Australian National University

Crawford School of Public Policy

TTPI

Tax and Transfer Policy Institute

A gender deduction gap

TTPI - Working Paper 4/2017
July 2017

Peter Varela
Research School of Economics, Australian National University

Abstract

This paper uses Australian tax return data and techniques from the gender pay gap literature, including the Oaxaca-Blinder decomposition and the DiNardo-Fortin-Lemieux decomposition, to explore whether men in similar economic circumstances to women claim more deductions on their tax return. After controlling for observable characteristics such as income and occupation, men are found to claim around 12 per cent more deductions than women, which when taken at face value, increases the gender pay gap in Australia by around $75 per year. The paper also finds an unexplained gender difference in 7 of 11 categories of deductions and amongst workers in 6 of 9 occupation classifications. Men and women earning different proportions of capital income and family tax planning are considered as potential explanations of the observed deduction gap. While both factors are found to influence the level of deductions claimed, they can only explain a small proportion of the observed difference in deductions between men and women.

JEL Codes: H22, H24, C20.
Keywords: Income tax, gender, Oaxaca-Blinder, decomposition, individual sample file

**I wish to thank Maria Racionero, Miranda Stewart, Mathias Sinning and Bob Breunig for helpful comments and edits on the draft. All remaining errors are of course my own.*

Tax and Transfer Policy Institute

Crawford School of Public Policy

College of Asia and the Pacific

+61 2 6125 9318

tax.policy@anu.edu.au

The Australian National University

Canberra ACT 0200 Australia

www.anu.edu.au

The Tax and Transfer Policy Institute in the Crawford School of Public Policy has been established to carry out research on tax and transfer policy, law and implementation for public benefit in Australia. The research of TTPI focuses on key themes of economic prosperity, social equity and system resilience. Responding to the need to adapt Australia's tax and transfer system to meet contemporary challenges, TTPI delivers policy-relevant research and seeks to inform public knowledge and debate on tax and transfers in Australia, the region and the world. TTPI is committed to working with governments, other academic scholars and institutions, business and the community.

The Crawford School of Public Policy is the Australian National University's public policy school, serving and influencing Australia, Asia and the Pacific through advanced policy research, graduate and executive education, and policy impact.

1 Introduction

The Australian tax system relies on individual taxpayers to keep records of the deductions that they are entitled to claim and submit these records along with their annual tax return. This means that if a taxpayer is more aware of the deductions that are allowed through the tax system, or more organised in keeping receipts throughout the year, they will end up paying less income tax than another person who earns the same amount.

This paper tests one implication of this voluntary deduction process. Namely, for men and women in similar economic circumstances, whether men will claim more deductions than women, and therefore pay less income tax. In other words, if there is a man and a woman who both earn the same amount of income, work in the same occupation and are the same age, the man will generally claim more deductions than the woman.

The paper finds evidence that this gap exists, and is reasonably large (around 12 per cent). Moreover, this gap is observed in the majority of industries, and for the majority of types of deductions. When evaluated at the mean level of female income and deductions, this equates to approximately $240 of deductions, which at a marginal tax rate of 32.5 per cent changes take home income by around $75 per year.

In interpreting this observed gap, it is useful to identify three potential drivers that can cause men and women to claim different levels of deductions. The first cause is that when faced with an identical situation, men will be more likely to claim a deduction that women. This may occur because men are more familiar with the deductions that they are able to claim, because they are more willing to maintain the appropriate records throughout the year, or because they are more willing to claim a deduction when they are not sure if it is allowed.

The second difference is an institutional bias that may exist within the tax system by which expenses incurred by men are easier to claim as tax deductible.[1] For instance, if men work in more traditional employment rolls, then expenses that occur may be more likely to be allowed by the tax code.

Finally, it is also possible that men incur more costs in earning income in a way that is not related to other observed factors. This explanation, also known as 'selection on unobservables', may also occur if an important

[1] See, for example, the different tax treatment of briefcases and purses (Han 2016).

explanatory factor is not available in the tax data.[2,3] While some attempt is made to distinguish between these causes, ultimately, the task of fully disentangling these effects is left to future research.

To investigate this issue, this paper uses the publically available two per cent sample of confidentialised[4] Australian tax return data for the year 2013/14, which contains 257,639 unique records. This data includes unit level information on eleven categories of deduction (shown in Table 1), detailed information on different income sources, partner status, age, one-unit data on occupation classification, and information about whether the individual used a tax agent.

