



Research Paper

# The impact of housing assistance on the employment and wage outcomes of labour market program participants

National Research Venture 1: Housing assistance and economic participation

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authored by

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# 1 INTRODUCTION

A central objective of the Australian Government's welfare reform program is to increase the rate of economic participation among Income Support Program recipients. One important component of this program has been the introduction—and increasing emphasis on—mutual obligation. Mutual obligation is an attempt to discourage passive receipt of welfare assistance, and instead encourage welfare recipients to “give something back” to the broader community (DEST, 2007). While the mutual obligation program encompasses a wide range of specific activities, the fundamental premise underlying the initiative is that participation in one of the specified activities will stimulate a sustained job search, improve an individual's chances of finding work and motivate individuals to accept suitable employment opportunities.

Following a series of pilot schemes, and the 1997 “Work for the Dole” legislation, Mutual Obligation Activities (MOAs) began in July 1998. A long-term unemployed individual—aged from 18 through to 24—had to participate in an additional approved activity to remain eligible for benefits. The program has subsequently expanded to include more categories of the unemployed and a larger number of MOAs. This Australian emphasis on mutual obligation for welfare recipients is consistent with similar reforms undertaken abroad. In the United States (US), for example, the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) requires recipients to work in order to receive welfare payments. Similarly, in 1998 Britain embarked on a welfare reform process that included a mutual obligation component for individuals in receipt of welfare.

Australian MOAs target individuals who have been unemployed for six months or more. More specifically, when the MOA program began on 1 July 1998, the Australian Government required all job seekers aged between 18 and 24 who had received Newstart Allowance or Youth Allowance for a continuous period of 6 months or more, to participate in an MOA in addition to searching for employment. In July 1999 the program was expanded to include job seekers aged between 25 and 34 who were in receipt of Newstart Allowance for a period of 12 months or more.<sup>1</sup> As shown in Table 1.1, the range of eligible activities includes employment and community participation, training and even relocation.

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<sup>1</sup> At this time, the range of eligible activities was also expanded.

**Table 1.1: Approved mutual obligation activities (MOAs) and participation requirements**

<i>Approved MOA</i>	<i>Participation requirement</i>
<b><i>Employment and community participation</i></b>	
Part-time paid work	A minimum of 130 hours in 13 fortnights
Work for the Dole (18–49 years)	150–390 hours, depending on age, within 6 months
Community work (18–49 years)	150–240 hours, depending on age, within 6 months
Community Development Employment Projects (CDEP)	Participation in the CDEP program meets mutual obligation requirements as long as participants remain eligible for the program and comply with CDEP work rules. For Indigenous remote communities.
Relocation to improve prospects	Movement to an area with higher employment prospects followed by 14 weeks of intensive job search
<b><i>Training</i></b>	
Language, literacy and numeracy training	6–20 hours per week for up to 400 hours
Part-time study in an approved course	100 hours plus participation in another activity if course is less than 100 hours. The unit of study must be completed.
Green Corps (ages 17 to 20)	Usually 5 days per week for 6 months
Defence Force Reserve (18–49 years)	150–240 hours, depending on age, in 6 months
New Apprenticeship Access Program	The length of the course followed by intensive job search for a minimum of 17 weeks
<b><i>Employment assistance</i></b>	
Youth Pathways	At least 6 months, varying hours
Job Placement, Employment and Training (15–21 years)	At least 6 months, varying hours

Source: Centrelink (2007).

The selection of a specific MOA activity is, in principle, left to the discretion of the individual MOA participant. The choice of MOA begins with a mandatory interview with a case officer in which the range of eligible activities is introduced to the participant. The participant indicates their preference, and the officer in charge of the interview will assist, where appropriate, in planning and organising the activity.<sup>2</sup>

The MOA initiative is just one component of a broad range of policies aimed at improving labour market participation and promoting sustainable employment outcomes. One policy example is Housing Assistance (HA). The 2003 Commonwealth-State Housing Agreement requires state and territory governments to reform rent-setting formulae in ways consistent with the promotion of economic participation among public housing tenants. Furthermore, the 2003 Agreement explicitly emphasises linkages between HA and “other relevant Commonwealth and State programs, including those relating to income support, health and community services” (Commonwealth of Australia, 2003: 2, 3).

<sup>2</sup> The participant might be eligible for a reduced MOA load if they are judged to be “partially capable of work”, while language and numeracy programs may be compulsory “in some cases”. Arguably, assistance programs are more focused on obtaining successful employment outcomes than other categories.

A number of US studies purport to show that welfare-to-work programs are more successful if the recipients also receive HA.<sup>3</sup> It is thought that HA promotes more sustainable employment outcomes among welfare-to-work-participants because:

- they have more secure and stable housing arrangements, which makes the search for employment opportunities more productive by, for example, providing an address for correspondence, because security of tenure in public housing can aid transition into employment by making it easier for participants to take advantage of programs designed to help them prepare for and hold a job (Van Ryzin, Kaestner & Main, 2003);
- they help the unemployed to relocate closer to employment opportunities where the housing cost burden is more onerous. Furthermore, housing subsidies can improve the ability of low-income workers to keep jobs by freeing up resources that can be used to meet work-related expenses such as childcare and transportation (Verma & Hendra, 2003)<sup>4</sup>; and
- if housing subsidies depress work effort, welfare reforms of the MOA kind have a potentially larger impact among this group, because they counteract these disincentive effects (Verma, Riccio and Azurdia, 2003).

This paper uses a panel of the long-term unemployed to test this hypothesis in Australia. The eligibility of the panel sample for HA programs is identified, with public housing tenants defined as renters whose landlord is a state housing authority. The other major HA program is Commonwealth Rent Assistance (CRA). Eligibility for CRA is determined using a simulation model of the Australian tax benefit system. Our analysis of the first four waves of the Household Income and Labour Dynamics in Australia (HILDA) survey suggests that an MOA participant receiving housing subsidies is no more likely to obtain better employment and wage outcomes than other MOA participants. Further, there is some evidence that outcomes for MOA participants undertaking employment and community participation programs and training programs are inferior to those MOA participants undertaking employment assistance programs. Importantly, this is one aspect of our study that is consistent with evidence from abroad, and it offers some important policy lessons (Miller, 1998; Riccio & Orenstein, 2001).

The remainder of this paper is structured as follows. The previous literature examining the impact of HA on the employment and earning outcomes of labour market participants is summarised in Section 2. We pay particular attention to US studies that compare the work outcomes of welfare reforms across the two subgroups: those receiving housing subsidies and those not receiving housing subsidies. The data and methodology are described in Section 3 and the empirical results are presented and interpreted in Section 4. Finally, Section 5 concludes with policy implications arising from the research and suggests areas for future work.

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<sup>3</sup> Some US studies examine exits from time-limited welfare benefit programs, rather than the effectiveness of MOA-type programs.

<sup>4</sup> Although one could equally argue that the income effects allow recipients to put in less work effort without such a large sacrifice of expenditure on other items.

## 2 PREVIOUS STUDIES

The recent spate of US studies that examine the employment impact of HA has been motivated by policy reforms that emphasise improvements in employment outcomes. As noted in our introduction, under the 1996 PRWORA, receipt of welfare assistance is conditional upon commitment to ongoing work requirements. This work commitment required 50 per cent of welfare recipient families to be working, or in work preparation, by 2002. Another central feature of the PRWORA is a 60-month lifetime limit on welfare receipt. Such time limits may have two effects. First, a lifetime limit creates incentive for individuals to exit welfare as quickly as possible, especially if they expect to be recipients later in life. Secondly, as Blank explains, "... once time limits are imposed, ex-recipients can no longer use cash assistance as a back-up to work" (Blank, 2002: 1113).

While the PRWORA is a federal initiative, welfare assistance is administered by individual states. A subsidiary program known as Temporary Assistance for Needy Families (TANF) is a block grant that is passed directly to the states, thus allowing them to adjust policy details in accordance with circumstances unique to their own constituents. Time limits, for example, can be shortened or even extended beyond the standard 60-month lifetime limit at the state's own expense. The individual states measure their level of welfare dependency via reference to "caseload", which is the total number of welfare-dependent individuals (cases). Welfare-to-work programs have been introduced in nearly all states, and between 1994 and 1999, Blank reports a 17.9 per cent increase in the caseload participation of job or work activities (Blank, 2002: 1111).<sup>5</sup> Though the specific nature of these programs varies widely, Blank explains that their intention is to improve work incentives, improve employment skills, and create an understanding that sustained job search is expected (Blank, 2002: 1112).

Time limits are not the only constraint on welfare recipients. Sanctions have also been implemented as a policing mechanism for those who do not fulfil precise work requirements. The imposed sanction is an effective reduction in welfare benefits. Sanctions are another policy that operate with the discretion of the states, and the precise level of reduction varies from one state to another (Blank, 2002: 1112). Time limits and sanctions are related, and are consistent with the overall theme of the PRWORA to mobilise welfare recipients into the workplace. However, these two policy measures are not identical. Effective sanctions force the individual to participate in activities that may help them obtain employment, while time limits are simply restrictions on the amount of support available to any one individual.

