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Life on the Minimum Wage in Australia: An Empirical Investigation

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Abstract

From 2006 to 2009, Federal minimum wages in Australia were set by the Australian Fair Pay Commission. This paper uses data from the Household, Income and Labour Dynamics in Australia panel survey to investigate the circumstances of persons who are paid at or near the minimum wage, and thus potentially affected by the wage determinations. Net disposable incomes for actual and potential minimum wage workers are modelled in and out of work to investigate the implications of the wage determinations on work incentives. In addition, a range of measures of socioeconomic status and wellbeing are inspected. Comparisons are made with selected groups of non-employed persons and those with higher earnings to highlight the potential costs and benefits for affected individuals, and hence the potential trade-offs faced in setting minimum wages if we accept that increases in minimum wages reduce employment opportunities.

JEL Classification: J010, J080, J380

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2. This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either FaHCSIA or the MIAESR.
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1. Introduction

Commencing from 2006, the Australian Fair Pay Commission has determined a legally enforceable minimum wage that must be paid to all workers within the Federal jurisdiction, which covers the majority of employers and employees in Australia.[1] The merits of minimum wage legislation and, once in place, the level at which the minimum wage should be set remain contentious issues for policy-makers and within the economics discipline. Central to the policy dilemma is the likely trade-off between equity objectives and the efficiency gains of a less regulated labour market, and between increasing earnings for the low paid and employment opportunity for that same group. Thus, the extent to which increases in the minimum wage reduce the demand for labour has been the key issue. However, there is a second issue of critical importance that has received far less attention, and this is the main issue we seek to cast light upon in this paper. If we accept that there is a trade-off between minimum wages and employment opportunity, how severe is that trade-off for the individuals affected? How much more 'worse off' would a worker be if they were displaced from a low paid job? How much 'better off' are workers who receive an increase in earnings as a result of minimum wage legislation? Surely empirical evidence on the trade-offs in the wellbeing of people affected by such policy measures is highly relevant to the implementation and setting of minimum wages.

Using data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey, we first examine the disposable incomes and work incentives that apply to minimum wage workers, and the potential income implications of recent wage rulings using microsimulation modelling. The approach taken is consistent with the microeconomic approach to monitoring the impact of the Commission's wage decisions recommended in Healy and Richardson (2007). Second, we analyse various dimensions of wellbeing for minimum wage workers. Descriptive statistics on a range of measures of subjective wellbeing are investigated to compare the wellbeing of minimum wage workers to those in other labour force states. For two of these measures, the individual's own assessments of their life satisfaction and whether they feel they are in 'financial stress', we utilise panel modelling to more formally investigate whether or not wellbeing changes as individuals move in and out of 'minimum wage' employment.

Section 2 presents a brief background to the issues covered and the associated literature. In section 3, we describe the data and sample design. In this section, we also report descriptive statistics that provide an overview of the characteristics of the minimum wage workers in our sample. Section 4 describes the microsimulation and panel modelling methodologies employed in this paper. Sections 5 and 6 present our key findings on the incomes and wellbeing of minimum wage workers respectively. The implications of those findings are discussed in section 7.

2. Background

The motivation behind imposing minimum wages ultimately lies in social objectives related to wellbeing and equity; notably the desire to ensure that an acceptable 'living

[1] The 2009 determination represents the fourth and final determination by the Fair Pay Commission, which is to be replaced with a new body called Fair Work Australia.

wage' is afforded to support low wage workers and their families. However, it can be argued that such objectives are best pursued through the welfare system rather than interfering with wage rates. The principal objection to the imposition of minimum wages is that they reduce employment opportunities. It is also argued that minimum wages suppress employer-provided training opportunities for low paid workers where that training would otherwise be financed by the employee receiving wages below the value of their marginal productivity (Hashimoto, 1982). Even here, the issue of whether or not minimum wages do have a negative effect on employment remains unresolved, with much of the uncertainty stemming from Card and Krueger's (1994) widely cited study that found an increase in employment in the New Jersey fast food industry in response to an *increase* in that State's minimum wage.

Much of the focus of empirical research on minimum wages has hence been on estimating the elasticity of employment demand with respect to the minimum wage rate (see Lewis, 2006). In contrast, the issue we seek to cast light upon in this paper is, if there is a trade-off between wages and employment opportunity, what is the potential impact on the wellbeing of those individuals affected. The most relevant comparison is between the wellbeing of people on minimum wages with that of the unemployed, however, a reduction in employment opportunities in low wage jobs may also result in displaced workers leaving the workforce altogether. A number of previous studies have looked at the characteristics of low wage workers, including several commissioned by the Fair Pay Commission (McGuinness *et al*., 2007; Healy and Richardson, 2006). Here we are more interested in the circumstances of minimum wage workers, rather than the characteristics associated with a greater propensity to be in minimum wage jobs. However, there is obviously considerable overlap between the two perspectives and it is of interest to check that the characteristics of our sample of minimum wage workers broadly correlate with existing research.

As noted by Healy and Richardson (2006, p.28), the picture one gets of minimum and low wage workers depends in part on whether they are considered among the population of workers or the wider population. Low wage or minimum wage workers tend to be female, young, single and with low levels of education (Leigh, 2007; McGuinness *et al*., 2007; and Healy and Richardson, 2006). Studies of the dynamics of poverty for developed countries have shown that generally households tend to enter relative poverty temporarily, although their probability of leaving poverty declines with duration in poverty. Buddelmeyer and Verick (2008) show this to be the case too for Australia, and find tertiary education and employment, whether full-time or part-time, to be the most important factors in insulating families from poverty.

There are several reasons to suspect that incremental increases in wages for such workers may have little impact on their wellbeing. First, because many low wage workers are also likely to be receiving some form of benefit, they are likely to face high effective marginal tax rates as benefits are withdrawn with earnings, meaning that wage rises or increased hours of work will provide little by way of greater disposable income (see Dockery *et al*., 2008). This has led to calls for the introduction of an earned income tax credit in preference to the setting of minimum wages, the so called 'Five Economists' Plan' (Dawkins, 2003). Second, the rapidly growing 'happiness literature' has shown that in the wealthier countries there is at best

a very modest link between income and wellbeing (Headey and Wooden, 2004). On the flip-side of the coin, there is an extensive psychological literature documenting the importance of employment in maintaining positive wellbeing and the deleterious effects of unemployment and joblessness (see, for example, Feather, 1990; and seminal work by Jahoda, 1982), and this is supported empirically by numerous studies in the economics literature (Clark *et al*., 2001; Clark and Oswald, 1994; Flatau *et al*., 2000; and Winkelmann and Winkelmann, 1998).

3. Data and Sample Frame

HILDA is Australia's first nationally representative household panel survey. The panel was established through the 'Wave 1' interviews of a randomly selected sample of 7,682 households commencing from late August 2001 (see http://melbourneinstitute.com/hilda/ for details on the survey and sampling frame). HILDA contains rich information on personal characteristics, socio-economic background, family circumstances, current activities and lifestyles along with a wealth of attitudinal data. Respondents are interviewed each year, as are any new persons who come into the scope of the survey: that is, persons aged 15 and over living in a HILDA household.

The Australian Fair Pay Commission (AFPC) delivered minimum wage determinations in 2006, 2007, 2008 and 2009. At the time of writing, survey data from Waves 1 to 7 of HILDA were available, spanning 2001 to 2007. This gives two years (2006 and 2007) for which both survey data is available and a federal minimum wage determination in place. The most recently available tax-benefit component of the AHURI-3M microsimulation model is based on the 2006 HILDA data and hence any cross-sectional descriptive statistics are also presented for that year. The panel models and transition analysis use data up to and including the 2007 wave of HILDA.

For employees paid on an hourly basis, the Commission's decision set the 2006 minimum hourly wage rate at $13.47 and, based on the assumption of a standard 38 hour week, a minimum weekly wage of $511.86. The comparative figures for the 2007 determination were an hourly minimum of $13.74 and weekly minimum wage of $522.12. Using data from the corresponding waves of HILDA, hourly wage rates were calculated for all employees aged 21 to 64. For full-time employees, their usual weekly wage is divided by 38 to arrive at an hourly rate, consistent with the Commission's assumption of a standard working week of 38 hours. For part-time employees, the hourly rate is defined as their usual weekly wage divided by usual hours worked. Based on this hourly wage, 'minimum wage workers' are defined as employees aged 21 to 64 whose hourly rate of pay is no more than ten per cent above the minimum rate set by the Commission. The justification for these criteria is as follows:

- Persons aged below 21 are excluded as these are the most likely to be receiving a junior wage. A different wage schedule applies to these people, however, it is not possible with the HILDA data to ascertain with any certainty whether or not an individual is receiving a junior wage, as opposed to simply a low wage. Dependent students are also excluded because their wages are supplemented by the income of adults upon whom they are dependent, e.g. parents. Hence, it is not possible to isolate the impact of being a minimum wage worker on these dependent students' wellbeing.