This paper employs a number of empirical techniques that are commonly used to study wage discrimination in the labour market. In Section 2, the empirical distributions of deductions for men and women are plotted graphically in histograms and binscatter plots. This is an effective informal way to illustrate which type of deductions differ between men and women, whether the difference occurs at high income levels or low income levels, and whether the difference occurs due to extensive differences (more men claiming some form of a given deduction) or intensive differences (those who do claim a deduction claim more of that deduction).

In Section 3, the difference in tax deductions claimed by men and women is formally decomposed using the Oaxaca-Blinder decomposition framework. This section shows that after controlling for observable characteristics such as income, occupation and age, men tend to claim about 12 per cent more deductions than women. Moreover, this difference is observed in 7 out of 11 deduction types and in 6 of 9 occupation groups.

In Section 4, the wage decomposition is extended using an approach proposed by DiNardo, Fortin and Lemieux (1996) (DFL). The DFL approach allows for a comparison of deductions between men and women that does

[2]This paper uses occupation data at the one-digit ANZSCO level, and it is likely that more detailed occupation data would better explain the level of deductions. To the extent that these factors vary between men and women, the more detailed level occupation data would be considered selection on unobservables, and show up as part of the unexplained component.

[3]This is an issue common to all work done with this type of wage decompositions, and has led to a significant debate about whether the unexplained wage differences should be interpreted as 'discrimination' or just the unexplained difference in wages. (Fortin et al. 2011)

[4]The data are confidentialised by the Tax Office by perturbing certain variables such that the mean is preserved. Moreover, variables are top-coded whereby the top one per cent of each category are all given the average value amongst that top percentile. This process will have very little effect on the empirical methodologies used in this paper.

not require the assumption of linearity used in the Oaxaca-Blinder decomposition. Using this methodology, men are found to claim 28 per cent more deductions than women (after controlling for observable characteristics). The DFL methodology can also be used to construct a full counterfactual distribution, which allows a more formal answer to the questions addressed visually in Section 2.

Section 5 tests two alternative theories that could explain the difference in deduction patterns between genders. First, it examines whether the observed results could be the result of tax planning at the household level. For instance, where it is possible to do so, there is an incentive for couples to claim deductions against the income of the higher income partner, and this could provide an explanation of the observed gap. This section then considers whether the deduction gap can be explained by the different composition of income types between men and women. There is evidence that both of these factors contribute to the observed deduction gap, even once these effects are considered, an unexplained gap in deductions remains of around 10 per cent.

Section 6 concludes the paper, looks at some of the policy implications of this result, and highlights some areas for future research.

1.1 The Australian personal income tax

The Australian income tax is paid on net taxable income, which is equal to the gross amount of income earned, less deductions. The tax is levied on personal, rather than family income, and there is no option to take a 'standard deduction'.

Tax deductions are allowed for a number of different items, and are included in the tax code for a variety of reasons. A significant proportion of tax deductions are designed to offset costs that are incurred in the process of earning income in order to only apply the income tax to net, rather than gross income. Deductions against taxable income are also allowed for selected items that the government wants to encourage (such as charitable giving) and to lower the effective tax rate on capital income. This paper classifies deductions into the 11 categories used by the Australian Tax Office Individual Sample File, which are described in Table 1.[5]

[5] In addition to the 11 categories of deductions considered in the main results in this paper, the Individual Sample File also includes information on negative gearing of rental properties and fringe benefits taxes. Analysis of these variables are reported in Appendix B.

Table 1: The eleven categories of tax deduction used in this paper

	Explanation
Work Related Expenses	
Car	Using a car for work-related travel, but does not include travel between home and work.
Travel	Meals, accommodation and incidentals while travelling overnight for work.
Uniform	Clothing that is required for work, and that allows the public to easily recognize your occupation.
Self-Education	The education must be related to current employment.
Other WRE	Including home office expenses, tools and mobile phones.
Other deductions	
Dividend Deduction	If money is borrowed to invest in shares or other related investments, the interest on this loan is deductible against personal income.
Interest Deduction	Account keeping fees where an account is held for investment purposes.
Charitable Gift	Must be to a registered Deductible Gift Recipient and greater than $2.
Superannuation Contribution	Contributions to superannuation above the level provided by an employer.
Cost of Tax Affairs	The cost of tax professionals and tax preparation software.
Other Deductions	Including union fees, election expenses and income protection insurance.