Analysis of the PRWORA welfare initiative has led to investigations of related support policies, such as HA. As outlined by Van Ryzin et al. (2003), government-directed housing policies and welfare programs began as separate and distinct policy initiatives. Since their implementation, it has been shown that recipients of one form of assistance are often the recipient of the other. In contrast to the extensive revisions of welfare policy inherent in the PRWORA, HA policy in the US has not been altered significantly in recent times. The three forms of HA used in the US are: 1) publicly owned and subsidised building projects (public housing); 2) vouchers distributed to the tenants of private residencies in order to subsidise their rent; and 3) private subsidised projects, which are privately owned and subsidised housing units reserved

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<sup>5</sup> "Since the passage of the PRWORA, states are mandating participation in job search assistance and work preparation among a much higher share of their caseload" (Blank, 2002: 1111).

for low-income renters.<sup>6</sup> As explained by Shroder (2002), most academic research divides HA into just two categories: vouchers (which is tenant-driven HA) and public housing (which includes both forms of the project-based HA).

Identifying and understanding any causal relationship between HA and employment outcomes is not without difficulty. The characteristics of those who receive HA appear to be different from those who do not obtain such assistance. Studies using data from welfare reform experiments have shown that families on welfare who receive HA are likely to have more children and longer welfare spells, and are more likely to be members of a minority group and less likely to be employed, than families not receiving HA (Blank & Riccio, 2001; Newman & Harkness, 1997). Those receiving HA are likely to be some of the most disadvantaged in society and it is important to control for all the characteristics of those receiving HA in an empirical study. This issue is discussed further in Section 3.

There is a reasonably large literature that has investigated the impact of HA on employment outcomes.<sup>7</sup> Many US studies have used experimental approaches to examine the impact of HA and welfare reform on employment outcomes benefiting from random assignments (Lee et al., 2003; Miller, 1998; Miller et al., 1997; Riccio and Orenstein, 2003; Verma et al, 2003). Random assignment ensures that both the program or treatment group and the control group are on average alike in all respects. The US Department of Health and Human Services granted waivers to some US states to adopt welfare policy changes, but only on the condition that those states conducted random-assignment evaluations of any changes. Particular counties or welfare offices within these US states could be exempt from the welfare policy changes. Within these counties or welfare office zones, some welfare-receiving families were randomly subjected to the new welfare policies. This created a treatment group. Families on welfare that were not subjected to the new welfare policies formed the control group. These studies, discussed below, found that HA recipients had more favourable outcomes than welfare recipients not receiving HA.

Lee et al. (2003) examined the impact of welfare reform on HA recipients using data from experimental welfare reform evaluations in Indiana and Delaware. In Indiana, welfare recipients in the treatment group were required to participate in work activities or job search activities if they were unable to find work. Sanctions were imposed for non-compliance and a 24-month limit was imposed, during which participation in work activities must occur. Similar welfare policies were applied to the treatment group in Delaware. Tests were then conducted to examine whether there were differences in the outcomes for the control and treatment groups. The study found that welfare reforms had similar effects on the earnings and welfare benefits of HA recipients and non-recipients. However, in those instances where HA did have a differential impact, it was a superior employment outcome to those not in receipt of HA.

Verma et al. (2003) used random assignment evaluations of two welfare reform initiatives in the states of Minnesota and Connecticut. The Minnesota's Family Investment Program (MFIP) provided financial incentives to welfare recipients who went to work and required participation of longer-term welfare recipients in certain types of employment and training programs. Connecticut's Jobs First Program is

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<sup>6</sup> Categories 2 and 3 are not necessarily mutually exclusive.

<sup>7</sup> See Shroder (2002) for a review. In summary, most studies find that HA decreases earnings and employment. Some, however, find the opposite effect. Most estimated effects are small and hypothesis tests often fail to reject the hypothesis of no effect at standard levels of significance. Further, most suffer from methodological or data problems or provide estimates for small, atypical subsets of assisted households.

another welfare reform program that incorporates time limits, financial incentives and a work requirement. Welfare recipients were randomly assigned across existing welfare programs (control group) and reform programs (treatment groups) and the groups were tracked over time, to gauge short- and longer-term effects. Comparison of welfare recipients who received HA with those who did not receive HA suggests that the former were not harder to employ. In fact, employment outcomes were superior for those receiving HA.<sup>8</sup> Similar findings from Minnesota were confirmed by Miller et al. (1997) and Miller (1998) in tracking the outcomes of individuals for the first 18 months after they entered the study, focusing primarily on MFIP's effects on single-parent families.

Riccio and Orenstein (2001) used data from a random assignment of a welfare program in Atlanta. The sample included single-parent welfare recipients, and a treatment group consisted of some randomly assigned welfare recipients being required to look for work, or prepare for work, as a condition of receiving full benefits. Outcomes were compared for the treatment and control groups over time, with the authors also controlling for other socio-economic characteristics. The findings indicated that a public housing tenants' probability of being employed over 3 years increases by 10 percentage points if exposed to sanctions for non-participation in education or labour market preparation activities.<sup>9</sup> The effects of these mandatory activities were, however, more marginal if the individual was receiving subsidised private housing (Riccio & Orenstein, 2001: 94).

Sanctions had no effect on the employment outcomes of those individuals who were not in receipt of HA. The authors offered two tentative arguments as to the cause of this disparity in results. First, they argued that those living in public housing tend to be a more disadvantaged group, and hence are more likely to benefit from program services and the participation mandate (Riccio & Orenstein, 2001: 82.) Their second argument, similar to the first, was that welfare-to-work programs might generate a more intensive treatment for those in public housing. Furthermore, Riccio and Orenstein claimed that this second argument is supported by their survey data (2001: 83). In any event, the studies of Miller (1998) and Riccio and Orenstein (2001) do offer some preliminary evidence that welfare activities with some mandatory component might combine with HA to generate a superior employment result for participants.

Other studies have examined the impact of HA on employment and earnings outcomes of welfare recipients in the absence of changes to welfare policies. They were unable to make use of random assignments and commonly apply logistic regression modelling to samples drawn from a number of US states. Some created their own control groups by identifying non-program participants who had similar characteristics to program participants (Harkness & Newman, 2006; Susin, 2005). These studies then compared employment and earnings outcomes in subsequent years. The two studies also provided evidence that employment outcomes for welfare recipients receiving HA are at least as good as for those welfare recipients who do not.

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<sup>8</sup> The US study conducted by Verma et al. (2003) suggested that: "The impacts of welfare reform on employment and earnings were consistently larger for recipients with HA than for those with no assistance".

<sup>9</sup> The differences between the two groups were significant, as the authors summarise: "Those assigned to the control group did not have access to the assistance provided by either of these welfare-to-work strategies, although they were free to seek and take part in any other program in the community for which they were eligible. However, they were not required to look for work or prepare for work as a condition of receiving their full welfare benefits" (Riccio & Orenstein, 2001: 69).

Results from other studies of this type were less conclusive. They found that HA had little impact, either way, on the employment and earnings of welfare recipients. Van Ryzin et al. (2003) examined the effects of HA on the transition from welfare to work in New York City. The authors used data from a survey of female welfare recipients, augmented with housing program, census and crime rate data. Outcomes were compared across two waves of the survey. The first was carried out in 1996 and a follow-up survey was conducted in 1997. To control for the somewhat more disadvantaged characteristics of those in subsidised housing, logistic regressions explaining welfare receipt and employment participation at follow-up interview were estimated. The study found little evidence that HA had any impact, either enabling or hindering, on welfare-to-work programs in New York City, suggesting that synergies between housing subsidies and welfare reform may not exist.

Corcoran and Heflin (2003) examined how current and former welfare recipients receiving HA differed from those not receiving assistance in terms of welfare history, potential barriers to employment, and employment and welfare exit outcomes. The sample consisted of 753 mothers who received cash assistance and were single parents in Michigan. Multivariate analysis was conducted by estimating logit and ordinary least squares (OLS) models that related various measures of employment and welfare outcomes in the second wave of data to individual characteristics and their housing situation. They found that women in public housing faced slightly more barriers to employment than their unassisted counterparts, but this difference was only marginally statistically significant. The study emphasised the importance of taking into account low human capital, discrimination, physical and mental health problems, alcohol and drug dependence and domestic violence as factors shaping the transition from welfare to work.

