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**Accounting for Salary Sacrificed Components of Wage
and Salary Income**

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1. Introduction

Employees may receive, as part of their remuneration package, a number of non-cash or fringe benefits. Common non-cash benefits include employer superannuation contributions, motor vehicles, laptop computers, housing and child care. These can be provided directly or as part of a salary sacrifice arrangement. Salary sacrifice is defined by the Australian Taxation Office (ATO) as ‘...an arrangement between an employer and an employee, where the employee agrees to forgo part of their future entitlement to salary or wages in return for the employer providing them with benefits of a similar value’ (ATO, 2011). Under a salary sacrifice arrangement, the employer notionally meets the cost of the goods or services provided to the employee. The value of these benefits (plus any additional costs incurred, such as fringe benefits taxes and administration costs) is deducted from the employee's pre-tax wage or salary income.¹

Reflecting concerns about the inadequacies of existing measures of wage and salary income that ignored non-cash benefits, in 2006 the Australian Bureau of Statistics (ABS) announced changes to its measures of employee remuneration. These changes meant salary sacrificed amounts were now treated as equivalent to wages and salaries in cash, and non-cash benefits were now treated as wages and salaries in kind. The new approach is argued by the ABS to create greater consistency with established international conventions (in particular, the guidelines produced at the 17th International Conference of Labour Statisticians in 2003), and also addresses the trend growth in the proportion of wage and salary income received as salary sacrificed income or other non-cash benefits (ABS, 2006).

If non-cash benefits are to be regarded as components of wage and salary income—and in particular, salary sacrificed income is to be regarded as equivalent to cash income—failure to measure salary sacrifice and other non-cash benefits in the HILDA Survey will lead to underestimation of wage and salary income. Furthermore, irrespective of whether non-cash benefits are regarded as wage and salary income, failure to account for salary sacrificed income will lead to incorrect estimates of disposable income. This is because most employees include salary sacrifice amounts in their reported gross wages and salaries, and salary sacrificed amounts are not subject to income tax. If salary sacrificed income is regarded as part of (cash wages and salaries), recipients' income tax liability will be overestimated and hence their disposable income will be underestimated. If salary sacrificed income is not regarded as wage and salary income, we will overestimate wages and salaries and income.

It has therefore become increasingly clear that the collection of data on non-cash benefits is important to the quality of estimates of both employment income and total disposable income, particularly in light of the changes introduced by the ABS in 2006, and the fact that those changes reflected a move to greater harmonisation with international conventions. Consequently, in Wave 10 of the HILDA Survey, questions were introduced into the person questionnaire on salary sacrificed wage and salary income and other non-cash benefits received by wage and salary earners. The sequence of questions on salary sacrificed income and non-cash benefits in the current main job of the respondent is presented in Figure 1. Similar sequences were also included for: (1) all other current jobs (combined); and (2) all

¹ Non-cash benefits, whether or not received through a salary sacrifice arrangement, are potentially subject to Fringe Benefits Tax (FBT). However, there are a number of specific exemptions, such as for superannuation and various work-related items. In addition, benefits provided by particular types of employers, such as public benevolent institutions, public and non-profit hospitals and religious institutions, are not subject to FBT up to a threshold limit.

jobs (combined) in the most recent financial year. These questions allow estimation of the value of salary sacrificed income and other non-cash benefits in respect of the current main job, current other jobs and jobs held in the preceding financial year. In turn, they facilitate accounting for non-cash benefits in estimates of wages and salaries and in estimates of income.

In this paper, we examine the quality of the salary sacrifice and non-cash benefits data produced by these questions, and the implications of accounting for non-cash benefits for estimated wages and salaries, gross incomes and disposable incomes. Most of the analysis presented in this paper is conducted on unweighted data—that is, statistics describe the properties of the HILDA sample, rather than attempting to describe the situation in the Australian population as a whole. An exception to this approach is made when comparing the HILDA data with ABS income survey data, where differences in sample design make it inappropriate to compare the unweighted samples. For these comparisons, the ‘responding-person cross-sectional weights’ are used for the HILDA sample and the ‘person weights’ are used for the ABS sample. Note further that imputed values are used in the analyses that assess the effects of accounting for non-cash benefits on wages and salaries and incomes.

