	[2.6]
Pseudo R2(%)	8.0%	6.6%
N	69,914	67,307
Mean (<i>MJH</i> %)	7.2%	9.7%

Notes:

(1) Absolute value of the ratio of the coefficient to its standard error shown in parentheses.

(2) *** = $p < 1\%$; ** = $p < 5\%$; and * = $p < 10\%$.

(3) All estimates are weighted to represent population totals.

(4) Effects are average marginal effects.

Most of the included variables are statistically significant, at least at the 10 per cent level, for both males and females. Turning first to the effect of the hourly wage in the primary job (*Wage1*), for males a one dollar (AUD) increase in the hourly wage rate is associated with a 0.02 per cent lower probability of holding a secondary job. This effect is highly statistically significant ($p < 1\%$), but small in magnitude. For example, this estimate implies that a doubling of the male mean hourly wage rate of AUD34.32 per hour (see Table 1) is associated with less than a 1 per cent reduction in multiple job holding. For females, the effect of the hourly wage in the primary job is negative and half the magnitude of the effect for males (0.01 per cent). However, this effect is not statistically significant, even at the generous 10 per cent level. The negative sign on *Wage1* for both males and females is consistent with theoretical expectations. However, the effect is not statistically significant for females (so effectively zero) and very small in magnitude for males. This suggests that the hourly wage in the primary job is not an important determinant of multiple job-holding for both males or females. Given that *Wages1*

is not important for either males or females, it can't be important in explaining difference in multiple job-holding between them.

For both sexes, the average marginal effect of number of hours worked in the primary job (*Hours1*) is negative and highly statistical significant ($p < 1$ per cent). This finding is in agreement with theoretical expectation. Simply put, if you work more hours in your primary job you have a lower probability of multiple job-holding. The magnitude of this effect is sizeable. For example, for males an additional hour of work for is associated with a 0.3 per cent reduction in the probability of holding a secondary job. For females the effect is larger—an additional hour of work for is associated with a 0.4 per cent reduction in the probability of holding a secondary job. As already discussed, there is large gender gap in the number of hours worked in the primary job. The average hours worked is 42 hours per week for males and 32 hours per week for females (see Table 1). If the number of hours worked increased by 15 hours per week, the estimates suggest that the probability of holding a secondary job would be around 4.5 per cent lower for males and 6.0 per cent lower for females. Given there is a sizeable gender gap in average values of *Hours1*, and the sizeable gender gap in the magnitudes of the average marginal effects of *Hours1*, differences in number of hours worked in the primary job is a key factor in “explaining” the gender gap in multiple job-holding.

Non-labour income (*NonLabInc*) is also important. For both sexes, the average marginal effect is negative and highly statistical significant ($p < 1$ per cent). This finding is in agreement with theoretical expectation in the sense that one would expect individuals who live in “wealthier households” to work less after controlling for other factors that impact on employment decisions. Note that *NonLabInc* has been scaled by a factor of 1,000 in order to reduce the number of leading zeros on the estimated coefficients. Therefore, the average marginal effect is for an AUD1,000 change (and not a AUD1.00 change) in non-labour income. For males, a AUD1,000 increase in non-labour income is associated with a 0.5 per cent

decrease in the probability of holding a secondary job. For females, the effect is larger—a AUD1,000 increase in non-labour income is associated with a 0.6 per cent decrease in the probability of holding a secondary job. This difference suggests that multiple job-holding amongst females is more responsive to difference in non-labour income. As Table 1 shows, the difference in the average value of *NonLabInc* for males and females is small. There is not a sizeable gender gap in either the average values, or average marginal effects, of *NonLabInc*. This suggests that gender differences in *NonLabInc* may not be a very important factor in explaining the gender gap in multiple job-holding.