Another group of studies conducted after welfare reform examined the outcomes of welfare leavers with and without HA. These studies used relatively simple techniques to compare outcomes for HA recipients and non-recipients once they had left welfare. Verma and Hendra (2003) compared the outcomes of welfare leavers receiving HA with those of non-HA recipients for Los Angeles county. The study was motivated by the idea that those receiving HA at the time of exit are less vulnerable to financial and housing hardship than their unassisted counterparts. HA may have positive employment effects because it improves the ability of low-income workers to keep jobs by freeing up resources that can be used to meet work-related expenses such as child care and transportation. Tenant-based assistance provides an additional potential benefit because it is portable and can in principle facilitate mobility to access employment opportunity. On the other hand, HA is means-tested and therefore contributes to poverty and unemployment traps that could blunt work incentives. The study benefited from the use of administrative records that formed a panel data set that allowed assisted and unassisted welfare leavers to be profiled after exit. The authors found that leavers with tenant-based assistance were somewhat more likely to have positive employment outcomes.

Nagle (2003) also compared welfare leavers receiving HA with those not receiving it, in Massachusetts. The study used survey data and compared outcomes for the two groups between 1999 and 2000. The study found that HA recipients were generally more disadvantaged, had more children, and were more likely to be single parents, older, a member of a minority group and have poor English language skills. However, they were somewhat more likely to be employed but with a lower average hourly wage. They also spent more time on welfare than non-assisted respondents. Friedman, Meschede and Hayes (2003) followed the path of families moving from welfare to work, and from homelessness to shelter to their own residence. HA, in the form of a housing subsidy, was essential in this process.

This paper is the first Australian study to consider the combined effect of HA and the MOA program on employment outcomes. There has been, however, one significant examination of the effect of MOA on employment outcomes in Australia. The impact of the threat of MOAs has been studied in the Australian context by Richardson (2002). Richardson's detailed study used a proportional hazard model to examine the impact of MOA on long-term unemployed and their unemployment spells. The study suggested that while MOA's have some marginal impact in forcing individuals out of welfare, the MOA program did not affect the average duration for which individuals were actually in receipt of welfare payments.<sup>10</sup>

In summary, the literature, in general, offers empirical support for a positive relationship between HA and employment outcomes among welfare recipients, at least in parts of the US. The work that has examined the combined effect of HA and welfare programs that incorporate some obligatory activity also suggests that HA does improve the employment outcomes for those in receipt of such assistance. The single study of the Australian version of obligatory welfare initiative, the MOA program, suggests that it has a limited impact on movement out of welfare. The current study builds on the existing literature by examining the combined impact of MOA and HA on employment outcomes, and compares it with the effect of MOA in isolation.

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<sup>10</sup> "The analysis finds some evidence that the threat of additional activity requirements increases the probability of exit immediately prior to those requirements being imposed. However, this effect was not sufficient to impact significantly on the average duration on benefits of individuals in the treated group." (Richardson, 2002: 407)

### 3 DATA AND METHODOLOGY

#### 3.1 Data and sample design

This study used the HILDA dataset. HILDA is a longitudinal (panel) dataset consisting of four waves of data covering the period 2001 to 2004.<sup>11</sup> The dataset was ideal for this analysis as it was possible to identify whether individuals had been required by Centrelink or Job Network to undertake a MOA. Furthermore, HILDA includes the employment and earnings outcomes of people undertaking MOAs in subsequent years. The dataset also includes a number of relevant demographic, geographic, human capital and labour market history variables.<sup>12</sup> Our sample was restricted to all MOA participants of working age. Working age persons are non-dependent persons aged 15–64 during waves 1–4. MOA participants are persons who have participated in a MOA in wave 1, 2 3 or 4, or who have been required to participate in a MOA before wave 1.

For MOA participants, we were able to observe their employment outcomes in all waves including wave 4. If an individual was a MOA participant in wave 4, it indicated that the individual was unemployed in wave 4, and vice versa. Hence, wave 4 MOA status was synonymous with being unemployed in wave 4. Because our dependent variable included employment status in wave 4, our sample included MOA participants up to wave 3 only. A person was defined as a HA recipient if the person received CRA or was in public housing at any point in waves 1 to 4.

Table 3.1 provides a breakdown of the sample by receipt of HA. The sample included 428 MOA participants and the table shows that 39 per cent of this sample received HA. Of those receiving HA, 66 per cent received it in the form of CRA, 24 per cent received public housing assistance, and the remainder received both at different points in the time frame.

**Table 3.1: MOA participants by housing assistance (HA) status**

<i>HA status</i>	<i>Frequency</i>	<i>%</i>
<b>HA</b>		
CRA only	111	25.9
Public housing only	40	9.3
CRA and public housing	16	3.7
Total	167	38.9
<b>No HA</b>	261	61.0
<b>Total</b>	428	100.0

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

Table 3.2 lists the range of MOA programs undertaken by HA participants and non-HA participants. It is important to note that some MOA participants had undertaken more

<sup>11</sup> A systematic review entitled *Housing Assistance and Non-Shelter Outcomes* completed in 2003 (Bridge et al., 2003) concluded that relationships between HA and economic participation are complex, and typically involve a range of mediating variables. Robust research methods are then critical to identifying and measuring the key relationships. The review identified panel databases as a potentially important resource facilitating identification and measurement of the relationship between HA and economic participation outcomes.

<sup>12</sup> Our selection of control variables is consistent with other studies in the literature, both a small and large set of control variables proposed by Van Ryzin et al. (2003) and also the study by Corcoran and Heflin (2003).

than one program – that is, the programs are not mutually exclusive. The table groups all MOA participants into the three broad categories of MOA activities. The largest category of program is *Assistance* – these activities are more focused on employment outcomes than are either *Employment and Community Participation* or *Training*. As noted in Section 1, the selection of a specific MOA activity is left to individual MOA participants, although a planning officer will provide some guidance and assistance. Over three-quarters of the sample had undertaken Assistance MOA activities, of which ‘Job Search Training’ and ‘Intensive Assistance’ were the most common. Tests were conducted to examine whether there were statistically significant differences between the MOA programs undertaken by those receiving HA versus those who don’t receive HA. The results revealed that Job Search Training was more likely to be undertaken by MOA participants not receiving HA. Other MOAs, such as ‘Work for the Dole’ and ‘Part-time Study’, were more likely to be undertaken by participants receiving HA. While participants receiving HA might have had reasons for favouring these programs, it is also possible that they were more likely to be assigned these programs by case officers.

**Table 3.2: MOA programs by HA status**

<i>MOA program</i>	<i>HA</i>	<i>No HA</i>
<b><i>Employment and Community Participation</i></b>		
Part-time paid work	5.4	6.9
Work for the Dole	25.7	13.0*
Community Development Employment projects	0.0	1.9 <sup>+</sup>
Community work	1.2	0.0
Green Corps	0.6	0.8
Relocation	2.4	0.8
Voluntary unpaid work	13.2	12.3
Total	40.7	19.5 <sup>+</sup>
<b><i>Training</i></b>		
Part-time study	19.2	12.3 <sup>#</sup>
Defence Force Reserve	1.2	0.8
New Apprenticeship Access Program	1.2	1.5
Approved literacy/numeracy training	3.6	3.8
Advanced English for Migrants	0.6	1.1
Total	24.6	17.2 <sup>#</sup>
<b><i>Assistance</i></b>		
Job Search Training	43.7	52.5 <sup>#</sup>
Job Placement Employment and Training	7.8	5.0
Intensive Assistance	50.9	47.1
Job Pathway Program	6.6	3.8
Total	77.8	77.8

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

\* Statistically significantly different from HA participants at 1% level. <sup>+</sup> Statistically significantly different from HA participants at 5% level. <sup>#</sup> Statistically significantly different from HA participants at 10% level. If there is no asterisk, the difference between HA and non-HA participants is not statistically significant at the 1%, 5% or 10% level.

We used a quasi-experimental study design that treated the sample of MOA participants as if they had been randomly assigned to two groups: participants (the

‘treatment’ group) and non-participants (the ‘control’ group) in HA programs. While HA status might have employment effects among MOA participants, inferior employment outcomes will often lead to eligibility for HA, thereby undermining the credibility of this study design. The threat that this poses is tempered by the observation that our sample was drawn exclusively from the pool of long-term unemployed (unemployed for 6 months or more before undertaking MOA). The sample then comprised individuals who were equally likely to be eligible for HA by virtue of their labour market status.

As a result we might expect the treatment and control groups to be indistinguishable with respect to characteristics shaping employment outcomes, as would be expected with a randomised experimental study design. This expectation is investigated in Table 3.3. We found that differences in human capital attributes such as qualifications, age (proxying experience) and health were statistically insignificant. Further confirmation was the insignificant difference in the weekly earnings of those who found employment, and the location of the treatment and control groups.

On the other hand, there were significant differences in gender and ethnicity, with females and the Indigenous more prominent among the treatment group receiving HA. This signals a potential problem for the study design. It might indicate that those expecting low rates of employment in the future are more likely to enrol in HA programs. In fact, Table 3.3 shows that those enrolled in HA programs have spent a smaller percentage of time in paid work (since leaving full-time education), and among those spending time out of the labour force, a higher proportion of the HA group’s main activity was home duties/child care. Gender, ethnicity and the presence of children are all observables, and can therefore be included as controls in a panel regression model of employment outcomes. But there may be other unobservable/unmeasured variables (e.g. motivation) correlated with HA status and employment outcomes that can undermine the study design. We propose strategies to deal with this below.