Figure 1: Wave 10 question sequence on salary sacrifice and non-cash benefits in current main job

<p>F6 Do you have a salary sacrifice arrangement with your employer for this job? <i>A salary sacrifice arrangement exists where an employer purchases items for an employee out of the employee's own (pre-tax) salary. It usually reduces the income tax payable by the employee compared with receiving the salary-sacrificed income as a cash payment.</i></p> <p>Yes 1 No 2 → F10 Don't Know 9 → F10</p>	<p>F10 Looking at SHOWCARD F10, apart from the items provided to you under a salary sacrifice arrangement, does your employer provide you with non-cash benefits, such as these?</p> <p>Yes 1 No 2 → F13 Don't Know 9 → F13</p> <hr/> <p>F11 What type of non-cash benefits do you receive from this employer? PROBE: Any others? RECORD UNDER F11</p> <p>F12a For each benefit marked, also ask: What is your estimate of the cash value of the [benefit type] provided by this employer?</p> <p>F12b And what period does that cover?</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">F11</th> <th style="width: 15%; text-align: center;">F12a</th> <th style="width: 15%; text-align: center;">F12b</th> </tr> <tr> <td></td> <td></td> <td style="text-align: center;"><i>Estimated cash value</i></td> <td style="text-align: center;"><i>Period covered</i></td> </tr> <tr> <td></td> <td style="text-align: center;"><i>MULTI</i></td> <td style="text-align: center;"><i>(enter 999999</i></td> <td style="text-align: center;"><i>1= Week</i></td> </tr> <tr> <td></td> <td style="text-align: center;"><i>RESP</i></td> <td style="text-align: center;"><i>if Don't Know)</i></td> <td style="text-align: center;"><i>2= Fortnight</i></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"><i>3= Month</i></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"><i>4= Year</i></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"><i>8= Other (specify)</i></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"><i>9= Don't Know</i></td> </tr> </thead> <tbody> <tr> <td>Housing rent..... 1</td> <td style="text-align: center;">\$</td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> </tr> <tr> <td>Telephone..... 2</td> <td style="text-align: center;">\$</td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> </tr> <tr> <td>Motor vehicle..... 3</td> <td style="text-align: center;">\$</td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> </tr> <tr> <td>Superannuation... 4</td> <td style="text-align: center;">\$</td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> <td style="border: 1px solid black; width: 60px; height: 20px;"></td> or ____%</tr></tbody></table>		F11	F12a	F12b			<i>Estimated cash value</i>	<i>Period covered</i>		<i>MULTI</i>	<i>(enter 999999</i>	<i>1= Week</i>		<i>RESP</i>	<i>if Don't Know)</i>	<i>2= Fortnight</i>				<i>3= Month</i>				<i>4= Year</i>				<i>8= Other (specify)</i>				<i>9= Don't Know</i>	Housing rent..... 1	\$			Telephone..... 2	\$			Motor vehicle..... 3	\$			Superannuation... 4	\$		
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F7 Looking at SHOWCARD F7, what salary sacrificed items do you receive? PROBE: Any others? RECORD UNDER F7 **F8a For each item marked, also ask:** **How much income do you salary sacrifice for [item type]?** **F8b And what period does that cover?**		F7	F8a	F8b		---------------------	----	--------------------------	---------------------------				<i>Amount sacrificed</i>	<i>Period covered</i>				<i>(enter 999999</i>	<i>1= Week</i>				<i>if Don't Know)</i>	<i>2= Fortnight</i>					<i>3= Month</i>					<i>4= Year</i>					<i>5= Other (specify)</i>					<i>9= Don't Know</i>		Superannuation... 1				
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 F9 Did you include the amount of income you salary sacrifice as part of the amount you reported earlier for wage and salary income in this job? Yes 1 No 2 |

2. Properties of the data

Prevalence and value of non-cash benefits

Tables 1 and 2 summarise the data collected in Wave 10 on salary sacrifice and non-cash benefits. For each of ‘current main job’, ‘current other jobs’ and ‘all jobs in the previous financial year’, they show the proportions of wage and salary earners reporting having a salary sacrifice arrangement and receiving non-cash benefits (other than through a salary sacrifice arrangement) and the mean value of these among recipients. The tables also present this information for each component of salary sacrificed income and other non-cash benefits.