1.2 Related literature

While to my knowledge, this is the first paper to look at the deduction claiming behaviour of men and women in this manner, there is a substantial literature examining the interaction between gender and the tax system. While this literature covers a much broader range of topics than is covered in this paper, it suggests that the finding of a gender deduction gap is not surprising.

For instance, a gender gap has also been observed in randomised audit studies. In Kleven et al. (2011), after a random sample of Danish tax returns were audited, tax returns of men were more likely to be adjusted to pay more tax. A similar difference is observed in Paetzold and Winner (2014), in which women are found to be less likely to overstate commuting distance in order to receive an associated tax deduction. Such studies are clearly related to

the different tax behaviours explored in this paper. However, there are also very important differences with this approach as audits will only pick up (a proportion of) fraudulent claims. On the other hand, the differences observed in this paper will result from a combination of fraudulent activity, a greater knowledge of the tax system, and a greater willingness to engage with the tax system. As a result, an audit based approach will be likely to underestimate the true difference in tax compliance between genders.

A gender gap has also been observed when a part of the tax system moves from being self-reported to being automated. Gillitzer and Skov (2013) examine a reform of the Danish tax system in which charitable donations are automatically reported to the tax office by the charity and pre-populated on individual tax returns. Following this reform, both men and women are found to have an increased level of claimable deduction, but this increase is larger for women. This suggests that women were more likely to make charitable donations that they later don't claim as tax deductions.

A gender deduction gap is also supported by studies looking at how the perception of taxes differs between genders. McGee (2014) examines World Values Survey data for 82 countries and finds that women are significantly more opposed to evading taxes than men, and that this result was true in the majority of countries.[6] McGee also provides a review of a range of papers comparing ethical behaviour between gender citing 39 studies in which women are found to be more ethical than men, 29 studies in which there is no difference between men and women, and only 2 papers in which men are more ethical than women.

More broadly, the gender pay literature identifies a number of potential explanations of the gender pay gap that may also be important in driving the gender tax gap. For instance, in Blau and Kahn (2016), men are found to place a higher value on money, have higher self-esteem, be more competitive and be more self-confident. Moreover, men take weaker stances on ethical behaviour (Glover et al. 1997), are less risk averse (Croson and Gneezy (2009), Eckel and Grossman (2008)), and are more likely to commit any type of crime (Schwartz and Steffenmeier 2008). While these findings were made in the context of wage comparisons, it is likely that they also play a role in explaining the observed difference in reported tax deductions found in this paper.

[6] In 63 per cent of countries in the study, women opposed tax evasion more than men when tested at the 10 per cent level, while in a further 29 per cent of countries women were more opposed to tax evasion, but at a statistically insignificant level.

2 Graphical representations of the key results

The aim of this section is to visually illustrate the key differences in tax deductions by gender. This includes showing which types of deductions vary by gender, and the relative size of this contribution. The visual presentations also provides a natural benchmark for the Oaxaca-Blinder (Section 3) and DFL analysis (Section 4) in the following sections.

Table 2 shows the raw differences in average deduction level for men and women. It shows that the largest differences (in absolute terms) occur in motor vehicle and 'other' work related expenses, and that based on raw data, men claim more of all types of deduction other than self-education expenses. The table also shows that two categories of deductions, car work related expenses and other work related expenses, comprise 48 per cent of male deductions, and more than half of the raw difference between men and women. This table also includes two aggregate categories, Total Work Related Expenses (which includes the 5 categories of work related expenses), and Total Deductions (which is the total of all 11 deduction categories), which will be used in much of the analysis that follows.