There are sizeable differences in the average marginal effects of the dummy variables intended to capture differences in job security: *SelfEmp*, *FixedCont*, *CasualCont* and *OtherCont*. It is important to note that the excluded category is being “employed on a permanent contract” (*PermCont*). The majority of individuals in our analysis—68.2 per cent of males and 64.4 per cent of females—report that their primary job is based on some form of permanent contract. Males have an advantage over females of nearly 4 percentage points on this variable. It is our working assumption that self-employment (*SelfEmp*) and fixed-term jobs (*FixedCont*), casual contract jobs (*CasualCont*) and jobs with other types of contracts (*OtherCont*) are all “less secure” than permanent contract jobs and that there is a negative relationship between job security and multiple-job holding.

The average marginal effects shown in Table 2 support this hypothesis. More specifically, the sign of the average marginal effects for *SelfEmp*, *FixedCont*, *CasualCont* and *OtherCont* are all positive for both males and females. In addition, all are highly statistically significant at the 1 per cent level or below, except for *OtherCont*, which is significant at the 5 per cent level in the male equation. More importantly, the average marginal effects are all larger (more positive) for females compared to males. For example, in the case of self-employed (*SelfEmp*), the marginal effect is 6.9 per cent for females and 5.3 per cent for males. Similarly,

for those in fixed contracts (*FixedCont*) the marginal effect is 2.8 per cent for females and 1.6 per cent for males. The corresponding effects for *CasualCont* is 1.7 per cent for females and 1.4 per cent for males and for other types of contract jobs (*CasualCont*) the effect is 7.8 per cent for females and 4.6 per cent for males. The differences in the average marginal effects of these variables, coupled with differences in the distribution of males and female across these variables, suggests the gender differences in job security may be a key factor in “explaining” the gender gap in multiple job-holding.

The regression estimates indicate that age is also a factor impacting on multiple job-holding (*Age*). For both male and females, the probability of holding a secondary job declines as individuals get older. Additional regressions were estimated aimed at testing for non-linear relationships between age and the probability of holding a secondary job (e.g. U-shaped, inverted U-shape, J-shaped and inverted J-shaped relationship). These additional regressions generated no evidence supporting a non-linear relationship with age. Even though this relationship is highly statistically significant ($p < 1$ per cent), the average marginal effects are small. For males, an additional year of age is associated with a 0.03 per cent lower probability of holding a secondary job. For females, the effect is slightly larger at 0.08 per cent. Even though these average marginal effects indicate that multiple job-holding is “downwards sloping” in age, the effect of age is tiny for both males and females. Furthermore, there is no real difference in the average age of males (39.5 years) and females (39.3 years). Given that the average marginal effects of age for both males and females are very small, and given there is virtually no difference in the average age of males or females in our sample, age is not a key factor in “explaining” the gender gap in multiple job-holding.

Education is also important in the understanding of multiple job-holding. There are three categories of educational attainment: “High-school or less (*OtherEduc*)”; Post-school level diploma or certificate (*DipCert*)” and “Degree of higher” (*Univ*). The average marginal

effects indicate that there is a positive relationship between education and the probability of holding a secondary job. For both male and females, these effects are highly statistical significant ($p < 1$ per cent) and large in magnitude. However, they are not the same in magnitude for males and females. The effect of having a degree or higher qualification (*Univ*) is larger for males at 5.6 per cent compared to females at 4.8 per cent. However, the effect of having a post-school level diploma or certificate (*OtherEduc*) is the opposite. The average marginal effect is 2.1 per cent for males and 2.5 per cent for females. Table 1 suggests that 66.2 per cent of males and 63.2 per cent of females have post-high school qualifications (*OtherEduc* + *Univ*). However, females have a sizeable advantage when it comes to having a degree or higher qualification—35.4 per cent for females compared to 28.6 per cent. To a certain extent gender differences in the effect and mean values of education work in opposing directions in the understanding of the gender gap in multiple job-holding. For example, while a larger share of females than males hold a degree or higher qualification, the effect of this factor is larger for males. The opposite is the case for post-school level diploma or certificate qualifications. Therefore, differences in education between males and females is, likely, not a key factor in explaining the gender gap in multiple job-holding.