- Our definition of minimum wage workers includes employees earning as much as ten per cent above the minimum wage, and all those earning below. This is because our interest is not in the exact coverage of the Australian Fair Pay Commission's determinations, as would be the case in a quasi-experimental evaluation. Rather, we are interested in the effects of minimum wage legislation more generally. Those with earnings slightly above are included as persons potentially subject to future adjustments in the minimum wage. We note also that a figure of ten per cent above the Federal Minimum Wage was used by McGuinness *et al*. (2007) to define 'low waged employees' after consultation with the AFPC. Those with earnings below the minimum wage are similarly included since they would be affected by a universally enforced minimum wage.

- Our sample of minimum wage workers excludes self-employed people and employers, two groups who are not subject to the minimum wage set by the Commission.

From the 2006 sample we identify 640 such 'minimum wage workers' with hourly wages below $14.82 per hour (that is, $13.47 x 1.1), representing 11 per cent of all employees aged 21-64. Figures 1(a) and 1(b) provide an idea of where the 2006 minimum wage sits within the wage distribution, after smoothing the distribution using a kernel density estimate.

Figure 1 - Kernel Density Estimate for Male and Female Hourly Rates, 2006

Figure 1(a) Females

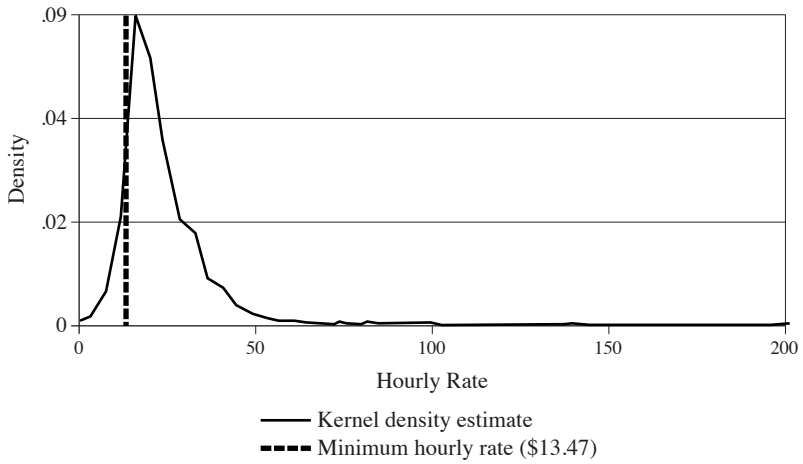
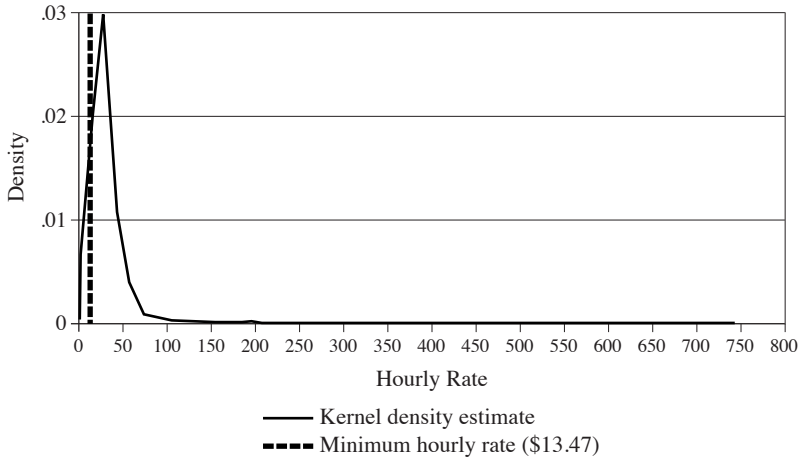


Figure 1 - Kernel Density Estimate for Male and Female Hourly Rates, 2006

Figure 1(b) Males



Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.

Minimum wage workers are roughly evenly divided between full-time and part-time work. Consequently, they are disproportionately found in part-time jobs, representing eight per cent of full-time employees and 20 per cent of part-time employees. Table 1 shows that the characteristics of our 2006 sample are broadly consistent with previous findings. Each figure in the middle three columns reports the percentage of individuals in that row category who are minimum wage workers. Taking the first row, for example, it can be seen that women are more likely to be minimum wage workers, since 14.0 per cent of women employees are minimum wage workers, which is higher than the 11 per cent of all employees (see final row). Moreover, this is not only a result of more women being part-time workers. Among part-time employees, 18.6 per cent of part-time women employees are minimum wage workers, compared to 20.5 per cent for all part-time workers. Rather, it is within the full-time labour force that women are disproportionately found to be on minimum wages. Conversely, male part-time employees have a very high likelihood of being minimum wage workers.

Where minimum wage work is more prominent, this generally applies irrespective of whether we consider the part-time or full-time workforce. By and large then, it is not the fact that part-time jobs are more likely to pay minimum wages that drives the differences in characteristics of the minimum wage workers relative to other employees. The young, non-married, less educated and those in lower skilled occupations are all clearly more likely to be minimum wage workers. Among industries, agriculture stands out as the sector with the highest proportion of minimum wage employees, followed by accommodation, cafes and restaurants, which is consistent with previous research on the characteristics of employers of the low paid

(Australian Centre for Research on Employment and Work, 2006). The health and community services sector is unusual. Employees in this industry are more likely to be minimum wage workers, but this is because full-time employees in that industry are much more likely to be minimum wage workers than in other industries, while part-time employees are less likely to be minimum wage workers.

In terms of the characteristics among the sample of minimum wage employees, the final column of table 1 shows almost two thirds are female, and 42 per cent are married. Over half have no qualification beyond Year 12 and can be found in the two occupational categories of labourers and related workers and tradespersons and related workers. The latter is likely to be related to hairdressers and the food industry trades, but possibly also mature age apprentices on training wages. Health and community services and retail trade are the largest employers of minimum wage workers.

In order to compare household incomes in a way that takes into account differences in household composition (and thus financial needs), gross household income has been adjusted using OECD Household Equivalence Scales. This represents a weighted 'gross income per head' figure, where the first adult in the household has a weighting of 1, additional adults a weighting of 0.7 (to allow for economies of scale) and each child a weighting of 0.5.[2] The data on equivalised gross household income demonstrate the significance of whether or not minimum wage workers are considered in the context of other employed persons or the wider population. The bands for the household equivalent deciles are calculated from the full population, including those not in the labour force, the unemployed and workers who are not employees (such as workers in family businesses or the self-employed). Employees in the poorest households are far more likely to be minimum wage workers than those in households with higher equivalised income, and the relationship is roughly monotonic. However, there are relatively few minimum wage workers in the lower income households, because these deciles are dominated by the non-employed. In fact, over half of all minimum wage employees are in households in the middle three (4th, 5th and 6th) deciles of household equivalised income.

[2] While this scale is used throughout this paper and is still commonly in use elsewhere (for recent examples see Dalton and Ong 2007, Wood and Ong 2009 and Jappelli and Pistaferri 2010), an anonymous referee pointed out that the OECD has now adopted a modified equivalence scale which assigns a weighting of 1 to the household head, 0.5 to each additional adult and 0.3 to each child. The findings are essentially unchanged if the OECD modified scale is used. Results for tables 1, 7 and 8 using the modified scale are available upon request from the authors.