Just over 16 per cent of wage and salary earners indicate they have a salary sacrifice arrangement, be it in reference to the current job or jobs held in the preceding financial year. Unsurprisingly, of the 669 respondents with more than one current job, only 3.1 per cent report having a salary sacrifice arrangement in that job. The mean value of salary sacrificed income among those with a salary sacrifice arrangement is \$237 per week for the current main job, \$157 per week for current other jobs and \$10,114 for all jobs held in the preceding financial year. The most common salary sacrifice items are superannuation, motor vehicles, household/personal bills and housing.

Table 1: Prevalence and mean value of salary sacrificed income among wage and salary earners

	Proportion reporting salary sacrifice (%)			Mean value among recipients (\$)		
	Current main job	Current other jobs	Financial year	Current main job	Current other jobs	Financial year
Total	16.29	3.14	16.12	237.32	157.43	10,113.59
<i>Components</i>						
Superannuation	8.97	1.35	9.10	234.11	75.61	8681.00
Motor vehicle	3.11	0.15	3.02	237.68	92.06	10,320.79
Computer	0.55	0.15	0.55	26.73	44.00	1,216.74
Child Care	0.10	0.00	0.05	140.13	-	2,282.00
Telephone	0.43	0.00	0.48	25.81	-	1,105.20
Housing	2.75	1.20	2.84	210.95	206.84	8,589.65
Household/personal bills	2.93	0.45	2.94	132.40	139.50	5,267.49
Other	1.83	0.30	1.58	117.03	105.04	5,251.28

Notes: Sample sizes are 7,893 for persons employed at time of interview (‘current main job’ sample), 669 for persons with other jobs (‘current other jobs’ sample) and 8,459 for persons employed in the last financial year (‘financial year’ sample).

The proportions of wage and salary earners indicating they receive non-cash benefits other than through a salary sacrifice arrangement are slightly higher than the proportions reporting a salary sacrifice arrangement. In particular, 19.2 per cent report receiving non-cash benefits in their current main job, which is higher than the proportion reporting receiving non-cash benefits in any of the jobs held in the preceding financial year. The lower rate for the previous financial year may be due to recall problems. The mean value of non-cash benefits among those receiving them is lower than for salary sacrifice items, at \$153 per week for the current main job, \$55 per week for current other jobs and \$6,825 for all jobs held in the preceding financial year. The most common non-cash benefits are telephones, superannuation and computers, although the benefits with the highest mean value among those receiving them are child care, housing rent and motor vehicles.

Table 2: Prevalence and mean value of non-cash benefits (excluding salary sacrifice) among wage and salary earners

	Proportion reporting non-cash benefits (%)			Mean value among recipients (\$)		
	Current main job	Current other jobs	Financial year	Current main job	Current other jobs	Financial year
Total	19.20	4.04	16.83	152.55	54.70	6,824.61
<i>Components</i>						
Housing rent	0.90	0.75	0.76	310.80	128.76	12,361.63
Telephone	7.56	0.60	6.64	21.53	27.68	1,050.65
Motor vehicle	4.73	0.60	4.08	237.90	61.68	11,733.11
Superannuation	6.24	1.35	5.42	167.85	23.01	4936.25
Computer	3.96	0.75	3.35	23.80	20.10	1,189.16
Child care	0.09	0.00	0.08	200.43	0.00	13,840.00
Car park	2.70	0.60	2.33	51.45	20.67	2,461.31
Shares	1.42	0.15	1.18	150.69	9.59	4,367.64
Low interest loans	0.53	0.00	0.47	57.34	0.00	2,430.00
Other	2.74	0.75	2.37	67.71	17.49	3,385.08

Note: Sample sizes are 7,893 for persons employed at time of interview ('current main job' sample), 669 for persons with other jobs ('current other jobs' sample) and 8,459 for persons employed in the last financial year ('financial year' sample).