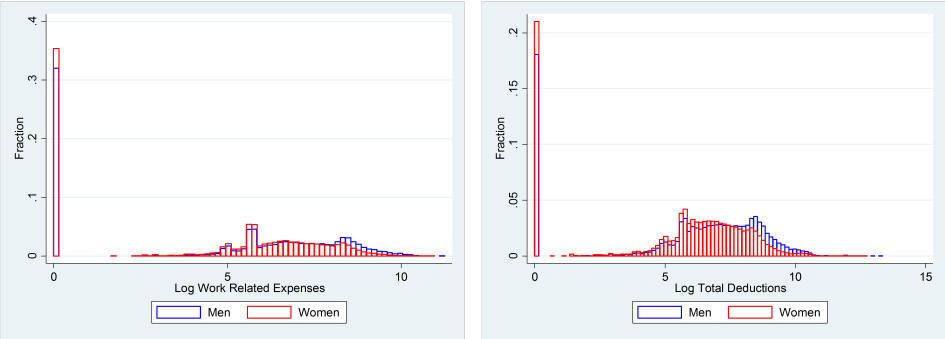
Table 2: Average levels of deductions claimed by men and women

	Mean (Men)	Mean (Women)	Difference	T statistic: Equal means	P Value (2 sided)
Work Related Expenses					
Car	$877	$433	$444	57.8	0.000
Travel	$242	$80	$162	33.5	0.000
Uniform	$149	$112	$38	45.8	0.000
Self-Education	$88	$88	$0	-0.1	0.912
Other WRE	$672	$444	$229	42.5	0.000
Total WRE	$2025	$1153	$872	67.1	0.000
Other Deductions					
Dividend Deduction	$118	$56	$62	5.7	0.000
Interest Deduction	$72	$41	$31	5.3	0.000
Charitable Gift	$252	$209	$43	2.8	0.003
Superannuation	$322	$240	$82	7.5	0.000
Cost of Tax Affairs	$212	$137	$75	11.0	0.000
Other Deductions	$224	$87	$137	15.4	0.000
Total Deductions	$3218	$1916	$1301	43.5	0.000

In Figure 1, the distributions of total work related expenses and total

deductions are drawn as histograms on a log scale. Two important facts are observed in this figure. First, there is a significant proportion of people who claim zero deductions, and this proportion is higher among women than men.[7] Second, there is a significant mass of high deduction individuals in the male distribution that is not apparent in the female distribution.

Figure 1: Histograms of Total Work Related Expenses and Total Deductions, by gender



The final illustrative figure is a binned scatterplot showing the relationship between deductions and income for men and women.[8] These binned scatterplots separate the X variable (in this case Gross Taxable Income) into 50 equal sized bins, and calculate the average value of deductions amongst this group. This provides a simple way to control for differences in income between men and women. The chart shows a significant difference in work related expenses between the genders, and a smaller difference in the level of total deductions. Figure 2 shows that there is a significant difference in the level of work related expenses claimed by men and women of the same income level. Figure 3 shows that the difference in total deduction is slightly smaller, but still substantial.

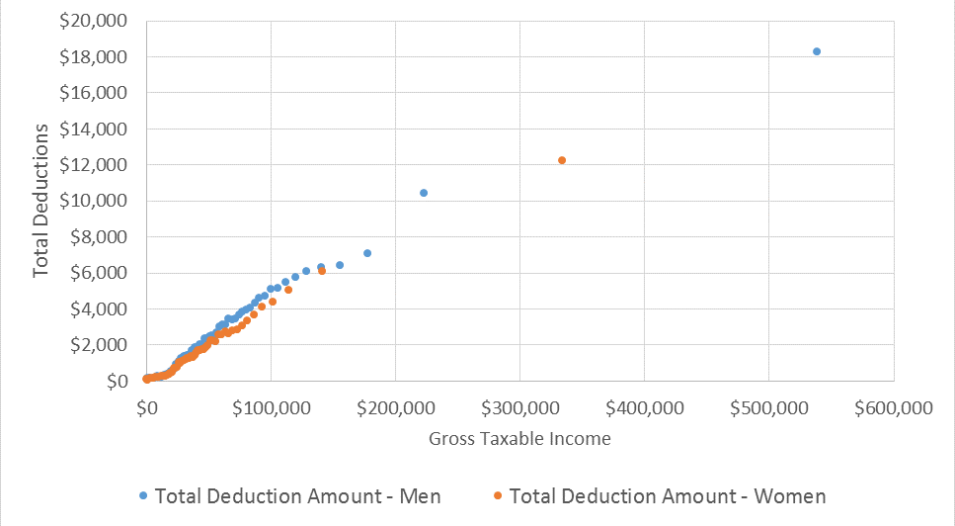
Similar binscatter charts are constructed looking at each type of deduction, as well as comparing the trends within occupation. These charts, which are presented in Appendix B, show that the gender gap is observed in the majority of deduction types, and the majority of industries, but that there is significant variation in these trends.