Table 1 - Incidence and Profile of Minimum Wage Workers by Selected Characteristics, Employees Aged 21-64, 2006

	Per Cent in Category who are Minimum Wage Workers			*Per Cent of Minimum Wage Workers*[d]
Characteristic	*Part-time Employees*[a]	*Full-time Employees*[b]	*All Employees*[c]	
Female	18.6	10.5	14.0	63.4
Male	28.1	6.0	8.4	36.6
Married	16.6	5.7	8.9	42.0
Aged 21-24	28.7	15.1	19.0	18.9
Highest educational qualification				
Year 11	28.7	12.4	18.1	33.6
Year 12	21.8	10.9	14.2	18.3
Cert I/II	37.6	16.4	23.2	3.3
Occupation				
Labourers & Related Workers	38.4	26.2	22.9	20.5
Elementary Clerical, Sales & Service	27.0	17.0	31.7	13.1
Tradespersons & Related Workers	31.3	8.9	10.7	32.7
Industry				
Agriculture	43.8	28.8	33.1	5.8
Retail Trade	29.5	10.9	18.4	16.7
Accommodation, Cafes & Restaurants	28.5	19.4	24.0	9.3
Health and Community Services	15.2	13.9	14.5	19.6
Cultural and Recreational Services	30.6	9.4	16.1	3.9
Personal and other services	30.2	10.7	15.1	4.6
Equivalised household income[e]				
1st (bottom) decile	42.9	19.5	33.7	5.3
2nd decile	42.6	35.6	39.6	6.6
3rd decile	29.9	20.5	25.2	11.3
4th decile	23.1	20.7	21.7	17.2
5th decile	21.6	15.5	17.6	18.0
6th decile	23.0	9.6	13.4	16.3
7th decile	12.8	4.8	6.9	8.6
8th decile	12.7	5.3	6.8	9.1
9th decile	14.2	2.4	4.3	5.8
10th decile	6.5	1.0	1.8	2.0
All	20.5	7.7	11.2	100.0

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6. Notes: [a] Per cent of part-time employees with row characteristics e.g. 18.6 per cent of female part-time employees are minimum wage workers. [b] Per cent of full-time employees with row characteristics e.g. 10.5 per cent of female full-time employees are minimum wage workers. [c] Per cent by row e.g., 14.0 per cent of females are minimum wage workers. [d] Per cent by column e.g. 63.4 per cent of minimum wage workers are female. [e] Percentile bands relate to equivalised income for the full population.

4. Modelling Methodologies

Microsimulation Modelling

It is well established that the interaction between Australia's tax and benefit systems results in many persons facing very low financial incentives to either enter the labour force or, for current employees, to expand the number of hours they work. Two commonly used measures of work disincentives are the effective marginal

tax rate (EMTR) and the replacement rate (RR). The EMTR is the proportion of an incremental increase in earnings that the worker loses through higher taxes and reduction in benefit entitlements. The RR measures disposable income while not working as a proportion of disposable income while employed. It measures how much of disposable income while employed is 'replaced' or 'retained' when a person becomes displaced from employment. Hence, the higher the RR, the blunter the work incentives to remain employed in low paid jobs. Thus, EMTRs are most appropriate to capturing disincentives associated with an increase in hours worked or the net effect of wage increases, while the RR is a measure of the disincentive to working as opposed to not working.

Moreover, recent work based on the HILDA data and the tax-benefit component of the AHURI-3M microsimulation model has provided evidence that the replacement rates individuals face do indeed have a considerable impact upon their propensity to gain employment (Dockery *et al*., 2008; and Wood *et al*., 2009). Therefore, the RRs facing minimum wage workers are another important dimension of their circumstances, and potentially of their future labour market outcomes. This section examines the work incentives faced by minimum wage workers by comparing their disposable incomes while employed with the disposable incomes they would have if they were to become unemployed or to withdraw from the labour force. This comparison gives an indication of how much more financially worse off a worker would be if displaced from a low paid job. A second issue relevant to the trade-off between positive equity effects and negative displacement effects of minimum wages is the degree to which increases in workers' wages due to minimum wage rulings translate into increased net income. This relates directly to the EMTRs facing minimum wage workers. To address this question, we model the impact of the increase in the minimum wage between 2006 and 2007 on EMTRs.

Given that minimum wage workers are on low pay, almost half are in income units that are in receipt of government benefits in the form of income support, family payments and/or housing assistance while working, though these may be at reduced rates. If they become unemployed or leave the labour force, their benefit entitlements will increase while their tax liabilities will decline with the loss of wage income. If minimum wage workers' incomes are largely similar in the employed and non-employed states, then leaving a low paid job does not leave them much worse off in financial terms.

For each minimum wage worker, disposable income is defined as their income unit private income and government benefits less income unit tax liabilities.[3] The calculation of disposable income on an income unit basis allows for interdependencies between adults belonging to the same income unit. Disposable incomes in each labour force state are computed using the 2006-07 tax-benefit component of a microsimulation model, AHURI-3M (Wood and Ong, 2008). The model is able to calculate disposable incomes for actual income units in the HILDA Survey (as opposed to hypothetical income units) taking into account the interactions of the tax-benefit parameters.

A minimum wage worker's income in an unemployed or not-in-the-labour-

[3] Even though public housing subsidy is an in-kind subsidy, for the purposes of this exercise the amount of in-kind subsidy is added to disposable income as though it is a cash entitlement.

force (NILF) state is imputed using the following assignment rules. First, the means-tested income support type the individual receives while employed remains unchanged if the individual is displaced from his/her job. For example, if a minimum wage worker reports receiving a Parenting Payment while employed, it is assumed that if the minimum wage worker were to become unemployed or NILF, s/he would still receive a Parenting Payment but at a higher rate. Second, disabled minimum wage workers who do not receive a means-tested income support payment while employed (13 per cent are in this category) are assumed to receive a Disability Support Pension (DSP) if unemployed or NILF.[4]

There are, however, three critical differences between movements into the unemployed and NILF states. First, a non-disabled minimum wage worker who does not receive a means-tested income support payment while employed is assumed to receive NewStart Allowance if s/he becomes unemployed, but no means-tested income support payments if s/he leaves the labour force because persons who are NILF do not meet the activity test requirements associated with eligibility for NewStart Allowance. Similarly, a non-disabled minimum wage worker receiving NewStart Allowance while employed does not receive any means-tested income support payment if s/he becomes NILF as a result of not meeting the activity test requirements.[5] Third, in a NILF state, an individual is assumed to be eligible for retirement annuities if aged 55 or over.[6]

Panel Regression Modelling

Section 6 presents cross-sectional comparisons for 2006 before utilising the longitudinal nature of the HILDA data to compare the subjective wellbeing of the same people as they move between different labour market states. HILDA respondents are classified into five labour force states in each year from 2001 to 2007: the unemployed, those not in the labour force, minimum wage workers, medium wage workers and high wage workers. As noted, this is problematic as there are only two years of survey data (2006 and 2007) in which a minimum wage determination applied. In those years minimum

[4] In July 2006, the DSP eligibility criteria was tightened such that only disabled people with an assessed work capacity of less than 15 hours per week are eligible subject to meeting income eligibility rules as well. These reforms are not modelled as we are unable to observe each person's assessed work capacity. However, we expect the impact of the DSP reform on average incomes to be minimal, as the new tightened DSP eligibility criteria only applies to post-July 2006 DSP applicants. Pre-July 2006 DSP applicants are not subject to the new rules. We find that among employed disabled DSP recipients in wave 5 of the HILDA Survey, 97 per cent were also DSP recipients in the previous year. Similarly, 97 per cent of employed disabled DSP recipients in wave 4 of the HILDA Survey were DSP recipients in the previous year. The figures indicate that the proportion of employed disabled persons who are post-July 2006 DSP applicants is likely to be small and likely to be around three per cent.

[5] It is unlikely minimum wage workers, especially those who live alone or are a major household breadwinner, would not apply for a means-tested income support payment should they move out of the labour force. Hence, this assumption is likely to result in an under-estimation of the average incomes of the population that leave the labour force.

[6] Retirement annuities are imputed for minimum wage workers aged 55 or over who move into a NILF state by taking the mean values of the retirement annuities of a comparable group of actual NILF individuals who are predicted to be minimum wage workers in the Heckman regression. We calculate the mean retirement annuities by age for this comparison group and find the mean values to range from $0 to $4,400. This equates to a mean of only $2,100 as over 88 per cent of them do not have retirement annuities.

wage workers are defined as those earning up to ten per cent above the minimum wage, as set out above. The threshold used for defining the minimum wage workers in the previous years (2001 to 2005), is obtained by deflating the 2006 figure of $14.82 per hour by the consumer price index. The threshold separating medium and high wage workers is kept at the 75th percentile of the wage distribution of the sample calculated for each year. This was $32.55 per hour in 2006 and $34.15 per hour in 2007.