Data quality

We consider two indicators of data quality: the extent to which data are missing due to non-response; and how the data compare with ABS 2009-10 income survey data on salary sacrifice and non-cash benefits.² Non-response could be because of a lack of knowledge about information or a lack of willingness to disclose information, although it appears that lack of knowledge is the primary reason for non-response, since the interviewer-recorded reason for non-response was in almost all cases 'don't know' rather than 'refused'.

Tables 3 and 4 show that non-response is negligible for questions about whether non-cash benefits are received and what items are received, irrespective of whether the benefits were obtained through a salary sacrifice arrangement. However, the percentage *not* providing an estimate of the value of each item is relatively high for most salary sacrifice items, with about 3-4 per cent of those receiving the item not reporting a value. Understandably, non-response is even higher for the value of other non-cash benefits—as high as 36 per cent for low interest loans in respect of the current main job—since a cash value will often not be obvious.

² A further potential indicator would be the prevalence of implausible values for reported amounts, but no such values were found in the Wave 10 data.

Table 3: Prevalence of missing data on salary sacrificed income among wage and salary earners in Wave 10 (Percent who refuse/don't state/don't know)

	Current main job	Current other jobs	Financial Year
'Has a salary sacrifice arrangement'	0.10	0.00	0.06
'What salary sacrifice item(s) received'	0.39	0.00	0.08
Value of salary sacrifice item, given that receive it:			
Superannuation	3.11	0.00	4.48
Motor vehicle	2.86	0.00	4.41
Computer	4.65	0.00	4.88
Child Care	0.00	0.00	0.0
Telephone	5.88	0.00	7.89
Housing	3.23	0.00	3.62
Household/personal bills	3.46	0.00	4.85
Other	1.39	0.00	3.20

Notes: Data is only missing if the item applies to the respondent. For example, the item 'What salary sacrifice item(s) received' is only missing if the items received are not reported *and* the respondent has reported having a salary sacrifice arrangement. Similarly, 'superannuation' is only missing if the value of superannuation salary sacrificed is not reported *and* the respondent reported having this component.

Table 4: Prevalence of missing data on non-cash benefits (excluding salary sacrifice) among wage and salary earners in Wave 10 (Percent who refuse/don't state/don't know)

	Current main job	Current other jobs	Financial Year
'Receives non-cash benefits'	0.14	0.15	0.10
'What non-cash benefit(s) received'	0.00	0.00	0.08
Value of non-cash benefit, given that receive it:			
Housing rent	7.04	0.00	5.08
Telephone	8.39	0.00	8.97
Motor vehicle	4.83	0.00	5.25
Superannuation (value)	8.74	0.00	7.44
Computer	7.37	0.00	7.39
Child care	28.57	0.00	16.67
Car park	23.47	0.00	23.03
Shares	8.93	0.00	6.67
Low interest loans	35.71	0.00	25.00
Other	8.33	0.00	8.29

Notes: Data is only missing if the item applies to the respondent. For example, the item 'What non-cash benefit(s) received' is only missing if the items received are not reported *and* the respondent has reported receiving non-cash benefits. Similarly, 'housing rent' is only missing if the value of housing rent benefits is not reported *and* the respondent reported having this component.

Table 5 reports comparisons between the HILDA Survey Wave 10 data on non-cash benefits and similar data collected in the ABS 2009-10 Survey of Income and Housing (SIH). To enable valid comparisons that take into account differences in sample design, the estimates are weighted using the (cross-sectional) population weights supplied with each data set. The ABS data relate to all current jobs and corresponding estimates for HILDA have been derived from the separate reports for current main and current other jobs. Note, however, that the ABS data relate to a slightly earlier period, the 2009-2010 financial year, than the HILDA data, which was mostly collected in September to November of 2010.