Turning to the effects of the other demography variables, there is a difference in the average marginal effect of being married or cohabitation (*Married*) for males and females. For males, the effect is not statically significant ($p > 10$ per cent). For females, the effect is negative, suggesting that being married reduces the probability of having a secondary job. The average marginal effect for females is sizeable at -1.5 per cent. There is also a difference between males and females with respect to the number of dependent children in the household (*Nkids*). For males the effect of this factor is positive while for females it is negative. However, for males the average marginal effect is very small at 0.2 per cent per child and this effects is only statistically significant at the 5 per cent level. In the case of females the average marginal

effect is much larger (and in the opposite direction); -1.5 per additional child and statistically significant well below the 1 per cent level. Finally, there is also a difference between males and females in the effect of the number of adults in the household (*NAdults*). For males, the effect of this factor is positive but not statistically significant ($p > 10$ per cent). For females, the effect is positive and highly statistically significant ($p < 1$ per cent). The average marginal effect is 0.7 per cent for each additional adult. For females, having more adults in the household increases the probability of holding a secondary job. Table 1 suggests little gender difference in the average values of these three demographic variables. There are gender differences in the average marginal effects of these variables. It is, however, unlikely that the latter are large enough to be important factors in explaining the gender gap in multiple job-holding.

It is possible that demand factors are important determinants of multiple-job holding. Living in an urban area (*Urban*), for example, is associated with a lower probability of holding a secondary job for both males and females. The average marginal effect is larger (more negative) for males compared to females, with both effects being highly statistically significant ($p < 1$ per cent). The effect for males is -3.2 per cent and -2.6 per cent for females. With respect to state and territory of residence, most of the effects are not statistically significant, even at the generous 10 per cent level. Remembering that the excluded category is New South Wales (*NSW*), the effect that stands out is for the Northern Territory (*NT*). The average marginal effect associated with this territory is 5.8 per cent for males and 9.3 per cent for females. Both effects are statistically significant at the 1 per cent level, with the effect much larger for females. In order to interpret the impact of place of residence on the gender gap it must be remembered that there is not a large difference in how males and females are distributed across the different states and territories (see Table 1). It should also be noted that around a third of population lives in New South Wales while only 2 per cent of the population live in the Northern Territories. Taking these estimated effects and mean values into account, it is unlikely that

place of residence is a factor of much importance in explaining the gender gap in multiple job-holding.

In the literature review section of this paper (Section 2), six key hypotheses concerned with the determinants of multiple job-holding were outlined. The *low pay hypothesis* suggests that the individual hold a secondary job because the hourly pay they receive in their primary job is low. Our empirical analysis suggests that this low pay hypothesis may be rejected since the hourly wage is not an important statistical determinant of multiple job-holding for both males and females. The *hours constraint hypothesis* suggests that the individual holds a secondary job because the hours available for work in their primary job is low. Our statistical analysis suggests that the hours constraint hypothesis cannot be rejected since the hours worked is an important statistical determinant of multiple job-holding for both males and females. The *wealth hypothesis* suggests that the individual holds a secondary job because income of the household they are a part of is low. Our statistical analysis suggests that the wealth hypothesis can be rejected since non-labour household income is an important statistical determinant of multiple job-holding for both males and females.

The *job security hypothesis* suggests that an individual holds a secondary job because, in their primary job, job security or risk of termination is high. Our statistical analysis suggests that this hypothesis cannot be rejected if it is agreed that contract type is a good measure of job security. For both males and females, being employed in a “non-permanent contract” job is associated with a higher probability of holding a secondary job. The *demand-side differences hypothesis* suggests differences in the demand for labour by employers is a key determinant of multiple job-holding. If the demand for labour differences are adequately proxied by geographical differences, then our statistical analysis generates very limited support for this hypothesis for both males and females. The *socio-economic differences hypothesis* suggests

that education and demographic variables are important in the understanding of multiple job-holding. Our statistical analysis presents limited support for this hypothesis.