To account for fixed individual effects, random effects and fixed effects panel models are then estimated to identify the impact of labour force state on life satisfaction and self-assessed financial stress level. Only a handful of additional explanatory variables that are largely unrelated to the job are included; namely gender, age, marital status and disability status. The number of explanatory variables is deliberately limited since the main interest is in the 'gross' wellbeing of the minimum wage workers, rather than identifying the factors contributing to their level of wellbeing. For example, including occupation, industry or education level would likely capture much of the 'minimum wage worker' effect, but our interest is in the full impact of being in a minimum wage job, not the impact after controlling for such attributes.

5. Key findings: Disposable Incomes and Work Incentives of Minimum Wage Workers

In this section, we report estimates from a series of microsimulation modelling exercises designed to examine the disposable incomes and work incentives that apply to minimum wage workers, and the potential income implications of recent wage rulings on their work incentives. First, we measure changes in the disposable incomes of minimum wage workers if they were to become unemployed or NILF. These estimates indicate to what extent minimum wage workers' overall net position changes when moving into unemployment or out of the labour force. Second, the question of how much more financially worse off a worker would be if displaced from a low paid job is further addressed by computing RRs for minimum wage workers, and for those observed out of employment in the HILDA Survey, but who would have received the minimum wage if they were employed (the 'predicted minimum wage workers'). Third, we simulate the impacts of the 2007 Fair Pay Commission ruling that increased the minimum wage marginally on workers' financial situation.

Table 2 below compares the annual mean disposable incomes and income components of full-time and part-time minimum wage workers if they were to become unemployed or NILF. The table estimates indicate that full-time minimum wage workers will experience a mean decline in income unit disposable income of $14,100 if displaced from their full-time jobs to become unemployed, as compared to $7,100 if part-time workers become unemployed. If the minimum wage workers were to move out of the labour force, they would be ineligible for NewStart Allowance leading to a larger decline in income unit disposable income of $18,600 and $9,200 for full-time and part-time workers respectively (see table 2b).

Table 2 - Net Annual Income Unit Disposable Income of Minimum Wage Workers in $`000s, by Labour Force State, 2006

(a) Employed to Unemployed

		Income while Employed	*Income while Unemployed*	*Change in Income*
Full-time MW workers	Private income	44.8[a]	18.8	-25.9
	Government benefits	3.0	11.1	8.1
	Tax liabilities	6.2	2.5	-3.7
	Disposable income	41.6	27.5	-14.1
Part-time MW workers	Private income	45.4[a]	32.9	-12.5
	Government benefits	7.7	12.0	4.3
	Tax liabilities	7.5	6.4	-1.1
	Disposable income	45.5	38.5	-7.1
All MW workers	Private income	45.1	25.6	-19.5
	Government benefits	5.3	11.6	6.3
	Tax liabilities	6.8	4.4	-2.5
	Disposable income	43.5	32.8	-10.7

(b) Employed to NILF

		Income while Employed	*Income while Unemployed*	*Change in Income*
Full-time MW workers	Private income	44.8[a]	19.0	-25.7
	Government benefits	3.0	6.3	3.3
	Tax liabilities	6.2	2.3	-3.8
	Disposable income	41.6	23.0	-18.6
Part-time MW workers	Private income	45.4[a]	33.1	-12.3
	Government benefits	7.7	9.6	1.9
	Tax liabilities	7.5	6.3	-1.2
	Disposable income	45.5	36.4	-9.2
All MW workers	Private income	45.1	25.8	-19.2
	Government benefits	5.3	7.9	2.6
	Tax liabilities	6.8	4.3	-2.6
	Disposable income	43.5	29.4	-14.1

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6. *Note*: [a] The mean income unit private income of part-time minimum wage workers is slightly higher than for full-time minimum wage workers. This is a reflection in the differences in income unit types between the two groups. Part-time minimum wage workers are much more likely to be partnered than full-time minimum wage workers.

The breakdown of income components provides some insight into the extent to which a loss of wage is offset by increases in government benefits and reductions in tax liabilities. Among both full-time and part-time minimum wage workers, the mean decline in income unit private income is offset by over 40 precent (over one-quarter) by a simultaneous increase in benefits and reduction in tax liabilities if they become unemployed (NILF).

Table 3 contains estimates of replacement rates. Part-time minimum wage workers have significantly blunter work incentives than full-time workers. If a part-time minimum wage worker becomes unemployed (NILF), 84 per cent (71 per cent) of the part-time worker's income will be retained as compared to 65 per cent (46 per cent) for full-time workers. Hence, workers clearly experience a greater decline in financial well-

being if displaced from full-time jobs than from part-time jobs. The estimates also indicate that part-time minimum wage workers have lower incentives to remain in their jobs than full-time minimum wage workers. In fact, over eight per cent (five per cent) of part-time minimum wage workers have RRs of over 100 per cent if they become unemployed (NILF) indicating that the combined interactions of reduced taxes and increased income support payments result in their households becoming, in fact, financially better off if they lost or quit their jobs. Existing papers on welfare reforms indicate groups such as public renters, whose rents are linked to their income, are particularly susceptible to RRs of over 100 per cent (Dockery *et al*., 2008; and Wood *et al*., 2005). Nonetheless, the RR distribution indicates that the majority of minimum wage workers, regardless of whether they are in full-time or part-time jobs, would find that over half of their incomes would be replaced if they were to become unemployed or leave the labour force.

Table 3 - Replacement Rates of Minimum Wage Workers, by Labour Force State, 2006

(a) Employed to Unemployed

	Full-time MW Workers	*Part-time MW Workers*	*All MW Workers*
Mean RR (%)	64.8	84.4	74.3
RR distribution (%)			
RR ≤ 25%	1.3	0.0	0.7
25% < RR ≤ 50%	20.4	0.7	10.9
50% < RR ≤ 75%	52.5	25.6	39.5
75% < RR ≤ 100%	23.6	65.7	43.9
RR > 100%	2.2	8.1	5.0
Total	100.0	100.0	100.0

(b) Employed to NILF

	Full-time MW Workers	*Part-time MW Workers*	*All MW Workers*
Mean RR (%)	46.1	70.6	57.9
RR distribution (%)			
RR ≤ 25%	30.8	12.8	22.1
25% < RR ≤ 50%	9.4	3.4	6.5
50% < RR ≤ 75%	43.1	23.9	33.8
75% < RR ≤ 100%	15.1	54.9	34.3
RR > 100%	1.6	5.1	3.3
Total	100.0	100.0	100.0

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.

Next, we compute RRs for those observed out of employment in the HILDA Survey, but who would have received the minimum wage if they were employed ('predicted minimum wage workers'). The potential wage for the unemployed and individuals not in the labour force is estimated using a Heckman two-step regression to correct for sample selection bias.[7] This allows us to generate a comparison group: those unwaged persons who are predicted to be minimum wage workers if they were in a job. A comparison of their income while not employed with their income if they

[7] Details of the regression models are provided in Appendix A.

were employed gives an indication of how financially better off these individuals would be if they were to accept a low paid job. RR estimates are generated for this pool of predicted minimum wage workers assuming first that they have been offered a full-time job at 38 hours and then assuming that they have been offered a part-time job at the 2006 average part-time hours of 18 hours.

The estimates in table 4 support those presented in table 3. The mean estimates indicate that for a non-employed individual, income in the non-employed state is in fact almost four-fifths of the income the individual would get if employed part-time. This finding is significant as the RR measure does not take into account work-related expenses that would be incurred by individuals who move into employment. After taking into account such expenses as transport costs, work clothing and child care expenses, the incentive to move into part-time work might be eroded altogether. The mean RR for one moving into full-time employment is slightly lower at 68 per cent, but nevertheless, almost 90 per cent of individuals in the predicted minimum wage worker sample still have RRs of over 50 per cent and over one-third have RRs of over 75 per cent.

Table 4 - Replacement Rates of Predicted Minimum Wage Workers, by Labour Force State, 2006

	Predicted Status = Full-time Employed	*Predicted Status = Part-time Employed*
Mean RR estimate (%)	67.6	79.3
RR distribution (%)		
RR ≤ 25%	2.8	1.5
25% < RR ≤ 50%	7.9	2.2
50% < RR ≤ 75%	55.2	29.0
75% < RR ≤ 100%	32.9	64.3
RR > 100%	1.2	3.0
Total	100.0	100.0

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.