**Table 3.3: Wave 4 socio-demographic characteristic variables by HA status, percentage by column**

<i>Characteristics</i>		<i>HA (%)</i>	<i>No HA (%)</i>	<i>Total (%)</i>
Gender	Male	53.9	68.2*	62.6
	Female	46.1	31.8*	37.4
Age group	15–19 years	6.6	6.5	6.5
	20–34 years	44.3	43.7	43.9
	35 years or older	49.1	49.8	49.5
Country of birth	Australian non-Indigenous	71.3	76.2	74.3
	Australian Indigenous	7.2	3.1 <sup>+</sup>	4.7
	Main English-speaking <sup>a</sup>	6.6	9.2	8.2
	Other	15.0	11.5	12.9
Income unit type	Couple with dependent children	12.6	17.6	15.7
	Couple with no dependent children	19.8	24.9	22.9
	Sole parent	6.0	3.4	4.4
	Single	61.7	54.0	57.0
No. dependent children	0	81.4	78.9	79.9
	1	9.6	8.8	9.1
	2	3.0	5.7	4.7
	3	3.0	4.2	3.7

<i>Characteristics</i>		<i>HA (%)</i>	<i>No HA (%)</i>	<i>Total (%)</i>
	4 or more	3.0	2.3	2.6
Region <sup>b</sup>	Major city	23.4	27.2	55.4
	Inner regional	18.0	15.7	25.7
	Outer regional, remote or very remote	3.0	1.9	18.9
Disability/long-term health condition		37.7	30.3	33.2
Labour force status (% by column)	Employed full-time	26.9	46.0*	38.6
	Employed part-time	21.6	21.5	21.5
	Unemployed	21.6	13.0 <sup>+</sup>	16.4
	NILF	29.9	19.5 <sup>+</sup>	23.6
Highest qualification (% by column)	Bachelor degree or higher	6.0	8.4	7.5
	Other post-school qualifications	32.9	32.6	32.7
	Year 12 or under	61.1	59.0	59.8
Main activity while NILF (% of persons ever NILF)	Home duties/childcare	19.2	11.9 <sup>+</sup>	31.7
	Study (school, TAFE or university)	16.2	15.7	34.2
	Own illness or injury	7.8	4.6	12.6
	Travelling/holiday/leisure	1.8	7.3*	11.1
Labour market history (% of time since leaving full-time education)	In paid work	52.8	63.0*	58.7
	Unemployed	20.2	16.8	18.3
	NILF	18.6	11.0*	14.2
Current weekly wage (\$, wage earners in wave 4)		555	562	560
Sample (number)		167	261	428

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

NILF: Not in labour force.

a. Main English-speaking countries are New Zealand, United Kingdom (UK), Ireland, Canada, US and South Africa.

b. Regions are classified by remoteness area, where each remoteness area represents an aggregation of non-contiguous geographical areas that share common characteristics of remoteness based on the Accessibility/Remoteness Index of Australia (ARIA). Major cities are collection districts with an ARIA index of 0 to 0.2, and inner regions are collection districts with an average ARIA index greater than 0.2 and less than or equal to 2.4. For further details, refer to Australian Bureau of Statistics (2001).

\* Statistically significantly different from HA participants at 1% level. + Statistically significantly different from HA participants at 5% level. If there is no asterisk, the difference between HA and non-HA participants is not statistically significant at the 1%, 5% or 10% level.

Table 3.4 shows data on changes in the characteristics of HA recipients and non-recipients between their first and most recent observations.<sup>13</sup> We conducted this exercise for two reasons. First, the exercise enabled us to observe whether the employment and wage gains of the two groups were different. Second, we were able to detect whether there had been changes in the composition of the two groups over time that would differentially affect their ability to participate in the labour force. The research approach is more robust if the compositions of treatment and comparison groups do not diverge over the time interval studied (Meyer, 1995).

<sup>13</sup> Control variables such as gender are of course omitted because they do not change over time. The first observation refers to the first time the individual was observed in the dataset since undertaking a MOA. The most recent observation refers to the last time the individual was observed in the dataset. For example, suppose an individual was interviewed in waves 2, 3 and 4, but was observed to be undertaking a MOA for the first time in wave 3. The first observation would be from wave 3; the most recent observation would be from wave 4.

The mean time interval between the first and last observation was 2.3 years and 2.0 years for the HA and non-HA groups respectively. The difference in mean time intervals between the two groups is not statistically significant at the 1, 5 and 10 per cent levels. Differential change in characteristics over time are therefore unlikely to be due to differences in the two groups' time intervals between first and last observations.

Column (1) in Table 3.4 presents average estimates from the first observation of each individual in the HA group. Column (2) presents estimates from the last observation of each individual in the HA group. The test of within-group differences in column (3) is a test of whether (2) differs significantly from (1) – that is, whether there were any changes in characteristics between the first and last observations of the HA group. Similarly, columns (4) and (5) present estimates from the first and last observations of each individual in the non-HA group. The test of within-group differences for the non-HA group in column (6) is a test of whether there were any changes in the personal characteristics of the non-HA group over time.

In column (7) of Table 3.4, the test is whether  $[(2) - (1)]$ , which is the change in the personal characteristics of the HA group, is significantly different from  $[(5) - (4)]$ , which is the change in the personal characteristics of the non-HA group, that is, whether the difference of differences (or difference-in-differences) are significant. Overall, the results suggest that the employment and wage gains made by HA recipients were not significantly different from the gains made by non-HA recipients. The table shows that only three variables exhibited significant difference-in-differences. The HA group were likely to have higher numbers of children aged 0 to 4 over time than the non-HA group, suggesting that the former would make smaller employment gains over time. This is confirmed by the difference-in-difference comparisons for years in paid work and years in unemployment (see column 7), where the HA group compare unfavourably. We tried to isolate the effects of these changes in the composition of the two groups over time by inserting socio-demographic and human capital characteristics in Table 3.4 as controls in regression models.

Table 3.4: Changes in the composition of HA/treatment and non-HA/comparison groups

	HA			No HA			Test of difference-in-differences (sig.) (7)
	First observation (1)	Most recent observation (2)	Test of difference within group (sig.) (3)	First observation (4)	Most recent observation (5)	Test of difference within group (sig.) (6)	
<b>Employment rate (%)<sup>a</sup></b>	28.7	48.5	0.000*	45.2	67.4	0.000*	0.646
<b>Average current weekly wage<sup>b</sup> (\$)</b>	84.1	239.2	0.000*	204.5	355.3	0.000*	0.919
<b>Partnered (%)</b>	28.1	32.3	0.195	43.7	42.5	0.613	0.176
<b>Average number of children</b>							
Aged 0–4 years	0.066	0.132	0.034 <sup>+</sup>	0.172	0.161	0.632	0.048 <sup>+</sup>
Aged 5–9 years	0.090	0.096	0.828	0.123	0.123	1.000	0.864
<b>Disabled (%)</b>	30.5	37.7	0.109	25.3	30.3	0.102	0.683
<b>Region (%)</b>							
Major city	24.6	23.4	0.656	28.0	27.2	0.746	0.904
Inner regional	16.8	18.0	0.656	16.9	15.7	0.514	0.465
Outer, remote or very remote	1.8	3.0	0.319	0.8	1.9	0.083#	0.972
<b>Highest qualification (%)</b>							
Bachelor degree or higher	6.0	6.0	0.158	7.7	8.4	0.158	0.158
Other post-school qualification	36.5	32.9	0.158	35.2	32.6	0.145	0.771
Year 12 or below	57.5	61.1	0.000*	57.1	59.0	0.318	0.598
<b>Labour force experience since leaving full-time education</b>							
Average years in paid work	10.3	11.4	0.000*	13.0	14.7	0.000*	0.050 <sup>+</sup>
Average years unemployed	2.9	3.8	0.000*	2.4	2.9	0.000*	0.001*
Average years NILF	3.7	4.2	0.000*	1.9	2.4	0.000*	0.475
<b>Sample (number)</b>		167			261		

Source: Confidentialised unit records from the HILDA Survey waves

Notes: a. Under columns 1-2, the percentages are percentages of the HA/treatment group. Under columns, 4-5, the percentages are percentages of the non-HA/comparison group. b. Current weekly wage in this table has been measured with respect to all sample members. For each individual in the sample, we require a first and most recent wage observation. For some individuals, the first observation may be equal to a zero wage while the most recent observation may be equal to a positive wage if the individual gets employed between the first and most recent time period, or vice versa. Hence, the wage levels are lower in Table 3.4 than in Table 3.3.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there is no asterisk, the test statistic is not significant at the 1%, 5% or 10% level.