We believe that our analysis has made a contribution to the understanding of the determinants of multiple job-holding using almost two decades of Australian data. While this is worthwhile research it is, however, not the main focus of this paper. Our primary focus is on explaining the difference in multiple job-holding between males and females. More explicitly: Why is the rate of multiple job-holding higher for females compared to males in Australia? The regression analysis suggests that the single most important determinant of the probability of holding a secondary job is hours worked in the primary job. This relationship is considerably stronger (more negative) for females than for males. In addition, the number of hours worked in the primary job is much lower for females compared to males. Coupling these two pieces of information together suggests that the gender gap in hours worked is a key determinant of the gender gap in multiple job-holding. In order to explore this idea further, the gender gap in multiple job-holding was decomposed following a method devised independently by Oaxaca (1973) and Blinder (1973) and widely-used in labour economics. The detailed results of the decomposition are not reported here but may be found in the supplementary online appendix. The main findings is that the gender gap in hours explains almost all (90%) of the gender gap in multiple job-holding. The gender gap in other variables (wages, non-labour income, job security, education and demographic characteristics) contributes very little to understanding the gender gap in multiple job-holding. In other words, in the Australian context, the gender difference in multiple job-holding is a story about gender differences in hours worked in the primary job.

This key finding is dependent on the regression estimates reported in Table 2 and the average values of the variables reported in Table 1. To consider the robustness of these estimates Table 3 reports the average marginal effects based on more homogenous samples.

This was achieved by estimating probit regressions for sub-samples of individuals. In all cases, regressions were fit separately for males and females. The sub-samples are: (1) Self-employed; (2) Employees; (3) High school or less; (4) Diploma/Certificate; (5) Degree or higher; (6) Age 20-29; (7) Age 30-54; (8) Age 55-64; (9) Part-time and (10) Full-time. Given that the “baseline estimates” suggest that, *Hours1*, is the most important factor in understanding the gender gap, we are particularly interested in the robustness of the estimated average marginal effect of this variable. The full results of these robustness tests are available in the supplementary online appendix.

Turning first to *Hours1*, in all ten robustness tests summarised in Table 3, the average marginal effect for males ranges from -0.2 per cent to -0.5 per cent. These estimates compare well to the base-line estimate of -0.3 per cent. All are statistically significant below the 1 per cent level. The spread of estimates is slightly wider for females. The average marginal effects range for -0.1 per cent to 0.5 per cent. As was the case for males, all these effects are statistically significant below the 1 per cent. The arithmetic average of the ten average marginal effects shown in Table 3 is -0.3 per cent for males and -0.4 per cent for females. These robustness tests not only confirm to the importance of hours worked in the primary job but also that effect is larger (more negative) for females compared to males.

One issue relating to estimates discussed so far is that the results refer to the whole time period so, in a sense, are a weighted average of each individual period’s coefficient. In order words, the impact of any the variables on the probability of holding a secondary job is constrained to the same in each period. Put slightly differently, the specification does not allow these effects to be different over time. The period in our estimation is nearly two decades. This was a period of sizeable economic growth and labour market change in Australia (see Birch and Preston, 2020). It, therefore, seems unlikely that these effects will be same throughout the period. In order to partially address this issue we undertook two additional sets of estimations.

In the first instance a variant of Eq. (1) was estimated, where each explanatory factor was interacted with a linear time trend. Within this specification, the impact of any of the explanatory factors will be a combination of the coefficients of the so-called “main effect” and “interaction effect”. If the interaction is not statistically significant, the effect is the same in all periods. In the second case we estimated equation (1) for just wave 18 and for waves 16-18 pooled. These additional probit regressions (not reported here but reported in the supplementary online appendix) suggest that the main effects summarised in Table 2 are applicable to all the periods the data refer to. In the case of the time-trend interactions most were not statistically significant and were small in magnitude. The wave 18 and wave 16-18 results were also similar in magnitude and sign to those reported in Table 2.