In total, the HILDA Survey and the ABS SIH appear to produce quite similar rates and levels of salary sacrifice and other non-cash benefits. The HILDA Survey data exhibit a slightly higher proportion reporting having a salary sacrifice arrangement, but offsetting this is a slightly lower mean value of salary sacrifice among recipients. For individual components,

disparities are larger. In part, these could derive from differences in the time period examined, especially when we consider that HILDA is predominately in the latter months of 2010, whereas the ABS SIH is distributed across the 2009-10 financial year. They are thus in different financial years and, perhaps more importantly, the current measures of salary sacrifice and non-cash benefits in HILDA will not capture items that tend to be purchased towards the end of the financial (and hence tax) year. However, for most items, the incidence of reporting is higher in the HILDA Survey, which is less easily explained by ‘seasonal’ effects.

Table 5: Prevalence and mean value of salary sacrifice and other non-cash benefits among wage and salary earners—ABS 2009-10 Survey of Income and Housing (SIH) compared with HILDA Survey Wave 10—All current jobs

	Proportion reporting receiving (%)		Mean value among recipients (\$)	
	ABS SIH 2009-10	HILDA Wave 10	ABS SIH 2009-10	HILDA Wave 10
Salary sacrifice				
Total	13.0	16.0	264.54	235.18
<i>Components</i>				
Superannuation	8.1	8.9	236.57	231.05
Motor vehicle	2.0	3.1	328.97	237.70
Computer	0.5	0.5	22.69	26.56
Child Care	0.0	0.1	178.70	150.04
Telephone	0.1	0.4	45.23	27.83
Housing	1.6	2.6	227.94	209.80
Household/personal bills	2.2	2.9	159.43	126.28
Other	1.4	1.9	127.17	115.63
Other non-cash benefits				
Total	19.8	18.7	188.60	145.84
<i>Components</i>				
Housing rent	0.8	0.7	456.77	317.76
Telephone	9.2	7.2	17.46	22.46
Motor vehicle	7.3	4.6	269.92	242.29
Superannuation (value)	3.5	6.0	165.75	157.77
Computer	5.1	3.9	29.42	23.85
Child care	0.0	0.1	22.08	172.58
Car park	2.0	2.8	48.82	53.48
Shares	1.2	1.5	224.66	143.13
Low interest loans	0.3	0.5	102.20	50.82
Other	2.9	2.8	38.47	65.87

Notes: Population-weighted estimates. *SIH*—Survey of Income and Housing.

A further point of comparison is the proportion of those reporting salary sacrifice income who included it in their reported wage and salary income. For the HILDA Survey, this figure is 79.4 per cent for current jobs, which is slightly lower than the ABS figure of 85.2 per cent. While the reasons for the difference are not clear, we note that in the 2007-08 SIH, the proportion who reported including salary sacrificed income in wages and salaries was 79 per cent, which suggests there may have been a change in ABS survey protocols between the 2007-08 and 2009-10 surveys that led to the increase.³

³ In the Wave 10 ‘dress rehearsal’ conducted in March 2010, respondents were asked to indicate whether salary sacrificed income had been included in reported wages and salaries ‘fully’, ‘partially’ or ‘not at all’. No respondents indicated that salary sacrificed income had been partially included. The ‘partial’ option was therefore removed from the questionnaire administered to the main sample.

3. Use of salary sacrifice information in derived variables

As noted in the Introduction, the ABS treats salary sacrifice as equivalent to cash income, and we therefore follow the same approach in producing revised estimates of wage and salary income, gross income and disposable income. However, likewise following the ABS (2006) approach, the information on other non-cash benefits is not used in producing revised estimates of earnings and income. This reflects the view that earnings and income measures should remain as cash-based measures. Indeed, income measures that attempted to include all in-kind components would need to account for much more than the in-kind non-cash benefits received by wage and salary earners, particularly in relation to government-provided or subsidised health care and education. Of course, users may wish to make use of the information on non-cash benefits in their own analyses, including in producing income measures that include in-kind components.⁴

The implications of accounting for salary sacrifice for estimated wages and salaries and for estimated income depend on whether the respondent included salary sacrificed income in reported wage and salary income. If it was not included, gross wage and salary income, gross personal income and disposable personal income all increase by the value of the salary sacrificed income. Household gross income and household disposable income also increase by the value of the salary sacrificed income for persons in households with at least one person with a salary sacrifice arrangement. The increase in disposable income is the same as the increase in gross income because salary sacrificed income is not subject to income tax. That is, *taxable* income does not change as a result of adding salary sacrificed income, meaning estimated income tax does not change, in turn meaning that the difference between gross and disposable income does not change—and so disposable income increases by the same amount as gross income.