## 3.2 Methodology

This paper examines the impact of HA on both employment and earnings outcomes of MOA participants. As noted earlier, a difficulty of modelling HA and employment or wage outcomes is omitted variables that can result in an endogeneity problem, where researchers confound the effect of omitted variables, and falsely attribute their impact on employment or wage outcomes to HA. We estimate three different statistical models. Two of these models are designed to address the endogeneity problem. See the appendix for detailed definitions of the variables used in the models.

Initially, employment outcomes and wages are examined using a cross-section model taking the following form:

$$Y_i = \alpha + \lambda M_i + \beta HA_i + \phi X_i + \varepsilon_i \quad (1)$$

where  $i$  indexes individuals,  $Y$  measures either employment or weekly wages in wave 4,  $M$  indexes the type of MOA activity undertaken,  $HA$  takes the value 1 if the recipient received HA at any point in waves 1 to 4, and 0 otherwise. Finally,  $X$  is a vector of socio-demographic controls.

The model is cross-sectional in nature because all the employment or wage outcomes are measured in one time period (wave 4). In order to address the endogeneity problem, we adopt two more sophisticated strategies – an instrumental variable model and a difference-in-difference model.

The instrumental variable model is a two-stage model. In the first stage, we estimate a model of the receipt of HA, where HA status is ‘identified’ by the inclusion of instrumental variables that influence the probability of HA receipt but are uncorrelated to employment or wage outcomes. In the second stage, employment or wage outcomes are estimated as a function of *predicted* HA status from the first stage and a vector of socio-demographic variables. The instrumental variable two-stage model takes the following form:

$$HA_i = \alpha + \phi X_i + \rho IV_i + \mu_i \quad (2a)$$

$$Y_i = \alpha + \lambda M_i + \beta \hat{HA}_i + \phi X_i + \varepsilon_i \quad (2b)$$

where in equation (2a)  $HA$  takes the value 1 if the individual has received HA between waves 1 to 4, zero otherwise and  $IV$  is a vector of instrumental variables that potentially influence HA but not employment or wage outcomes. In equation (2b),  $HA$  takes the value 1 if the recipient is predicted to have received HA using equation (2a), and 0 otherwise.

For the vector  $IV$  we experiment with variables such as number of siblings, whether parents ever divorced or separated, whether one or both parents had died by the time each individual was aged 14 and the children’s gender mix. These variables are chosen because they are likely to influence the chances of receiving housing assistance, given that they help to determine home ownership status, but do not directly influence employment or wage outcomes (see, for example, Whelan, 2004; Whelan & Ong, forthcoming). For example, an individual with a large number of siblings will likely receive a smaller portion of his/her parents’ wealth than an individual with no siblings. Inheritance is a potentially important influence on the likelihood of achieving home ownership. Holding all other factors constant, an individual whose parents have divorced or separated is more likely to have less wealth than an individual whose parents stayed together, due to the separation of assets that usually takes place during divorce or separation. A parent’s death when one is still young may

result in early receipt of one's inheritance, or it may result in one having less wealth because his/her parents' asset-accumulating years have been shortened by early death. The gender mix of children variable is included because parents with children of mixed gender are more likely to enrol in public housing programs given larger subsidies that eventuate because children of mixed gender are not expected to share bedrooms (see Dockery, et al., forthcoming: 62).

Our third model is a difference-in-difference model (Meyer, 1995). This more complex specification has been used in previous work on MOA in Australia (see Richardson, 2002).<sup>14</sup> The difference-in-difference model in the current context has the following specification:

$$Y_{it} = f\left(\alpha + \lambda M_i + \sum_{t=1}^T \gamma_t YEAR_{it} + \sigma HA_i + \theta(HA_i \cdot h_{it}) + \phi X_{it} + u_{it}\right) \quad (3)$$

Equation (3) exploits the panel nature of the data.  $YEAR_{it}$  equals 1 if the observation for a MOA participant belongs to wave  $t = 1, 2$  or  $3$ , and 0 otherwise. The coefficient  $\gamma$  may be interpreted as a time trend common to treatment and control groups and captures 'unobservables' (fixed effects) specific to  $t$  but common to all  $i$ .

The treatment group variable  $HA_i$  is 1 if a person has received the treatment (in our case HA) at any point in waves 1–4, and 0 otherwise. We can interpret  $\sigma$  as the treatment group specific effect (average permanent differences between treatment and control groups). The variable  $h_{it}$  is 1 if the observation belongs to a time period on or after the individual makes a transition onto a HA program. For example, a person could receive HA in  $t$ , exit the HA program in  $t + 1$  and then re-enter the HA program in  $t + 2$ . In this case the variable  $h_{it}$  will take the values 1, 0, 1. *For the treatment group receiving HA at some point between waves 1 and 4, the interaction variable equals 0 if the time period is a wave when housing assistance is not received.*

The variable  $HA_i$  is critical because it captures differences in unobservables between the HA and non-HA groups that may affect employment or wage outcomes (Meyer, 1995). The effect of receipt of HA is then captured by the variable  $HA_i \cdot h_{it}$ . In comparison, the variable  $HA_i$  in equation (1) confounds the effects of unobservable differences between the treatment and control groups with the effect of HA receipt. In equation (3)  $\theta$  is called the HA difference-in-difference estimator, which captures any differential employment outcomes between the HA and the non-HA groups that are attributable to the receipt of HA.

Note that sample sizes are higher in the difference-in-difference model because for each individual in the sample there are between one and four observations, depending on how many times the individual was interviewed since undertaking MOA. For example, if the individual was interviewed in waves 1 and 2 only, there will be two observations for this individual. If the individual was interviewed in all four waves, there will be four observations for this individual. Not all individuals are interviewed in all waves, because of attrition, which commonly afflicts longitudinal analysis. Forty-four per cent of individuals in the HA group have four observations, compared to 32 per cent of the non-HA group. Sixty-six per cent of individuals in the former group have at least three observations, compared to 57 per cent of the latter. Hence, the rate of attrition is higher across the non-HA group. These differences are significant at the 5 per cent level. The issue of attrition will be addressed in future analyses.

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<sup>14</sup> Richardson (2002) analyses exits from Income Support Programs incorporating a difference-in-difference specification within a hazard function framework.

In all three equations, models explaining employment outcomes, is a binary variable taking the value 1 if the MOA participant is employed, and 0 otherwise. Equations (1) and (3) are estimated using a logit specification that is commonly used to estimate models with binary outcomes. Equation (2b) is estimated by OLS.

In the two-stage least square model, explaining the level of weekly wages,  $Y$  represents the weekly wages of the MOA participant sample. A tobit specification is used to estimate the wage equation. Tobit specifications are commonly used to estimate models where many individuals have zero values for the dependent variable. For example, 57 per cent of MOA participations had zero wages in wave 4.

## 4 RESULTS AND INTERPRETATION

Results from the estimation of the logit model for employment outcomes are provided in Table 4.1. Results from this model indicate that the receipt of HA is negatively associated with the probability of being employed. The coefficient on the HA variable is statistically significant at the 5 per cent level and indicates that HA recipients are 12.6 per cent less likely to be employed in wave 4 than MOA participants who did not receive HA.<sup>15</sup> The results also suggest that the probability of employment is negatively associated with being female, single, having young children, being disabled, and the number of years unemployed. Relative to Australian (non-Indigenous) participants, those from mainly English-speaking countries are less likely to be employed all other things being equal. Results suggest an inverted U-shaped relationship between the number of years in paid work since leaving full-time education and the probability of being employed. The probability of currently being employed initially increases with the number of years in paid work before decreasing once a participant has been in paid work for 18 years.

The results also indicate that relative to *Employment Assistance* (the omitted activity category), Training activities deliver inferior employment outcomes for MOA participants. Parameter estimates suggest that participants undertaking Training are 13.5 percentage points less likely to be employed than those who obtained employment assistance only. *Training* activities include approved literacy and language training, part-time study or apprenticeships. It may also include defence force reserve commitment. The most common activity within *Employment and Community Participation and Training* activity categories is the Work for the Dole scheme, managed by Community Work Coordinators, who refer participants to specific tasks and activities. Community work and Green Corps are also part of the program. In contrast, *Employment Assistance* activities are much more focused on delivering employment outcomes. These activities include specific job placement assistance programs, which require regular contact with the job placement provider, and also considerable career planning. This third MOA category is more aligned with programs running in the US, where welfare programs incorporating sanctions seem to deliver improved employment outcomes (Miller, 1998; Riccio and Orenstein, 2003).<sup>16</sup> Given the assistance sometimes provided by case officers in choosing an MOA activity, there is the possibility of 'cream skimming' such that MOA participants with relatively high levels of human capital are channelled into the employment assistance programs.

There is qualitative evidence that Australian MOA categories differ from their UK equivalents in terms of focus on employment outcomes. The study by Curtain (2001) compares the Australian and UK forms of MOA, and explains that:

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<sup>15</sup> The model was also estimated with HA disaggregated into CRA and public housing. Results suggest that it is public housing rather than CRA which is associated with a lower probability of being employed. The coefficient indicates that public housing recipients are 14.8 per cent less likely to be employed although the coefficient is only statistically significant at the 10 per cent level. Moreover, there are only 40 MOA participants in the sample receiving public housing. All the other results from the estimation of this model speculation are the same as for the model with HA employed in its aggregate form..