Table 3: Robustness Analysis, Determinants of Multiple Job-Holding, Probit Regression Estimates, Various Sub-Samples; Males and Females; Australia; 2001 to 2018; Marginal Effects

(a) Males	<i>Wage1</i>	<i>Hours1</i>	<i>NonLabInc</i>	<i>SelfEmp</i>	<i>FixedCont</i>	<i>CasualCont</i>	<i>OtherCont</i>	<i>Age</i>	<i>DipCert</i>	<i>Univ</i>	<i>Married</i>	<i>NKids</i>	<i>NAdults</i>
Baseline	-0.0002***	-0.003***	-0.005***	0.053***	0.016***	0.014*	0.046**	-0.0003***	0.021***	0.056***	0.001	0.002**	0.001
1. Self-employed	0.0005**	-0.004***	-0.003**	na	na	na	na	-0.001*	0.024***	0.058***	0.026***	0.0007	0.010***
2. Employees	-0.0003***	-0.003***	-0.007***	--	0.015***	0.012***	0.045**	-0.0003***	0.021***	0.057***	-0.001	0.003**	0.001
3. High school or less	0.0002	-0.002***	-0.002**	0.041***	0.020***	0.010**	0.014	-0.001***	na	na	0.011***	0.001	0.0005
4. Diploma/Certificate	0.00001	-0.002***	-0.007***	0.052***	0.000	0.029***	0.065	-0.0004***	na	na	0.0001	0.004**	-0.0005
5. Degree or higher	-0.0006***	-0.005***	-0.006***	0.058***	0.025***	-0.004	0.078	0.0002	na	na	-0.013**	0.003	0.005***
6. Age 20-29	0.0001	-0.003***	-0.006***	0.053***	0.023***	0.009*	0.083*	0.001*	0.015***	0.059***	-0.010**	0.003	0.006***
7. Age 30-54	-0.0003***	-0.003***	-0.008***	0.049***	0.014***	0.014***	0.013	-0.0004**	0.025***	0.054***	0.008**	0.001	0.0006
8. Age 55-64	0.0003	-0.002***	0.0001	0.063***	0.016	0.051***	0.108	-0.004***	0.009	0.056***	0.008	0.008	-0.007**
9. Part-time	0.0013***	-0.002***	-0.014***	0.021	0.055***	-0.039***	-0.019	-0.002***	0.055***	0.184***	0.023**	0.022***	0.012***
10. Full-time	-0.0003***	-0.002***	-0.003***	0.036***	0.006*	0.028***	0.051**	-0.0002*	0.015**	0.034***	-0.002	0.001	-0.001
(b) Females	<i>Wage1</i>	<i>Hours1</i>	<i>NonLabInc</i>	<i>SelfEmp</i>	<i>FixedCont</i>	<i>CasualCont</i>	<i>OtherCont</i>	<i>Age</i>	<i>DipCert</i>	<i>Uinv</i>	<i>Married</i>	<i>NKids</i>	<i>NAdults</i>
Baseline	-0.0001	-0.004***	-0.006***	0.069***	0.028***	0.017***	0.078***	-0.0008	0.025***	0.048***	-0.015***	-0.012***	0.007***
1. Self-employed	-0.001**	-0.003***	-0.005**	na	na	na	na	-0.003***	0.052***	0.117***	-0.058***	-0.036***	0.008
2. Employees	0.0001	-0.004***	-0.006***	na	0.027***	0.014***	0.073**	-0.0008***	0.023***	0.042***	-0.015***	-0.011***	0.007***
3. High school or less	-0.0003*	-0.003***	-0.001	0.049***	0.014*	0.014***	0.046	-0.002***	na	na	-0.008*	-0.009***	0.002
4. Diploma/Certificate	0.0001	-0.003***	-0.006***	0.066***	0.026***	0.025***	0.076	0.0002	na	na	-0.021***	-0.004	0.009***
5. Degree or higher	0.00001	-0.005***	-0.012***	0.097***	0.034***	0.011*	0.090**	-0.0006***	na	na	-0.009*	-0.023***	0.010***
6. Age 20-29	-0.0003	-0.004***	-0.002**	0.152***	0.028***	0.023***	0.188**	0.00001	-0.007	0.032***	-0.012**	-0.056***	-0.005**
7. Age 30-54	0.0001	-0.004***	-0.010***	0.064***	0.026***	0.017***	0.049*	0.0008***	0.033***	0.050***	-0.014***	-0.008***	0.0001
8. Age 55-64	-0.001***	-0.003***	-0.003**	0.047***	0.030**	0.008	0.093	-0.006***	0.058***	0.079***	-0.029***	0.026**	0.008***
9. Part-time	0.0006***	-0.003***	-0.008***	0.062***	0.046***	0.013***	0.108***	-0.001***	0.040***	0.082***	-0.034***	-0.021***	0.007***
10. Full-time	-0.0006***	-0.001***	-0.003***	0.066***	0.016***	0.033***	0.038	-0.0005***	0.008**	0.019***	-0.004*	-0.009***	0.004***