[7] In the analysis in this paper that involves logs, one is added to all variables so that the zeroes can still be used.

[8] An introduction to the binscatter technique is provided in Stepner (2014).

Figure 2: Binned Scatterplots of Total Work Related Expenses, by gender

Figure 3: Binned Scatterplots of Total Deductions, by gender



3 Analysing the gender gap using a Oaxaca-Blinder decomposition

The previous section compares the average amount of tax deductions claimed by men and women, but it is difficult to interpret the difference in outcome

between genders. For instance, looking at the results in Section 2, it is possible that men might claim more deductions because of an inherent gender difference, or it might be the case that men have higher income on average, and work in industries associated with higher work related expenses. In order to more formally approach this question we want to know what level of deduction are claimed by men and women who have similar observable characteristics. In other words, if we take a population with similar incomes, similar occupations, similar ages and similar tax filing status do men still claim more deductions than women? In order to answer this question, this section uses the Oaxaco-Blinder technique. In the following section, this result is generalised using the a DFL decomposition.

The Oaxaca-Blinder technique is a counterfactual decomposition technique developed independently by Blinder (1973) and Oaxaca (1973). This technique is widely used, particularly in the labour market and discrimination literature, and the strengths and weaknesses of this approach are well understood. Reviews of the Oaxaca-Blinder decomposition can be found in Stanley and Jarrell (1998), Weichselbaumer and Winter-Ebmer (2005), and Fortin et al. (2011).

The Oaxaca-Blinder decomposition is conducted by separately estimating a regression equation that predicts the level of deductions claimed by men and women. Evaluated at the means, these two equations will give a raw difference between the expected level of deductions for men and women. Then, the regression equation for women is used to estimate the expected level of deductions if they had the same observable characteristics as men.[9] That is, the average wage of men, the occupational profile of men, the age profile of men etc. are substituted into the female wage equation, and used to predict a counterfactual level of deductions. The amount that is estimated in this equation is said to be the explained portion of the raw difference, while the remainder is considered 'unexplained'.

As discussed previously, some care must be exercised in interpreting the unexplained portion, as it will potentially include differences in the behaviour of men and women, as well as 'selection on unobservables'. This means that if an important determinant of filing behaviour is not included as an explanatory variable, and that determinant is correlated with gender,

[9]This description characterizes the so called 'two part' Oaxaca-Blinder decomposition. A well-known issue with the Oaxaca-Blinder literature is that a decomposition performed in the manner described here will yield different results than if the procedure is reversed (estimating the male equation with female observed characteristics). A variety of potential solutions to this issue are discussed in the literature reviews described above, but are not considered further in this paper.

then this effect will be included as part of the unexplained portion.

The regression equation used in the Oaxaca-Blinder decomposition in this section is:

$$\begin{aligned} LnDed_i = &\beta_1 LnGrossTaxableIncome_i + \beta_2 Occupation_i + \beta_3 Age_i + \\ &\beta_4 PartnerStatus_i + \beta_5 lodgmentMethod_i + Constant \end{aligned}$$

where each individual is recorded as belonging to one of 10 industries and 12 discrete age ranges.[10] Partner status is defined as whether there is a partner recorded on the tax form, and lodgment method is either agent-prepared or self-prepared.

The results from the baseline Oaxaca-Blinder decomposition of total deductions and total work related expenses are shown in Table 3. In the case of work related expenses, the Oaxaca-Blinder framework identifies a raw difference of around 52 per cent between genders, of which 33.8 percentage points[11] are explained by differences in observable characteristics between men and women, and 18.2 percentage points were left unexplained. The biggest explanatory factors were difference in income, and difference in occupation, while lodgement method, partner status and age range are relatively unimportant in explaining the deduction difference.[12]

The Oaxaca-Blinder decomposition for total deductions claimed has a similar interpretation. There is a 57.1 percentage point difference between men and women, of which 45.4 percentage points can be explained by differences in observed characteristics, leaving 11.6 percentage points unexplained.

The Oaxaca-Blinder framework can also be applied at the level of each individual deduction, to determine whether there is a difference between genders at this disaggregated level. As is the case above, log of total income, occupation, lodgment method, age range and partner status are used as control variables. Table 4 shows the gross gender difference, the explained portion and the unexplained portion for each type of deduction.