If salary sacrificed income was included in reported wage and salary income, as it is in approximately 80 per cent of cases, gross wages and salaries and gross income are not affected by accounting for salary sacrifice. However, disposable income is affected, since estimated taxable income is reduced by the value of salary sacrificed income, resulting in lower estimated income tax and therefore higher disposable income.

As Figure 1 shows, in reporting the value of each salary sacrifice component, respondents could choose any time frame they liked. Moreover, for superannuation, they could report the value as a percentage of (gross) wages and salary. To create revised earnings and income variables, all reported values for salary sacrifice are converted into weekly values for current employment and into annual values for employment in the preceding financial year. For superannuation contributions reported as a percentage of the wage, the calculation of their value depends on whether salary sacrificed income was included in reported wages. If included, the value is calculated as $(r/(1+r))w$, where r is the proportion of wages that is salary sacrificed on superannuation contributions and w is the reported wage (which does not include the salary sacrificed income). If salary sacrificed income was excluded in reported earnings, the value is simply the stated percentage of reported gross wages (rw).

The data provided in Release 10 for Wave 10 contains the derived variables for the total value of salary sacrificed income for each of current main job, current other jobs and all jobs in the previous financial year. Derived variables for wages and salaries, for personal income

⁴ In this context, it should also be noted that some other income data collected by the HILDA Survey is not used to produce estimates of overall individual and household income—namely, irregular income such as lump sum payments.

and for household income that account for salary sacrifice are also included in the data release. For income variables, these replace previous derived income variables. However, for wage and salary income, in addition to the new Wave-10 variables that take account of salary sacrifice, variables calculated as per Waves 1 to 9 (that is, ignoring the issue of salary sacrifice) are also retained. This allows for longitudinal analyses of wages using a consistently measured wage variable.⁵

4. Effects of accounting for salary sacrifice on wage and salary income

Accounting for salary sacrifice only affects estimated wage and salary income of respondents who did not include salary sacrificed income in their reported gross wages and salaries. Effects on the overall distribution of earnings are likely to be small, because only 16 per cent of wage and salary earners report having a salary sacrifice arrangement, of whom only about 20 per cent—just over 3 per cent of all wage and salary earners—did not include salary sacrifice amounts in gross wages and salaries. The statistics presented in Table 6 are consistent with the expectation of small effects. Taking into account salary sacrifice results in an increase in the mean weekly wage of \$9, or 0.9 per cent, and an increase in mean annual wages of \$318, or 0.6 per cent.

Table 6: Effects of accounting for salary sacrifice on the distribution of earnings among all wage and salary earners

	Current main job			Financial year		
	Before (\$)	After (\$)	Difference (%)	Before (\$)	After (\$)	Difference (%)
10 th percentile	250	250	0.0	5776	5,800	0.4
25 th percentile	552	558	1.1	20910	21,000	0.4
Median	900	900	0.0	42000	42,000	0.0
75 th percentile	1,346	1,350	0.3	67360	68,000	1.0
90 th percentile	1,900	1,918	1.0	96000	97,000	1.0
Mean	1,043	1,052	0.9	50,223	50,541	0.6
<i>Number of observations</i>		7,893			8,459	

Notes: *Before*—Earnings before accounting for salary sacrifice; *After*—Earnings after accounting for salary sacrifice.

Table 7 restricts to wage and salary earners for whom earnings actually changed as a result of accounting for salary sacrifice—that is, those who did not include the salary sacrifice amounts in their reported wage and salary income. As can be seen, this affects relatively few people—270 for the current main job and 233 for the previous financial year—which again reinforces why we find very small effects on the overall distribution of earnings. For this group of workers, effects are in fact quite large, with the mean increasing by 17.7 per cent for the current main job and by 13.8 per cent for all jobs in the previous financial year. The lower panel of Table 7 further supports this finding, showing the distribution of the effects on individuals' estimated gross earnings. The mean increase in earnings is \$253 for weekly earnings in current main job and \$11,562 for annual earnings in all jobs. For ten per cent of those affected, annual earnings increase by at least \$30,703, which is clearly sizeable.