Note:
(1) *** = p<1%; ** = p<5%; and * = p<10%.
(2) Baseline coefficients are from Table 2.
(3) Regression also includes dummy variables for urban residence and State and Territory of residence. Coefficients not shown.
(4) All estimates are weighted to represent population totals.

5 CONCLUSION

Motivated by a desire to understand why the multiple job-holding rate is higher for females than males, this paper uses data from the *Household, Income and Labour Dynamics in Australia* (HILDA) survey to empirically examine the determinants of multiple job-holding. Building on previous research, the analysis focuses on the role played by potential explanatory factors such as the hourly wage in the primary job, hours worked in the primary job, household wealth, job security, education, demographics and demand conditions. Probit regression points to a large, highly statistically significant, negative effect of hours on the probability of holding a secondary job. In other words, as hours in the primary job increase, the likelihood of holding a secondary job decreases. The estimates show that this effect is larger (more negative) for females. A decomposition analysis indicates around 90 per cent of the gender gap in multiple job-holding may be explained by the gender gap in hours worked in the primary job.

This finding begs the question: “Why is this hours-constraint more important for females?” The empirical analysis carried out in this paper has established the importance of this constraint. However, the analysis does not provide any evidence as to why it exists in the first place. It is possible that demand conditions, laws and regulations relating to working time are part of this explanation. If these factors result in females working “fewer hours” in their primary job, then our analysis suggests that changes to these factors may affect the probability of holding a secondary job. With belief that research aimed at exploring such mechanisms is needed. In fact, research of this type is especially needed given a recent announcement by the Australian Government to further review and reform industrial relations regulations. There may see a further weakening of worker rights and the reduction (if not elimination) of penalty rates and overtime pay premia.

It is important to recognise that our findings, and subsequent conclusions, are heavily based on the assumption that both wages and hours worked in the primary job are fixed. In

simple terms this means that individuals are unable to negotiate more hours and/or a higher hourly wage in order to increase their earnings in their primary job. This assumption effectively means that the prime determinant of multiple job-holding is financial. While we believe that this is likely the case for the majority of multiple job-holders in Australia we accept that it may not be the case for all. For some individuals the non-pecuniary benefits of multiple job-holding will be more important. It would also require a statistical approach that blurs the distinction between primary and secondary jobs and models both employment decisions jointly and would be very demanding in terms of information needed.

The HILDA survey, unfortunately, does not collect the type of information needed to implement such an empirical strategy. There are no questions that ask individuals directly why they hold (or do not hold) a secondary job. Likewise, there are no variables that indirectly measure these benefits. Empirically examining the role played by non-pecuniary benefits would require relaxing the hours constraint assumption. All that we know about the secondary job (or jobs if multiple secondary jobs are held) is total hours worked and total earnings received—there is no information about occupation, sector and industry of the secondary job(s). A key variable needed to jointly model the primary and secondary jobs employment decisions is “desired hours of work”. While HILDA collects such information, the question is asked about “total” hours worked, which is combination of hours worked in both the primary and secondary jobs. Clearly such a variable is of limited use since it is not specific to the primary job. Finally, no distinction may be made between “hours worked” and “hours paid for”. This makes it impossible to examine how paid and unpaid over-time impact on the decision to hold a secondary job.

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Supplementary Online Appendix.

The supplementary online appendix may be found at: [xxx \[url\]](#).