Several elements of Table 4 are noteworthy. First the gender deduction gap is evident in seven of the eleven categories. Women claim significantly

[10] These age ranges are 5 year bins, as well as an 'under 20' and 'over 70' category.

[11] Throughout these results, percentage point differences are based on a difference in logs, and therefore won't relate exactly to percentages in the underlying data.

[12] The standard errors reported throughout this paper are estimated using Stata's 'Oaxaca' command, and are calculated using the delta method. This allows for variation in the regressors (as well as variation in the outcome variable) to be incorporated into the estimates of standard errors (Jann 2008).

Table 3: Results of the Oaxaca-Blinder Decomposition

	Total WRE (log percentage points)	Total Deduction Amount (log percentage points)
Total difference	52.0	57.1
	(1.4)	(1.2)
Explained	33.8	45.5
	(1.2)	(1.0)
Unexplained	18.2	11.6
	(1.1)	(1.1)
Explained by:		
Ln (Total Income)	19.3	33.8
	(0.3)	(0.5)
Occupation	11.9	7.9
	(1.0)	(0.7)
Lodgment Method	2.3	3.3
	(0.1)	(0.1)
Age Range	0.2	0.0
	(0.1)	(0.1)
Partner Status	0.0	0.3
	(0.0)	(0.0)

more than men in three categories of deductions, educational expenses, charitable gifts and non-employer superannuation. In the case of charitable giving, this gap is increased further once controlling for observable characteristics in the Oaxaca-Blinder framework.[13]

Finally, the Oaxaca-Blinder framework is applied at the occupation level. The results, shown in Tables 5 and 6, show that men claim more than women in six out of nine occupation classifications while women claim more than men in the community and personal service sector and professional sector.

[13]This aligns with other research that suggests women are more likely than men to make charitable donations (Mesch (2010) and Piper and Schnepf (2008)).

Table 4: Oaxaca-Blinder Results, by type of deduction

	Difference	Explained	Unexplained
Aggregates			
Total WRE	52.0	33.8	18.2
	(1.4)	(1.2)	(1.1)
Total Deduction Amount	57.1	45.5	11.6
	(1.2)	(1.0)	(1.1)
By Deduction			
Car WRE	43.9	27.0	16.9
	(1.2)	(0.9)	(1.4)
Travel WRE	22.3	10.0	12.3
	(0.7)	(0.5)	(0.8)
Uniform WRE	49.0	42.2	6.8
	(1.1)	(0.8)	(1.1)
Self-Education WRE	-3.0	-0.7	-2.3
	(0.6)	(0.4)	(0.7)
Other WRE	47.0	24.7	22.4
	(1.3)	(1.0)	(1.2)
Dividend Deduction	3.2	0.8	2.3
	(0.4)	(0.2)	(0.4)
Interest Deduction	0.7	0.6	0.1
	(0.4)	(0.2)	(0.4)
Charitable Gifts	-10.7	4.6	-15.3
	(1.0)	(0.7)	(1.1)
Non-Employer Superannuation	5.5	7.3	-1.8
	(0.5)	(0.3)	(0.5)
Cost of Tax Affairs	43.6	26.1	17.6
	(1.1)	(0.8)	(1.1)
Other Deductions	32.1	8.9	23.1
	(0.6)	(0.5)	(0.8)

4 Analysing the gender gap using the DFL methodology

In this section, the differences between tax returns of men and women are examined using an approach first proposed in DiNardo, Fortin and Lemieux

Table 5: Oaxaca-Blinder Results, WRE by Occupation

	Difference	Explained	Unexplained
Managers	27.0	17.9	9.1
	(3.8)	(9.1)	(3.7)
Professionals	-6.6	28.3	-34.9
	(2.6)	(1.4)	(2.6)
Technicians and Trades Workers	111.5	81.5	30.0
	(5.1)	(2.8)	(4.8)
Community and Personal Service	55.7	74.2	-18.5
Workers	(4.4)	(3.1)	(3.8)
Clerical and Administrative	55.3	33.8	21.5
Workers	(4.2)	(2.6)	(4.1)
Sales Workers	49.0	46.5	2.4
	(5.1)	(3.2)	(4.5)
Machinery Operators and Drivers	71.5	35.6	35.9
	(9.7)	(5.2)	(8.3)
Labourers	85.9	78.5	7.4
	(4.4)	(3.1)	(3.9)
Consultants, apprentices and	97.3	57.3	40.0
Not Specified	(4.7)	(3.0)	(4.2)