In its 2006 ruling, the Australian Fair Pay Commission set the basic minimum wage at $13.47 per hour. In 2007, this was increased by $0.27 per hour to $13.74 per hour. Two important issues in assessing the impact of these policy developments on workers' financial situation are:

1. What is the impact of having the minimum wage as opposed to not having a minimum wage? and
2. Once in place, what is the impact of an increase in the minimum wage?

Turning to the first of these questions, 404 workers in our 2006 sample were receiving below the minimum wage. The impact of the presence of the minimum wage on work incentives, assuming it is universally binding, can be tested by comparing the disposable income of these 404 workers based on their reported (below minimum) wage with their disposable income if they were all instead to receive the minimum wage.

Table 5 shows that for all workers, the gain in mean wage (and therefore mean private income) under the 2006 minimum wage ruling is $5000 per year. Full-time workers gain $6800, more than twice the gain experienced by part-time workers. However, for full-time (part-time) workers approximately one-quarter (one-third) of this gain is eroded by a reduction in government benefits together with an increase in

tax liabilities, resulting in an increase in mean disposable income of $5000 ($2200) per year. The 2006 minimum wage ruling appears to have more impact on full-time workers, who retain approximately three-quarters of the minimum wage increase compared to part-time workers who lose around two-thirds of the minimum wage increase in government benefit reductions and tax increases.

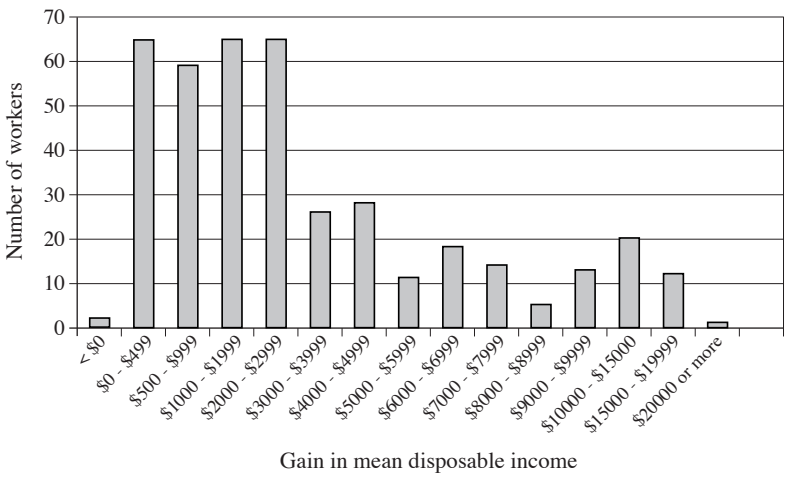
Table 5 - Comparison of Net Annual Income Unit Disposable Income when Receiving Below Minimum Wage with Receiving the Minimum Wage ($'000), 2006

		Income while receiving below MW	*Income while receiving MW*	*Change in Income*
Full-time workers	Private income	37.8	44.6	6.8
	Government benefits	3.3	2.7	-0.6
	Tax liabilities	4.4	5.7	1.2
	Disposable income	36.7	41.6	5.0
Part-time workers	Private income	41.3	44.7	3.3
	Government benefits	7.9	7.2	-0.7
	Tax liabilities	6.8	7.2	0.4
	Disposable income	42.5	44.7	2.2
All workers	Private income	39.6	44.6	5.0
	Government benefits	5.6	5.0	-0.7
	Tax liabilities	5.6	6.4	0.8
	Disposable income	39.6	43.2	3.6

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.

Figure 2 below shows the distribution of gains in annual mean disposable income. It indicates that the majority of the workers receiving below minimum wages would receive annual gains of up to $3000 under the 2006 minimum wage ruling had it been imposed on their employers.

Figure 2 - Distribution of Gains in Annual Mean Disposable Income, 2006



Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.

Finally, the decision to increase the basic minimum wage by $0.27 per hour in 2007 is equivalent to a 'marginal' increase, to which the EMTR measure is directly applicable. We examine the impacts of the 2007 minimum wage increase by examining the EMTRs of the 2006 sample of minimum wage workers when their wages are increased by $0.27 per hour. The mean EMTR estimates show that the average minimum wage worker (full-time and part-time) would retain approximately two-thirds of a wage increase under the 2007 ruling. For the majority of both full-time and part-time workers, EMTRs are less than or equal to 50 per cent, so their income units will pocket most of any incremental increase in the minimum wage rate if it were passed on. This also suggests that, despite the high replacement rates minimum wage workers are likely to face when out of employment, the disincentives to increase work efforts among existing minimum wage workers are relatively minor.

Note, however, that this simulation is likely to have under-estimated the EMTRs and therefore work disincentive effects of the 2007 wage ruling. Under this simulation, all minimum wage workers' hourly rates were increased by $0.27 per hour, including the hourly rates of 404 workers in the sample who were in fact earning below the minimum wage rate and who were therefore very likely to be in the income test free area even when their hourly rates are increased by $0.27 per hour. The simulation was re-run assuming that all those earning below the minimum wage were in fact earning the minimum wage rate of $13.47 per hour. Under this scenario, the proportion of workers with EMTRs of less than or equal to 25 per cent decreases from 44.2 per cent (as indicated in the table below) to 24.5 per cent, and mean EMTRs rise from 31.8 per cent to 37.3 per cent.

Table 6 - Effective Marginal Tax Rates of Minimum Wage Workers When Wages are Increased by $0.27 per hour (2007 Ruling), 2006

	Full-time MW Workers	*Part-time MW Workers*	*All MW Workers*
Mean EMTR (%)	32.7	30.8	31.8
EMTR distribution (%)			
EMTR ≤ 25%	35.8	53.2	44.2
25% < EMTR ≤ 50%	50.9	25.9	38.9
50% < EMTR ≤ 75%	9.7	17.8	13.7
75% < EMTR ≤ 100%	1.3	1.7	1.5
EMTR > 100%	2.2	1.3	1.8
Total	100.0	100.0	100.0

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.

6. Key findings: The Wellbeing of Minimum Wage Workers

Table 7 presents a selected range of measures relating to individuals' wellbeing and socio-economic circumstances and provides comparisons to the unemployed and the other selected groups outlined above. Data in the first nine rows relate to various subjective measures of wellbeing – self assessed health status, a rating of life satisfaction similar to those now used in a growing volume of 'happiness studies', and overall job satisfaction. As argued above, the most salient comparison is between the

minimum wage workers and the unemployed. It can be seen that unemployed persons have a significantly lower self-assessed level of wellbeing than persons working in a minimum wage job. This relates to general health, mental health and a broader assessment of their overall quality of life. Although the numerical difference in mean life satisfaction between the minimum wage workers and the unemployed seems small (0.57 on an 11 point scale), this is in fact a sizeable difference in the context of other empirical findings in happiness research, due to the tendency of responses to be tightly clustered around scores of seven or eight on such scales. In statistical terms, the difference is highly significant. The questions relating to job satisfaction are of course not applicable to the unemployed.

Table 7 - Means for Selected Indicators of Well-being, Persons aged 21-64 by Workforce Status, 2006

	Minimum Wage Workers	*NILF*	*Unemployed*	*Medium Wage Workers*	*High Wage Workers*
Self-assessed General Health [1-5][a,b]	**3.44**	2.95***	3.11***	3.55***	3.63***
SF-36 Mental Health[0-100][b]	**73.49**	68.82***	64.03***	75.03**	77.96***
Life Satisfaction [0-10][a,b]	**7.74**	7.68	7.17***	7.76	7.87**
Satisfaction with [0-10]:					
Your job, all things considered[a,b]	**7.61**	N/A	N/A	7.56	7.71
The work itself[b]	**7.62**	N/A	N/A	7.52	7.72
Your total pay[b]	**6.20**	N/A	N/A	6.87***	7.75***
Hours you work[b]	**7.20**	N/A	N/A	7.29	7.04*
Flexibility to balance work/nonwork commitments[b]	**7.52**	N/A	N/A	7.35	7.17***
Your job security[b]	**7.78**	N/A	N/A	8.03***	8.20***
Equivalised household income	**$30,983**	$28,572*	$25,637***	$42,379***	$66,926***
Self-Assessed Financial Stress Level [1-6][a,c]	**3.39**	3.40	3.79***	3.24***	2.86***
Home Owner (No=0/Yes=1)	**0.55**	0.64***	0.40***	0.66***	0.78***
Renting Public (No=0/Yes=1)	**0.05**	0.10***	0.09**	0.02***	0.01***
(Observations)[d]	**(640)**	(1819)	(260)	(3862)	(1297)

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6. *Notes*: ***, **, and * denote significance at the one per cent, five per cent and ten per cent levels, respectively, according to the standard t-test for the difference in means between the reported figure and the corresponding figure for minimum wage workers. [a] The statistical significance of the differences in responses across categories is confirmed using the Mantel-Haenszel chi-square test. [b] The underlying variable is coded such that a higher number on the scale represents a more positive outcome; [c] Response options are from a scale ranging from 1='prosperous' to 6='very poor'; [d] Not all observations are included in each calculation due to missing values on some of the variables.