⁵ It may be that in future HILDA Survey data releases this practice will cease, since data users can construct their own longitudinally consistent measure of wages from the information on salary sacrifice provided in the data set.

Table 7: Effects of accounting for salary sacrifice on the earnings of those who reported salary sacrifice and did not include it in reported earnings

<i>Effects on the distribution of earnings</i>						
	Current main job			Financial year		
	Before (\$)	After (\$)	Difference (%)	Before (\$)	After (\$)	Difference (%)
10 th percentile	539	737	36.7	26,080	31,434	20.5
25 th percentile	850	1,005	18.2	47,750	55,275	15.8
Median	1,250	1,463	17.0	68,000	78,000	14.7
75 th percentile	1,785	2,017	13.0	96,967	106,999	10.3
90 th percentile	2,336	2,873	23.0	142,913	163,400	14.3
Mean	1,427	1,680	17.7	83,919	95,482	13.8

Distribution of effects on earnings (\$)

	Current main job		Financial year	
10 th percentile		24		380
25 th percentile		58		1,300
Median		150		5,460
75 th percentile		308		15,300
90 th percentile		603		30,703
Mean		253		11,562

Number of observations

270

233

Notes: *Before*—Earnings before accounting for salary sacrifice; *After*—Earnings after accounting for salary sacrifice.

5. Effects of accounting for salary sacrifice on gross and disposable income

Gross income

Accounting for salary sacrifice only affects gross incomes of households containing wage and salary earners who did not include salary sacrificed income in their reported earnings. Since, as Table 7 shows, this applies to relatively few wage and salary earners, the distribution of gross income is therefore little-affected. Table 8 bears this out, showing only minor effects on the Wave-10 distribution of household gross annual income, whether among all persons aged 15 years and over (Panel A) or among only wage and salary earners (Panel B). However, Table 9 shows that, consistent with the findings in Table 7, accounting for salary sacrifice has a large impact on the gross household incomes of persons whose gross earnings are actually affected—i.e., wage and salary earners who did not include salary sacrificed income in their reported wages and salaries.⁶

⁶ Household incomes will be affected for all members of households in which someone has a salary sacrifice arrangement. Table 9 does not capture the effects on the members of these households who do not personally have salary sacrifice arrangements.

Table 8: Effects of accounting for salary sacrifice on the distribution of household annual gross income in Wave 10

	A. All persons aged 15 years and over			B. All wage and salary earners		
	Before (\$)	After (\$)	Difference (%)	Before (\$)	After (\$)	Difference (%)
10 th percentile	4,746	4,746	0.0	11,000	11,000	0.0
25 th percentile	14,760	14,778	0.1	26,035	26,096	0.2
Median	32,067	32,161	0.3	46,200	46,484	0.6
75 th percentile	59,500	59,987	0.8	71,159	71,989	1.2
90 th percentile	90,007	90,530	0.6	101,500	102,056	0.5
Mean	44,141	44,340	0.5	55,712	56,030	0.6
<i>Number of observations</i>		13,526			8,459	

Notes: *Before*—Earnings before accounting for salary sacrifice; *After*—Earnings after accounting for salary sacrifice. Samples are restricted to responding persons only.

Table 9: Effects of accounting for salary sacrifice on household annual gross income of persons who did not include salary sacrificed income in reported wages and salaries

	Effects on the distribution of income			Distribution of effects on income (\$)
	Before (\$)	After (\$)	Difference (%)	
10 th percentile	34,400	40,125	16.6	380
25 th percentile	52,546	58,773	11.9	1,300
Median	71,000	82,900	16.8	5,460
75 th percentile	101,796	115,040	13.0	15,300
90 th percentile	152,602	170,200	11.5	30,703
Mean	89,624	101,187	12.9	11,562
<i>Number of observations</i>				233

Notes: *Before*—Earnings before accounting for salary sacrifice; *After*—Earnings after accounting for salary sacrifice. Sample is restricted to responding persons only.