<sup>16</sup> Stromback and Dockery (2000) examined the effectiveness of labour market programs previously undertaken in Australia (before those initiated under MOAs) in assisting people to make the transition from job search to sustained employment. They found that wage subsidy programs (such as Jobstart) have the most favourable impact on employment, followed by brokered employment programs (Jobskills, Landcare and Environmental Action Program (LEAP), New Work Opportunities), job search assistance (Job clubs) and training programs (Special intervention, Skillshare, and Jobtrain).

The in-depth comparison shows that there are a number of features of the operation of mutual obligation arrangements in Australia which appear to be inferior to those in the UK. In particular, the primary focus on employment outcomes in the UK is notably different to the more imprecise outcomes nominated in the Australian case. Another feature of the UK arrangements compared to Australia is the greater emphasis on a coordinated approach focused on the needs of the individual job seeker (Curtain, 2001: 3).

The work of Curtain, and our own empirical evidence, suggests that serious questions might be asked of the effectiveness of some elements of the MOA program.

**Table 4.1: Cross-section logit model for employment**

<i>Explanatory variable</i>		<i>Coef.</i>	<i>Std. error</i>	<i>Sig.</i>	<i>Marg. eff.</i>
MOA program (omit Assistance only)	Employment/community participation	-0.354	0.250	0.156	-0.085
	Training	-0.552 <sup>#</sup>	0.289	0.056	-0.135
HA		-0.527 <sup>+</sup>	0.238	0.027	-0.126
Female		-1.007 <sup>*</sup>	0.246	0.000	-0.241
Partnered		0.565 <sup>+</sup>	0.268	0.035	0.132
Number of children	Aged 0–4 years	-0.903 <sup>*</sup>	0.256	0.000	-0.215
	Aged 5–9 years	-0.317	0.298	0.288	-0.076
	Aged 10–14 years	0.065	0.302	0.831	0.015
Ethnicity (omit Australian non-Indigenous)	Australian Indigenous	-0.538	0.532	0.311	-0.133
	Main English-speaking countries	-0.861 <sup>+</sup>	0.426	0.043	-0.212
	Other countries	-0.520	0.356	0.144	-0.127
Disabled		-1.090 <sup>*</sup>	0.244	0.000	-0.262
Region (omit major cities)	Inner	0.397	0.320	0.215	0.091
	Outer, remote or very remote	-0.230	0.778	0.768	-0.056
Highest qualification (omit no post-school qual.)	Bachelor or higher	-0.371	0.457	0.417	-0.091
	Other post-school qualification	0.232	0.264	0.380	0.055
Labour force experience since leaving full-time education	Years in paid work	0.073 <sup>+</sup>	0.033	0.029	0.017
	Square of years in paid work	-0.002 <sup>*</sup>	0.001	0.006	-0.001
	Years unemployed	-0.133 <sup>*</sup>	0.035	0.000	-0.032
Constant		1.853 <sup>*</sup>	0.335	0.000	
<b>Diagnosics</b>					
Sample		417			
Chi <sup>2</sup> (19)		98.525			
P > Chi <sup>2</sup>		0.000			
Cox and Snell R <sup>2</sup>		0.210			
Nagelkerke R <sup>2</sup>		0.284			
-2 log-likelihood		465.997			

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

a. All explanatory variables are 0–1 dummies except the Number of children and Labour force experience variables.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there is no asterisk, the test statistic is not significant at the 1%, 5% or 10% level.

In Table 4.2 we explore the use of instrumental variables in a two-stage model to address endogeneity problems associated with the HA variable. The table indicates that the only instrumental variable important for explaining receipt of HA is a dummy variable indicating whether an individual's parents have ever divorced or separated. The coefficient on this variable has a positive sign and is statistically significant at the 10 per cent level. Though not presented in Table 4.2, females and disabled persons are significantly more likely to be in receipt of HA than males and non-disabled persons respectively.

Predicted HA status from this first stage regression is included in the model explaining employment outcomes. The coefficient on the (predicted) HA variable is statistically insignificant in this model. Assuming that endogeneity problems have been adequately addressed by the instrumental variable approach, our estimates indicate that receipt of HA does not cause inferior employment outcomes.<sup>17</sup>

The socio-demographic control variables represented by X in Table 4.2 generally confirm the findings presented in Table 4.1. The probability of employment is negatively associated with being female, having young children, being disabled, and the number of years unemployed. As in Table 4.1, *Training and Employment and Community Participation* activities appear to deliver inferior employment outcomes relative to *Employment Assistance*. Results suggest that participants undertaking *Training and Employment and Community Participation* activities are 13 and 9.5 percentage points respectively less likely to be employed than those who obtained *Employment Assistance*.<sup>18</sup>

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<sup>17</sup> The same is true of the coefficients on the CRA and public housing variables when HA was disaggregated. Results are available on request.

<sup>18</sup> In a two-stage least squares model such as this, the marginal effects take on the same values as the coefficient estimates.

**Table 4.2: Instrumental variable two-stage least squares model for employmenta**

<i>Explanatory variable</i>		<i>Coef.<sup>b</sup></i>	<i>Std error</i>	<i>Sig.</i>
<i>First-stage model of HA receipt</i>				
Instrumental variables	Number of siblings	0.008	0.011	0.454
	Parents have ever divorced or separated	0.096 <sup>#</sup>	0.055	0.081
	One or both parents had died when individual was aged 14	-0.095	0.110	0.392
	Mixed-gender children	-0.102	0.123	0.409
<i>Other explanatory variables (not shown)<sup>c</sup></i>				
<i>Second-stage model of employment outcomes</i>				
Constant		0.816*	0.130	0.000
MOA program (omit Assistance only)	Employment/community participation	-0.095	0.064	0.139
	Training	-0.130 <sup>+</sup>	0.066	0.049
Predicted HA		0.235	0.420	0.575
Female		-0.235*	0.070	0.001
Partnered		0.125 <sup>#</sup>	0.071	0.079
Number of children	Aged 0–4 years	-0.164*	0.051	0.001
	Aged 5–9 years	-0.051	0.059	0.387
	Aged 10–14 years	-0.003	0.065	0.967
Ethnicity (omit Australian non-Aboriginal)	Australian Aboriginal	-0.191	0.136	0.159
	Main English-speaking countries	-0.169 <sup>#</sup>	0.089	0.058
	Other countries	-0.162 <sup>#</sup>	0.089	0.069
Disabled		-0.274*	0.061	0.000
Region (omit major cities)	Inner	0.063	0.066	0.336
	Outer, remote or very remote	-0.097	0.158	0.540
Highest qualification (omit no post-school qual.)	Bachelor or higher	-0.050	0.095	0.602
	Other post-school qualification	0.033	0.054	0.536
Labour force experience since leaving full-time education	Years in paid work	0.011 <sup>#</sup>	0.007	0.098
	Square of years in paid work	0.000 <sup>#</sup>	0.000	0.056
	Years unemployed	-0.032*	0.008	0.000
<b><i>Diagnostics</i></b>				
Sample		403		
Wald Chi <sup>2</sup> (19)		96.7		
P > Ch <sup>i2</sup>		0.000		
R <sup>2</sup>		0.109		

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

a. This model is estimated using the iv regress 2sls function in the STATA software package, which fits two-stage least square models with endogenous explanatory variables.

b. No marginal effects are reported in this table because in a two-stage least squares model the marginal effects take on the same values as the coefficient estimates.

c. Results are available from authors on request.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there is no asterisk, the test statistic is not significant at the 1%, 5% or 10% level.

Estimates from equations (1) and (2a) and (2b) have produced contrasting results on the impact of HA receipt on employment outcomes. We now proceed to estimate a difference-in-difference model. Results are presented in Table 4.3 and confirm the findings from tables 3.3 and 3.4. The coefficient on HA is large, negative and statistically significant, indicating that there are important unobservable characteristics such that HA recipients have a lower probability of being employed. However, the coefficient on the difference-in-difference estimator is not statistically significant, indicating that receipt of HA in itself does not affect the probability of being employed. It seems that the negative association between HA and the probability of employment is being driven by unmeasured variables.

Estimates again confirm that MOA activity type might be important in explaining the probability of employment. Relative to *Employment Assistance* (the omitted activity category), *Training and Employment and Community Participation* activities deliver inferior employment outcomes for MOA participants. Results suggest that participants undertaking *Training and Employment and Community Participation* are 10.6 and 12.7 percentage points respectively less likely to be employed than those who obtained *Employment Assistance*.