It is also clear that the unemployed face significantly worse financial circumstances than those in minimum wage employment. In terms of equivalised household income (see section 3), the HILDA data show that unemployed persons live in households with, on average, almost $5000 per annum less in 'equivalised' income. This evidence of lower income in dollar terms is reinforced by self-assessments

of prosperity relative to 'current needs and financial responsibilities', in which the average unemployed person is found on a point on the scale close to 'just getting along' and the average minimum wage worker closer to 'reasonably comfortable'. Again, the differences in means for these measures of financial wellbeing are highly significant in the statistical sense.

The final two rows of table 7 relate to housing status, a factor known to have a strong correlation with individuals' socio-economic opportunity and labour market outcomes (see Wood *et al*., 2009). The unemployed are significantly less likely to own their own home (either outright or with a mortgage) and almost twice as likely to be in public housing as those workers in minimum wage jobs.

The comparisons to the other groups also provide some interesting results. Working age persons who are not participating in the labour force report worse general health, and indeed this may be their reason for non-participation, but otherwise display better mental health and life satisfaction than the unemployed and relatively similar outcomes to minimum wage workers. Compared to minimum wage workers, medium and high wage workers report better health and better financial and housing outcomes, with the high wage employees clearly faring best on each measure. In terms of overall life satisfaction the differences are more marginal. Only the high wage workers display higher average self-assessed life satisfaction compared to minimum wage workers, and even here the difference is significant only at the 5 per cent level. As for job satisfaction, there is in fact no robust evidence that workers in minimum wage jobs find those jobs less satisfying than do those with medium-wage or even high-wage jobs. Minimum wage workers are actually more satisfied with their hours of work and flexibility to balance work/non-work commitments than high-wage workers, but less satisfied with job security and total pay than medium-wage or high-wage workers.

An important qualification to these comparisons is that the minimum wage workers may be quite unlike persons in the other workforce categories. Say, for example, the typical minimum wage worker has markedly different human capital characteristics to the typical unemployed person. Would we then expect a minimum wage worker who became unemployed to report the similar levels of life satisfaction to the current stock of unemployed persons? We consider this further in a number of ways. Still using 2006 cross-section data, we attempt to move closer to a quasi-experimental or 'matching' approach by identifying persons within the pool of unemployed and of non-participants who are likely to be minimum-wage workers if they were employed. That is, we attempt to match the minimum wage workers to those most like them among the unemployed and non-participants in terms of their predicted wage as a means of identifying the likely welfare of the minimum wage workers if they were instead to be unemployed or outside the labour force (the 'predicted minimum wage workers' described in the previous section). As shown in table 8, these comparisons reveal even more starkly the decline in welfare associated with unemployment, as opposed to having work in a minimum wage job.

Table 8 - Means for Selected Indicators of Well-being, Persons Aged 21-64 by Workforce Status, 2006

	Minimum Wage Workers	*Predicted Minimum Wage Workers from Among:*	
		NILF	*Unemployed*
Self-assessed General Health [1-5][a,b]	3.44	2.85***	2.96***
SF-36 Mental Health[0-100][b]	73.49	65.24***	60.05***
Life Satisfaction [0-10][a,b]	7.74	7.63	7.21***
Equivalised household income	$30,983	$23,449***	$19,973***
Self-Assessed Financial Stress Level [1-6][a,c]	3.39	3.54***	3.81***
Home Owner (No=0/Yes=1)	0.55	0.55	0.33***
Renting Public (No=0/Yes=1)	0.05	0.14***	0.12***
(Observations)[d]	(640)	(785)	(89)

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Wave 6.
Notes: See notes to table 7.

Formal random and fixed effects panel models were also estimated for life-satisfaction and self-assessed financial stress level (see table 9). For life satisfaction, a panel linear regression model is estimated. With the dependent variable being an ordered categorical variable ranging from 0 to 10, the linear model is not the ideal specification but is the preferred model to report here. The relative magnitude and significance of the estimated coefficients are consistent with those obtained using a panel probit or logit model, and the coefficients in the linear model have a more straightforward interpretation.[8] The results reported in models (1) and (2), are consistent with those well established in empirical 'happiness' studies: married people are more satisfied with their lives; persons with a disability less satisfied, and life satisfaction reaches a nadir at age 35-45. The important result is with respect to the effect of labour force status variables. Minimum wage workers have been modelled as the default category, so that the coefficients on the other labour force states can be interpreted as the effect relative to being a minimum wage worker. Being unemployed significantly reduces life satisfaction compared to being in a minimum wage job, and this is confirmed in both the random effects and the fixed effects models. The magnitude of this effect is quite large – the coefficient is close to -0.3 in the random effects model – which is around one-fifth of the standard deviation in the life-satisfaction variable for the pooled data. In magnitude it equates to around half the effect of being unmarried as opposed to married, which is consistently found in empirical studies to be one of the largest and most robust effects on subjective wellbeing.

[8] For an ordered categorical variable, the ordered probit model is generally seen as the more appropriate specification. However, using STATA, the longitudinal panel version of the probit model (XTPROBIT) requires the dependent variable to be binary, and thus the responses on the 0 to 10 scale must be arbitrarily divided into a 'satisfied' and 'not satisfied' dichotomy. Responses tend to cluster around 7, 8 and 9 towards the 'completely satisfied with my life' end of the scale. Using a split of 7 and below as 'dissatisfied' and 8 and above as 'satisfied' leads to essentially the same conclusions as in the random effects linear regression models. However, inference in the fixed effect model is severely limited due to the small proportion of the sample observed to move between the 'dissatisfied' and 'satisfied' states within the six-year period. This is less of a concern in the linear fixed effects model which allows greater variation in the dependent variable.

In contrast, the estimates suggest no significant effect upon life satisfaction of having a job with medium wages as opposed to a minimum wage job. Even being in a high wage job has a small and significant positive effect only in the random effects model. Persons outside of the labour force have lower life satisfaction than the employed, but far less so than the unemployed. The estimated effect of being out of the labour force is considerably reduced in both magnitude and statistical significance in the fixed effects model which controls more stringently for individual effects.

Table 9 - Panel Model Estimates of Life-satisfaction and Incidence of Self-assessed Financial Stress, HILDA Waves 1 to 7

	Life Satisfaction (0 to 10) Linear Regression				*Likelihood of being in Self-assessed Financial Stress (Logit Model)*			
	Random Effects (1)		*Fixed Effects (2)*		*Random Effects (3)*		*Fixed Effects (4)*	
	Coef.	*P>|z|*	*Coef.*	*P>|t|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Intercept	7.956	0.00	7.867	0.00	-1.119	0.00		
Male		-0.157	0.00			0.396	0.00	
Age:								
21 to 24 years	0.200	0.00	0.177	0.00	-0.495	0.00	-0.031	0.80
25 to 34 years	0.078	0.00	0.082	0.00	-0.139	0.02	0.085	0.29
35 to 44 years	—		—		—		—	
45 to 54 years	0.100	0.00	0.024	0.38	-0.318	0.00	-0.388	0.00
55 to 64 years	0.341	0.00	0.103	0.01	-1.057	0.00	-0.976	0.00
Marital status:								
Married	—		—		—		—	
Separated	-0.539	0.00	-0.392	0.00	1.340	0.00	0.564	0.00
Never married	-0.404	0.00	-0.293	0.00	0.510	0.00	0.298	0.00
Widow	-0.307	0.00	-0.413	0.00	0.458	0.01	-0.331	0.19
Has long-term disability	-0.255	0.00	-0.121	0.00	0.442	0.00	0.016	0.76
Labour force status								
Not in the labour force	-0.095	0.00	-0.053	0.04	0.553	0.00	0.414	0.00
Unemployed	-0.290	0.00	-0.205	0.00	1.000	0.00	0.640	0.00
Minimum wage worker	—		—		—		—	
Medium wage worker	0.017	0.37	0.016	0.44	-0.478	0.00	-0.256	0.00
High wage worker	0.044	0.08	0.015	0.58	-1.688	0.00	-0.711	0.00
Observations	56850		56850		51503		21920	
Individuals	13110		13110		12403		4048	
Obs. Per individual								
Minimum	1		1		1		2	
Average	4.3		4.3		4.2		5.4	
Maximum	7		7		7		7	
R-sq: within	0.01		0.01					
between	0.09		0.07					
overall	0.06		0.05					
Wald/LR chi-sq	1363.8	0.00		1783.5	0.00	326.0	0.00	
F-statistic			23.1	0.00				

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Waves 1-7.