Disposable income

Effects of accounting for salary sacrifice are expected to be larger for disposable income than for gross income because disposable income is affected for all households containing persons who report a salary sacrifice arrangement. Not including salary sacrificed income in reported earnings causes estimated household disposable income to increase by the amount salary sacrificed; while for households in which salary sacrificed income was included, the estimated income tax will typically decline, leading to an increase in estimated disposable income.

Table 10 nonetheless shows that effects on the overall distribution of income, and even on the distribution of income among wage and salary earners, are relatively minor. The mean household annual disposable income among all respondents aged 15 years and over increases by 1.2 per cent, while among wage and salary earners it increases by 1.5 per cent. Table 10 does show, however, that effects are larger, in both absolute and proportionate terms, the higher up the income distribution we move. For example, the 90th percentile of the overall income distribution increases by 2 per cent as a result of taking into account of salary sacrifice, the median increases by 0.4 per cent, and the 10th percentile does not change.

Table 10: Effects of accounting for salary sacrifice on the distribution of household annual disposable income in Wave 10

	A. All persons aged 15+			B. All wage and salary earners		
	Before (\$)	After (\$)	Difference (%)	Before (\$)	After (\$)	Difference (%)
10 th percentile	4,720	4,720	0.0	11,000	11,000	0.0
25 th percentile	14,739	14,760	0.1	25,578	25,582	0.0
Median	30,852	30,963	0.4	40,866	41,278	1.0
75 th percentile	49,695	50,195	1.0	58,036	58,812	1.3
90 th percentile	71,029	72,479	2.0	78,459	79,954	1.9
Mean	36,700	37,132	1.2	45,577	46,267	1.5
<i>Number of observations</i>		13,526			8,459	

Notes: *Before*—Earnings before accounting for salary sacrifice; *After*—Earnings after accounting for salary sacrifice. Samples are restricted to responding persons only.

In Table 11, restricting to those who reported having a salary sacrifice arrangement, in common with wages and gross income, we see that changes in disposable income are typically quite large. The mean increase in household disposable income is \$4,614 among all persons with a salary sacrifice arrangement, and is even as high as \$3,044 for those who included salary sacrificed income in reported wages and salaries—meaning the increase is entirely due to a reduction in estimated income tax. For ten per cent of individuals with a salary sacrifice arrangement, the increase in household disposable income as a result of accounting for salary sacrifice is at least \$10,722. In aggregate, mean household disposable income among those with a salary sacrifice arrangement increases by 4.7 per cent.

Table 11: Effects of accounting for salary sacrifice on household annual disposable income of persons who reported having a salary sacrifice arrangement

	Persons who included salary sacrificed income in reported wages and salaries			All persons with a salary sacrifice arrangement	
	Effects on the distribution of income			Distribution of effects on income (\$)	
	Before (\$)	After (\$)	Difference (%)		
10 th percentile	32,259	33,506	3.9	61	96
25 th percentile	44,265	46,500	5.0	372	591
Median	59,236	62,213	5.0	1,826	2,327
75 th percentile	77,021	80,851	5.0	4,250	5,000
90 th percentile	102,137	107,964	5.7	7,447	10,722
Mean	65,341	68,385	4.7	3,044	4,614
<i>Number of observations</i>			1,031		1,264

Notes: *Before*—Earnings before accounting for salary sacrifice; *After*—Earnings after accounting for salary sacrifice. Samples are restricted to responding persons only.

6. Conclusion

Overall, the quality of the salary sacrifice data collected in Wave 10 of the HILDA Survey appears to be quite high, with rates of missing data reasonably low and estimates comparable to those obtained by the ABS SIH. ‘Missingness’ is more problematic for other non-cash benefits, but estimates nonetheless line up reasonably well against the ABS SIH.

The effects of accounting for salary sacrifice on distribution of earnings and income are quite small, which is encouraging from the perspective of longitudinal consistency of earnings and income measures. However, it is also true that effects on earnings and income are sizeable for the relatively small proportion of people who have salary sacrifice arrangements. Indeed, in a number of cases, effects are very large. This implies that it is important to capture the salary sacrifice component of earnings, particularly when the focus is on earnings and their relationships with other economic and social behaviour and outcomes.

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