The coefficients on the time trend variables indicate that the probability of employment increased during the four waves (2001–2004) of the HILDA survey, as is to be expected given the falling unemployment rate during this period. The results also suggest that the probability of being employed is negatively associated with being female, having young children, being disabled, and the number of years unemployed. Results confirm the inverted U-shaped relationship between the number of years in paid work and the probability of being employed.<sup>19 20</sup>

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<sup>19</sup> The difference-in-difference logit model for employment was also estimated with HA disaggregated into its components. The coefficient on the CRA variable was negative and statistically significant. The coefficient on the public housing variable was not statistically significant. Further, the coefficients on the CRA and public housing difference-in-difference variables are not statistically significant, indicating that both forms of HA have no impact on the probability of being employed. Other results are also consistent with those presented in Table 4.3.

<sup>20</sup> Models were also run separately for males and females. The results (not presented here but available from the authors on request) are generally consistent with those presented above.

**Table 4.3: Difference-in-difference logit model for employment**

<i>Explanatory variables</i>		<i>Coef.</i>	<i>Robust std error</i>	<i>Sig.</i>	<i>Marg. eff.</i>
MOA program	Employment/community participation	-0.522*	0.152	0.001	-0.127
	Training	-0.442+	0.189	0.017	-0.106
Time trend	Wave 1	-1.360*	0.203	0.000	-0.298
(wave 4 omitted)	Wave 2	-1.087*	0.203	0.000	-0.245
	Wave 3	-0.991*	0.202	0.000	-0.226
Received HA in waves 1-4 (H)		-0.562 <sup>+</sup>	0.207	0.011	-0.137
Difference-in-difference estimator (H*h)		-0.015	0.234	0.950	-0.004
Female		-0.575*	0.161	0.000	-0.139
Partnered		0.273	0.169	0.110	0.067
Number of children	Aged 0–4 years	-0.417 <sup>+</sup>	0.171	0.012	-0.103
	Aged 5–9 years	-0.253	0.204	0.203	-0.062
	Aged 10–14 years	0.071	0.192	0.723	0.017
Ethnicity	Australian Indigenous	-0.011	0.363	0.976	-0.003
(Australian non-Indigenous omitted)	Main English-speaking countries	-0.004	0.284	0.989	-0.001
	Other	-0.394 <sup>#</sup>	0.234	0.090	-0.095
Disabled		-0.887*	0.169	0.000	-0.209
Region	Inner region	0.239	0.203	0.217	0.059
(major cities omitted)	Outer, remote or very remote region	-0.090	0.560	0.884	-0.022
Highest qualification	Bachelor degree or higher	-0.056	0.325	0.852	-0.014
(Year 12 or below omitted)	Other post-school qualification	0.183	0.164	0.264	0.045
Labour force experience since leaving full-time education	Years in paid work	0.076*	0.022	0.000	0.019
	Square of years in paid work	-0.002*	0.001	0.000	-0.001
	Years unemployed	-0.126*	0.024	0.000	-0.031
Constant		1.567*	0.222	0.000	
<b><i>Diagnostics</i></b>					
Sample		983			
Chi2(23)		215.460			
P > Chi <sup>2</sup>		0.000			
Cox and Snell R <sup>2</sup>		0.197			
Nagelkerke R <sup>2</sup>		0.263			
-2 log-likelihood		1,138.831			

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there is no asterisk, the test statistic is not significant at the 1%, 5% or 10% level.

Results from estimation of the cross-section tobit model for wage outcomes are provided in Table 4.4. Coefficient estimates indicate that MOA participants who received HA have lower wages than those receiving no HA. Relative to *Employment Assistance* activities, MOA participants undertaking *Employment and Community Participation and Training* activities have lower wages. Lower wages are associated with being female, single, having young children, and being disabled. There is also a negative association between wages and the number of years unemployed. Relative to Australian (non-Indigenous) participants, those from mainly English-speaking countries have lower wages and the level of wages initially increases with the number of years in paid work, before decreasing beyond a threshold level of about 18 years. Moreover, there is evidence that region is important, with higher wages associated with inner regions relative to major cities.<sup>21</sup>

Table 4.5 presents results for the instrumental variable two-stage tobit wage model. The first stage model predicting HA receipt is the same as in the first stage of the instrumental variable employment model. The HA status estimates are the same as those for the instrumented variable in the employment model – that is, the coefficient estimate is statistically insignificant. The socio-demographic variables are again as expected and similar to those in the previous tobit model. However, while *Employment and Community Participation and Training* activities appear to result in lower wages than *Employment Assistance* activities, the coefficients on these variables are statistically insignificant in Table 4.5.

Table 4.6 provides results from the estimation of a difference-in-difference tobit model for wages. The coefficient on the HA variable is negative and statistically significant, indicating that individuals who receive HA have unobservable characteristics that lower relative wage outcomes. However, the coefficient on the difference-in-difference variable is not statistically significant, suggesting that actual receipt of HA does not have an independent effect on wages. In general the findings from wage models confirm those obtained from employment models. Most important in the present context is the repeated finding that HA programs appear to have no detectable effects on the labour market performance of those long-term unemployed required to participate in MOA programs.<sup>22</sup>

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<sup>21</sup> Refer to Table 3.3 for details of regional classifications. The tobit model of wages is also estimated with disaggregated HA. Results from this model indicate that receipt of public housing is associated with lower wages, while receipt of CRA has no statistically significant impact. Results relating to the other explanatory variables are consistent with those presented in Table 4.4.

<sup>22</sup> When HA is disaggregated the coefficient on the CRA difference-in-difference variable is negative and statistically significant (albeit at the 10 per cent level). This provides some limited evidence that transitions on to CRA are associated with lower wages.

**Table 4.4: Cross-section tobit model for wages**

<i>Explanatory variable</i>		<i>Coef.</i>	<i>Std error</i>	<i>Sig.</i>
MOA program (omit Assistance only)	Employment/community participation	-124.429 <sup>#</sup>	75.343	0.099
	Training	-153.878 <sup>#</sup>	89.012	0.085
HA		-152.518 <sup>+</sup>	72.854	0.037
Female		-291.227 <sup>*</sup>	72.975	0.000
Partnered		161.483 <sup>+</sup>	77.602	0.038
Number of children	Aged 0–4 years	-257.689 <sup>*</sup>	81.179	0.002
	Aged 5–9 years	-214.527 <sup>+</sup>	88.722	0.016
	Aged 10–14 years	-36.678	91.292	0.688
Ethnicity (omit Australian non-Indigenous)	Australian Indigenous	-78.624	165.998	0.636
	Main English-speaking countries	-277.263 <sup>+</sup>	135.496	0.041
	Other countries	-80.073	108.666	0.462
Disabled		-244.024 <sup>*</sup>	76.183	0.001
Region (omit major cities)	Inner	222.669 <sup>*</sup>	92.493	0.017
	Outer, remote or very remote	-176.022	235.181	0.455
Highest qualification (omit no post-school qual.)	Bachelor or higher	-39.732	136.757	0.772
	Other post-school qualification	-3.195	77.850	0.967
Labour force experience since leaving full-time education	Years in paid work	40.725 <sup>*</sup>	10.245	0.000
	Square of years in paid work	-1.191 <sup>*</sup>	0.264	0.000
	Years unemployed	-47.644 <sup>*</sup>	11.443	0.000
Constant		387.788 <sup>*</sup>	90.737	0.000
Sigma		610.443	31.104	
<b>Diagnostcs</b>				
Sample		417		
Chi <sup>2</sup> (19)		96.62		
P > Chi <sup>2</sup>		0.000		
Pseudo R <sup>2</sup>		0.0249		
Log-likelihood		-1,888.003		

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there are no asterisks, the test statistic is not significant at the 1%, 5% or 10% level.

**Table 4.5: Instrumental variable two-stage tobit model for wages<sup>a</sup>**

<i>Explanatory variable</i>		<i>Coef.</i>	<i>Std error</i>	<i>Sig.</i>
First-stage model of HA receipt				
Instrumental variables	Number of siblings	0.008	0.011	0.454
	Parents have ever divorced or separated	0.096 <sup>#</sup>	0.055	0.081
	One or both parents had died when individual was aged 14	-0.095	0.110	0.392
	Mixed-gender children	-0.102	0.123	0.409
Other explanatory variables (not shown) <sup>b</sup>				
Second-stage model of wage outcome				
Constant		0.920*	0.225	0.000
MOA program (omit Assistance only)	Employment/community participation	-0.148	0.112	0.188
	Training	-0.166	0.116	0.154
Predicted HA		-0.169	0.723	0.815
Female		-0.318*	0.121	0.009
Partnered		0.081	0.122	0.507
Number of children	Aged 0–4 years	-0.334*	0.097	0.001
	Aged 5–9 years	-0.117	0.103	0.260
	Aged 10–14 years	-0.021	0.113	0.851
Ethnicity (omit Australian non-Aboriginal)	Australian Aboriginal	-0.313	0.239	0.191
	Main English-speaking countries	-0.243	0.158	0.124
	Other countries	-0.183	0.157	0.242
Disabled		-0.405*	0.108	0.000
Region (omit major cities)	Inner	0.092	0.113	0.417
	Outer, remote or very remote	-0.134	0.279	0.632
Highest qualification (omit no post-school qual.)	Bachelor or higher	-0.175	0.168	0.295
	Other post-school qualification	-0.027	0.094	0.770
Labour force experience since leaving full-time education	Years in paid work	0.030 <sup>+</sup>	0.012	0.014
	Square of years in paid work	-0.001*	0.000	0.002
	Years unemployed	-0.058*	0.016	0.000
<b>Diagnostics</b>				
Sample		403		
Wald Chi <sup>2</sup> (19)		88.75		
P > Chi <sup>2</sup>		0.000		

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

a. This model is estimated using the iv tobit function in the STATA software package, which fits tobit models with endogenous explanatory variables.

b. In the first stage, estimates for other explanatory variables are not shown. Results are available from authors on request.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there is no asterisk, the test statistic is not significant at the 1%, 5% or 10% level.