Models (3) and (4) of table 9 investigate the impact of labour force status on the likelihood of an individual assessing himself or herself as being in financial stress based on the HILDA survey question on prosperity given current needs. In order to estimate a panel model the independent variable is recoded as a dummy variable, with those indicating they are 'just getting along', 'poor' or 'very poor' coded as experiencing financial stress, and those who assessed themselves as 'reasonably comfortable', 'very comfortable' or 'prosperous' coded as not being in financial stress. A positive coefficient indicates a greater likelihood of the respondent indicating that they are in financial stress. The results indicate that people in their prime working age (25-44 years) and divorcees are the most likely to face financial stress.

In terms of labour force status, the panel models confirm that it is the unemployed who are the most likely to assess themselves as being in financial stress and, to a lesser extent, non-participants. Being unemployed has a broadly similar level of impact on the incidence of self-assessed financial stress as a marital breakdown. In contrast to life satisfaction, having a medium wage job as opposed to a minimum wage job does significantly improve individual's assessment of their financial stress level, but the effect is not as strong in magnitude as the impact of unemployment. As would be expected, high wage earners are significantly less likely to assess themselves as being in financial stress.

Given the large proportion of minimum wage workers who are also part-time employees, a variable for part-time work was also included in the models (results not reported). The variable is insignificant in the models for life satisfaction and its inclusion has only trivial effects on the other coefficients. In models (3) and (4), working part-time is associated with a significantly greater chance of assessing oneself as being in financial stress. Its inclusion accentuates the estimated detrimental impact of unemployment on individuals' financial circumstances and reduces the estimated positive effects of being in jobs offering earnings above the minimum wage.

Finally, restricting the sample to persons observed in one of the five labour force categories defined above in both 2006 and 2007, table 10 provides some gauge of the degree of persistence in each category and the flows between states. Of the persons who were minimum wage workers in 2006, 39 per cent were also minimum wage workers in 2007. A larger proportion (48 per cent) had moved into medium wage work. Just eight per cent left the labour force altogether, and very few became unemployed or high-wage workers. Conversely, looking at the minimum wage workers in 2007, around 47 per cent were minimum wage workers in the previous year and just under 40 per cent were medium wage workers in 2006. Very few high wage workers move into minimum wage work. The general picture for minimum wage workers is one of relatively low persistence - more than half leave this category each year – with most movement to (and from) medium paid employment.

Table 10 - Transition Matrix between Labour Force States, Wave 6 to Wave 7

	Labour Force Status in 2007 (row per cent)						
Labour Force Status in 2006	*Not in the Labour Force*	*Unemployed*	*Minimum Wage Workers*	*Medium Wage Workers*	*High Wage Workers*	*Total*	*(Obs.)*
Not in the labour force	83%	4%	3%	9%	1%	100%	(1529)
Unemployed	27%	25%	8%	38%	3%	100%	(212)
Minimum wage workers	8%	2%	39%	48%	3%	100%	(545)
Medium wage	4%	1%	5%	80%	9%	100%	(3213)
High wage	3%	1%	1%	19%	76%	100%	(1283)
All	23%	3%	7%	49%	19%	100%	(6782)
(obs)	(1555)	(183)	(449)	(3291)	(1304)	(6782)	

Source: Authors' own calculations from confidentialised unit record files of the HILDA Survey Waves 6 and 7.

In summary, inspection of key indicators across a range of aspects of socioeconomic status suggests that the unemployed are considerably worse off than persons who are in a job but paid at around the minimum wage or lower. With many qualifications, this provides a prima facie case that any unemployment created by minimum wage legislation will be associated with a substantial decline in the wellbeing of those workers affected.

7. Conclusion

In this paper we have investigated the circumstances of persons paid near or below the Federal Minimum Wage with respect to a range of aspects of their lives, and the financial incentives they face to engage with the labour market. While such a descriptive overview is of interest in its own right, another motivating theme has been to contrast the wellbeing of the unemployed and those not in the labour force with those in minimum wage jobs. This contrast is crucial to minimum wage determinations if we are to accept that there is a trade-off between higher wages and employment opportunity.

Our overall conclusion is that the Fair Pay Commission's successor should be extremely wary of the potential impact of higher minimum wages on employment. The evidence is that unemployment is associated with substantially worse outcomes – in terms of general wellbeing and financial prosperity – than those experienced by people working in minimum wage jobs. On the other side of the coin, it seems that increases in the minimum wage will have virtually no effect on the wellbeing of those affected and lead to relatively minor improvements in disposable incomes. The financial effect is modest because the tax and welfare systems in Australia already operate to supplement the incomes of the low paid, although this in turn contributes to work disincentives for the low paid and non-employed. The main findings leading to this conclusion are as follows.

In terms of wellbeing, the main indicator used is individuals' reported satisfaction with their life as a whole. Using several approaches it is found that the unemployed have far lower life satisfaction than minimum wage workers, while medium wage workers are not any more satisfied with their lives than minimum wage

workers. Recall that our definition of minimum wage workers includes many who are earning below - often well below - the minimum wage; while the definition of medium wage workers extends from ten per cent above the minimum wage to the 75th percentile of the employee wage distribution. If no difference in life satisfaction can be identified between two broad groups taking in 75 per cent of the wage distribution, then the effect of a marginal increase in earnings from the minimum wage rate to just above it would be trivial in the extreme. Workers in the top 25 per cent of the wage distribution are happier than minimum wage workers, but the effect is small relative to the magnitude of the impact of unemployment on life satisfaction. There is also no evidence that minimum wage workers are less satisfied with their jobs than are higher paid employees.

In terms of loss of household income, it is true that minimum wage workers would be cushioned to a considerable extent by the welfare system if they were to lose their jobs. This is particularly so for part-time workers. The vast majority face replacement rates above 50 per cent and a small proportion of minimum wage workers would actually find their income units financially better off if they were not working. However, this also means that many displaced workers would end up in unemployment traps, with very low incentive to regain employment and potentially leading to longer term unemployment. The incentive to accept part-time work, which accounts for around half of all minimum wage jobs, is particularly muted. Even if the temporary financial impact on the household of a minimum wage worker being displaced from work would be minor, previous research suggests that employment, even part-time employment, is important in protecting families from poverty (Buddelmeyer and Verick, 2008).

Against these effects must be considered the gains in income for minimum wage workers. Had the 2006 minimum wage ruling been applied universally to all low paid employees, we estimate that the disposable incomes of their households would increase by just under ten per cent. We also find that minimum wage workers face relatively low EMTRs, such that they would retain the majority of any increase in the minimum wage rate. It should be remembered, however, that only around ten per cent of minimum wage workers in 2006 were in households in the bottom two deciles of equivalised household income. Most are in the 4th to 6th decile and a significant proportion live in higher income households. Hence we would concur with Leigh's (2007) conclusion that the imposition of minimum wages and further increases in the minimum wage will do little to reduce income inequality between households. To the extent that it reduces employment opportunities for the existing unemployed and those out of the labour force, it may accentuate it.

Exploration of these issues has been constrained by the fact that, at the time of writing, there are only two years of overlap in which an Australian Fair Pay Commission determination was in force and survey data from that year was available through HILDA. As further waves of HILDA data become available, it is hoped that it will be possible to say much more about the impacts of such rulings on wellbeing (or at least to say it more definitively), and possibly even to generate estimates of the effect of minimum wage rulings on employment opportunity using quasi-experimental methods.

Appendix A1

Regression Models for Estimating 'Potential' Wages of the Unemployed and Non-participants

The potential wage for the unemployed and individuals not in the labour force was estimated using a Heckman two-step regression to correct for sample selection bias. The dependent variable was the natural log of the hourly wage rate of those employed. The explanatory variables included human capital characteristics, i.e. marital status, highest educational qualification, work experience, English proficiency, location, number of children and disability status. Separate regressions were run for males and females to allow for gender differences in the magnitude and significance of explanatory variables. The results are presented in table A1 below.