**Table 4.6: Difference-in-difference tobit model for wages**

<i>Explanatory variables</i>		<i>Coef.</i>	<i>Robust std error</i>	<i>Sig.</i>
MOA program	Employment/community participation	-136.596	50.495	0.005
	Training	-144.234	58.019	0.012
Time trend	Wave 1	-411.026	69.184	0.000
(omit wave 4)	Wave 2	-305.665	63.642	0.000
	Wave 3	-280.787	65.035	0.000
Received HA in waves 1–4 (H)		-147.439	71.694	0.030
Difference-in-difference estimator (H*h)		-85.526	79.950	0.268
Female		-207.472	53.241	0.000
Partnered		112.443	56.197	0.030
Number of children	Aged 0–4 years	-130.574	57.518	0.010
	Aged 5–9 years	-138.510	58.069	0.024
	Aged 10–14 years	-2.976	55.914	0.960
Ethnicity	Australian Indigenous	14.795	100.965	0.892
(omit Australian non-Indigenous)	Main English-speaking countries	-88.013	81.170	0.308
	Other	-110.126	83.890	0.123
Disabled		-239.911	48.713	0.000
Region	Inner region	100.910	80.546	0.086
(omit major cities)	Outer, remote or very remote region	-65.946	129.743	0.716
Highest qualification	Bachelor degree or higher	67.971	93.419	0.442
(omit Year 12 or below)	Other post-school qualification	32.936	48.464	0.507
Labour force experience since leaving full-time education	Years in paid work	34.648	6.711	0.000
	Square of years in paid work	-1.060	0.194	0.000
	Years unemployed	-42.841	7.660	0.000
Constant		386.907	54.910	0.000
Sigma		578.532	63.522	
<b>Diagnostocs</b>				
Sample		983		
Chi <sup>2</sup> (23)		234.71		
P > Chi <sup>2</sup>		0.000		
Pseudo R <sup>2</sup>		0.032		
Log-likelihood		-3,548.547		

Source: Confidentialised unit records from the HILDA Survey waves 1–4.

\* Test statistic is significant at 1% level. + Test statistic is significant at 5% level. # Test statistic is significant at 10% level. If there is no asterisk, the test statistic is not significant at the 1%, 5% or 10% level.

## 5 CONCLUSION AND POLICY IMPLICATIONS

The Australian MOA program is part of a growing international emphasis on participation by welfare recipients. Using a sample of Australian MOA participants this paper has examined the impact of HA on employment and wage outcomes. The study has presented a series of model estimates in an effort to understand the relationship between MOA and HA, and employment and wage outcomes. Overall results provide little evidence that HA has any independent impact on the probability of employment and wages of MOA participants – either positive or negative.

These Australian data based findings contrast with those presented in a number of US studies. Long term unemployed Australians required to enrol in MOAs are not more likely to achieve sustained employment gains if they are eligible for HA. We advance three possible reasons. Firstly, CRA is the main HA program received by the Australian HA/treatment group and it is an entitlement available to all income eligible residents of private rental housing. The equivalent in the US, housing voucher programs, is rationed with income eligible renters joining queues. The sample design in US studies is typically restricted to renters enrolled in welfare programs. If most are eligible for vouchers, as seems likely, the HA/treatment group will be people that have reached the top of queues before or during the study time frame. The comparison group is then eligible welfare recipients still waiting in the queue. Those in queues are vulnerable to welfare locks – they have an incentive to reject job offers or job search less intensively to preserve eligibility (Dockery, Ong, Whelan and Wood, 2007). The Housing assistance variable in US studies could then be picking up welfare lock effects rather than positive synergies between welfare-to-work reforms and enrolment in HA programs.

The US studies also typically ignore the endogeneity problems that we have tried to address. They do not check for time-varying heterogeneity and if multivariate modelling is conducted, model specifications are more rudimentary. Generally cross-section models are estimated with the inclusion of a simple indicator variable to detect HA effects. Instrumental variable and panel model specifications may reveal different findings that are more robust.

Finally the scope of the early Australian reforms was more limited than their US counterparts. MOAs were originally targeted at young adults belonging to the pool of long-term unemployed. Those on disability support pensions and sole parent pensions were outside the scope of welfare-to-work reforms. Sole parents are particularly prone to poverty and unemployment traps if receiving HA. It may be that as this group are brought within the scope of MOAs, the comparative employment profiles of HA recipients will begin to resemble those detected in US studies. However, on the basis of the empirical work conducted here we can find no evidence for synergies between Australian HA programs and welfare-to-work reforms.

A second important policy finding is that concerning the effectiveness of alternative MOA activities. MOA participants undertaking *Employment and Community Participation, and Training* experience a lower probability of employment and lower wages. Interestingly, Australian *Employment Assistance* activities are most like the US form of obligatory activity, which invariably seem to deliver a superior employment outcome (Miller, 1998; Riccio and Orenstein, 2001). Our conclusions here are however subject to the qualification that findings could be biased by cream skimming or self selection effects, though we would expect the findings from difference in difference models to be more robust in this respect, and they warrant this conclusion.

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## APPENDIX: VARIABLE DEFINITIONS

<i>Variable</i>	<i>Definition</i>
<b><i>Dependent variable</i></b>	
Employment model	1 if employed, 0 otherwise
Wage model	Current weekly wage
<b><i>MOA program</i></b>	
Employment/community participation	1 if participant in the following programs: Part-time paid work, Work for the Dole, Community Development Employment projects, Community work, Green Corps, Relocation, Voluntary unpaid work; 0 otherwise
Training	1 if participant in the following programs: Part-time study, Defence Force Reserve, New Apprenticeship Access Program, Approved literacy/numeracy training, Advance English for Migrants; 0 otherwise
Assistance	1 if participant in the following programs: Job Search Training, Job Placement Employment and Training, Intensive Assistance, Job Pathway Program; 0 otherwise
<b><i>HA</i></b>	1 if received HA at some point during waves 1–4
<b><i>Female</i></b>	1 if female, 0 otherwise
<b><i>Partnered</i></b>	1 if partnered, 0 otherwise
<b><i>Number of children</i></b>	
Aged 0–4 years	Number of children aged 0–4 years
Aged 5–9 years	Number of children aged 5–9 years
Aged 10–14 years	Number of children aged 10–14 years
<b><i>Ethnicity</i></b>	
Australian Indigenous	1 if born in Australia and of Aboriginal or Torres Strait Islander origin; 0 otherwise
Australian non-Indigenous	1 if born in Australia and not of Aboriginal or Torres Strait Islander origin; 0 otherwise
Main English-speaking countries	1 if born in New Zealand, UK, Ireland, Canada, US or South Africa; 0 otherwise
Other countries	1 if born in countries other than Australia and main English-speaking countries; 0 otherwise
<b><i>Disabled</i></b>	1 if has a disability or long-term health condition; 0 otherwise
<b><i>Region</i></b>	
Major city	1 if residing in major cities; 0 otherwise
Inner	1 if residing in inner regional areas; 0 otherwise
Outer, remote or very remote	1 if residing in outer, remote or very remote regional areas; 0 otherwise
<b><i>Highest qualification</i></b>	
Bachelor or higher	1 if possess bachelor degree or higher; 0 otherwise
Other post-school qualification	1 if possess other post-school qualification; 0 otherwise
No post-school qualification	1 if no post-school qualification; 0 otherwise
<b><i>Labour force experience</i></b>	
Years in paid work	Total years in paid work since leaving full-time education
Square of years in paid work	Square of above
Years unemployed	Total years unemployed since leaving full-time education

<i>Variable</i>	<i>Definition</i>
<b><i>Instrumental variables</i></b>	
Number of siblings	Total number of siblings ever had
Whether parents ever divorced or separated	1 if parents ever divorced or separated; 0 otherwise
Whether one or both parents had died when the individual was aged 14	1 if one or both parents had died when the individual was aged 14; 0 otherwise
Children's gender mix	1 if the individual is living in a household where there are more than one children and the children are of mixed gender, 0 otherwise.

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