We find the inverse Mills' ratio to be mildly significant (ten per cent level) for males – evidence of sample selection bias, which is corrected for by the inclusion of the inverse Mills' ratio into the regression. However, the inverse Mills' ratio was insignificant for females. The Chi square for both the male and female models were highly significant. The results indicate that males who were married, previously married, and/or those with children earned higher wages. For females, the time spent in paid employment and being resident in Sydney both result in higher wages. Conversely, not speaking English as their first language and the presence of disability both result in lower wages for females. The results also indicate that for both males and females, there are strong positive returns to higher education, i.e. as the highest educational qualification level increases, wage rises.

Table A1 - Heckman Regression, Wave 6

		Males			*Females*		
Explanatory Variables		*Coef.*	*Std. Error*	*Sig.*	*Coef.*	*Std. Error*	*Sig.*
Constant		2.968	0.095	0.000	0.913	0.096	0.000
Marital status (never married omitted)	Married	0.109	0.028	0.000	0.055	0.067	0.413
	Divorced/Separated/ Widowed	0.130	0.042	0.002	-0.068	0.091	0.456
Education	Year 12	0.065	0.040	0.102	0.190	0.077	0.014
	Certificate not defined	-0.024	0.210	0.910	-0.338	0.355	0.341
	Certificate I or II	-0.170	0.094	0.069	0.387	0.200	0.053
	Certificate III or IV	0.065	0.033	0.049	0.156	0.059	0.008
	Diploma/Advance diploma	0.154	0.039	0.000	0.082	0.082	0.317
	Bachelor	0.303	0.042	0.000	0.234	0.078	0.003
	Graduate diploma	0.383	0.060	0.000	0.402	0.116	0.001
	Postgraduate degree	0.425	0.050	0.000	0.113	0.114	0.320
Work experience	Years in paid work	0.007	0.005	0.183	0.037	0.006	0.000
	Years in paid work squared	0.000	0.000	0.982	-0.001	0.000	0.000
	Years unemployed	-0.016	0.013	0.238	-0.091	0.012	0.000
English proficiency (English 1st language omitted)	Good	-0.004	0.050	0.934	-0.343	0.079	0.000
	Poor	-0.209	0.153	0.172	-0.744	0.221	0.001
State/ Capital city (Sydney omitted)	Rest of New South Wales	-0.062	0.051	0.219	-0.348	0.082	0.000
	Melbourne	-0.022	0.032	0.496	-0.049	0.077	0.525

Table A1 - Heckman Regression, Wave 6 (continued)

		Males			*Females*		
Explanatory Variables		*Coef.*	*Std. Error*	*Sig.*	*Coef.*	*Std. Error*	*Sig.*
	Rest of Victoria	-0.115	0.063	0.069	-0.421	0.098	0.000
	Brisbane	-0.079	0.038	0.038	0.030	0.094	0.754
	Rest of Queensland	-0.053	0.045	0.238	-0.273	0.085	0.001
	Adelaide	-0.158	0.046	0.001	-0.162	0.102	0.114
	Rest of South Australia	-0.050	0.099	0.614	-0.657	0.130	0.000
	Perth	-0.018	0.042	0.671	-0.108	0.099	0.275
	Rest of Western Australia	0.093	0.068	0.170	-0.231	0.141	0.102
	Tasmania	-0.161	0.068	0.017	-0.313	0.131	0.017
	North Territory	-0.021	0.099	0.832	0.256	0.284	0.367
	Australia Capital Territory	0.033	0.067	0.623	0.166	0.177	0.348
	Number of children	0.027	0.013	0.030	-0.081	0.020	0.000
	Disabled	0.069	0.101	0.497	-0.765	0.051	0.000
Lambda		-0.432	0.245	0.078	0.332	0.228	0.145
Observations		4395.000			4897.000		
Wald chi2		1068.990		0.000	1144.310		0.000

Source: Authors' own calculations from the HILDA Survey Wave 6

References

Australian Centre for Research in Employment and Work (2006), *Characteristics of Employers of the Low Paid*, Research Report No. 2/06, October, Australian Fair Pay Commission, Melbourne.

Buddelmeyer, H. and Verick, S. (2008), 'Understanding the Drivers of Poverty Dynamics in Australian Households', *Economic Record*, 84(266), 310-321.

Card, D. and Krueger, A. (1994), 'Minimum Wages and Employment: A Case of the Fast-Food Industry in New Jersey and Pennsylvania', *American Economic Review*, 84(4), 772-793.

Clark, A.E., Georgellis, Y. and Sanfey, P. (2001), 'Scarring: the Psychological Impact of Past Unemployment', *Economica*, 68, 221-241.

Clark, A.E. and Oswald, A.J. (1994), 'Unhappiness and Unemployment', *Economic Journal*, 104, 648-59.

Dalton, T. and Ong, R. (2007), Welfare to Work in Australia: Disability Income Support, Housing Affordability and Employment Incentives, *European Journal of Housing Policy* 7(3), 275-297.

Dawkins, P. (2003), 'The 'Five Economists' Plan: The Original Idea and Further Developments', *Labour Economics: A Journal of Labour Economics and Labour Relations,* 5(2), 203-30.

Dockery, A.M., Ong, R. and Wood, G. (2008), *Welfare Traps in Australia: Do They Bite?, Discussion Paper Series 08/2*, Centre for Labour Market Research, Curtin University, Perth.

Feather, N.T. (1990), *The Psychological Impact of Unemployment,* Springer-Verlag, New York.

Flatau, P., Galea, J. and Petridis, R. (2000), 'Mental Health and Wellbeing and Unemployment', *Australian Economic Review*, 33(2), 161-81.

Hashimoto, M. (1982), 'Minimum Wage Effects on Training on the Job', *American Economic Review*, 72(5), 1070-87.

Headey, B. and Wooden, M. (2004), 'The Effects of Wealth and Income on Subjective Well-Being and Ill-Being', *Economic Record*, 80, Special Issue, S24S33.

Healy, J. and Richardson, S. (2007), *A Strategy for Monitoring the Micro-Economic and Social Impacts of the Australian Fair Pay Commission*, Research Report No. 4/07, June, Australian Fair Pay Commission, Melbourne.

Healy, J. and Richardson, S. (2006), *An Updated Profile of the Minimum Wage Workforce in Australia*, Research Report No. 4/06, October, Australian Fair Pay Commission, Melbourne.

Jahoda, M. (1982), *Employment and Unemployment: A Social-Psychological Analysis*, Cambridge University Press, Cambridge.

Jappelli, P. and Pistaferri, L. (2010), 'Does Consumption Inequality Track Income Inequality in Italy?', *Review of Economic Dynamics*, 13(1), 133-153.

Leigh, A. (2007), 'Does Raising the Minimum Wage Help the Poor?', *Economic Record*, 83(263), 432-445.

Lewis, P. (2006), *Minimum Wages and Employment*, Research Report No. 1/06, October, Australian Fair Pay Commission, Melbourne.

McGuinness, S., Freebairn, J. and Mavromaras, K. (2007), *Characteristics of Minimum Wage Employees – Revised 2007*, Report Commissioned by the Australian Fair Pay Commission, Australian Fair Pay Commission, Melbourne.

Winkelmann, L. and Winkelmann, R. (1998), 'Why are the Unemployed so Unhappy? Evidence from Panel Data', *Economica*, 65, 1-15.

Wood, G. and Ong, R. (2008), *Redesigning AHURI's Australian Housing Market Microsimulation Model*, Australian Housing and Urban Research Institute, Melbourne.

Wood, G. and Ong, R. (2009), *Housing Affordability Dynamics in Australia 2001-06. HILDA Survey Conference*, Melbourne, 16-17 July.

Wood, G., Ong, R., Dockery, A.M. and Flatau, P. (2005), *Housing Assistance Programmes and Their Contribution to Poverty and Unemployment Traps*, National Research Venture 1 Research Paper 1, Australian Housing and Urban Research Institute, Melbourne.

Wood, G., Ong, R. and Dockery, A.M. (2009), 'The Long-Run Decline in Employment Participation for Australian Public Housing Tenants: An Investigation', *Housing Studies*, 24(1), 103-126.