Table 6: Oaxaca-Blinder Results, Total deductions by Occupation

	Difference	Explained	Unexplained
Managers	42.6	36.5	6.1
	(3.2)	(1.5)	(3.0)
Professionals	11.6	35.7	-24.1
	(2.3)	(1.3)	(2.1)
Technicians and Trade Workers	104.2	81.9	22.4
	(4.6)	(2.6)	(4.2)
Community and Personal Service	55.6	69.3	-13.7
Workers	(4.2)	(3.1)	(3.5)
Clerical and Administrative	43.7	37.2	6.5
Workers	(3.8)	(2.6)	(3.4)
Sales workers	49.0	45.8	3.2
	(4.9)	(3.3)	(4.1)
Machinery Operators and Drivers	69.7	36.0	33.7
	(9.1)	(5.0)	(7.6)
Labourers	82.3	71.7	10.6
	(4.2)	(3.0)	(3.6)
Consultants, apprentices and	90.7	55.1	35.6
Not Specified	(4.4)	(3.0)	(3.8)

(1996). This approach reweights the observations of women in order to create a counterfactual distribution of women that have similar characteristics to men (similar income, similar proportions working in each occupation, similar age, etc.). The average level of deductions can then be compared between the male sample and the weighted female sample.[14] The DFL methodology can also be used to compare the distributions of male and female deductions, and can show effects that are not visible when only looking at a comparison of means (such as the Oaxaca-Blinder analysis used in the proceeding section).

The reweighting factor used in the DFL approach is designed to create a sample of women that have a similar distribution of predictive variables. This means that where there are predictive variables (X) that are more common among men than women (such as working as a machinery operator), they will be given a larger weight in the female sample. On the other hand, if there are predictive variables (X) that are more common amongst women than men (such as working in the community services sector), individuals with these characteristics will be given less weight in the DFL methodology. Specifically, the reweighting factor is of the form:

$$\psi(x) = \frac{Pr(X \backslash Gender = Men)}{Pr(X \backslash Gender = Women)} \tag{1}$$

In order to generate these probabilities, both the numerator and denominator are expanded using Bayes rule:

$$Pr(X \backslash Gender = Men) = \frac{Pr(Gender = Men \backslash X).Pr(X)}{Pr(Men)} \tag{2}$$

$$Pr(X \backslash Gender = Women) = \frac{Pr(Gender = Women \backslash X).Pr(X)}{Pr(Women)} \tag{3}$$

Substituting (2) and (3) into (1) leaves the expression:

$$\psi(x) = \frac{Pr(Gender = Men \backslash X)/Pr(Men)}{Pr(Gender = Women \backslash X)/(Pr(Women)} \tag{4}$$

The probabilities required to implement this model are generated using a logit model that predicts the gender of the tax return using the predictive variables (Log Gross Income, Occupation, Age, Partner Status, Lodgment Method, and a dummy for having zero income).

[14] When applied in this way, the DFL decomposition is very similar to the propensity score reweighting method used in the program evaluation literature (Fortin, Lemieux and Firpo 2011).

Table 7: Mean of predictive variables by gender using DFL weights

	Men	Women	Women (DFL weights)
Gross Taxable Income	$71,556	$48,275	$65,495
Proportion with Zero Income	0.46%	0.58%	0.48%
Proportion with Partner	56.29%	54.62%	54.04%
Managers	11.49%	7.70%	11.35%
Professionals	14.37%	19.61%	14.19%
Technicians and Trades Workers	15.21%	2.51%	14.10%
Community and Personal Service Workers	4.72%	11.53%	4.72%
Clerical and Administrative Workers	4.93%	18.56%	4.97%
Sales Workers	4.14%	8.17%	4.16%
Machinery Operators and Drivers	8.41%	0.54%	8.19%
Labourers	10.35%	5.24%	9.86%
Consultants, Apprentices and Not Specified	7.12%	7.66%	7.15%
Occupation not listed/specified	19.26%	18.48%	21.31%

The intuition behind the DFL approach can be appreciated in Table 7, which presents the descriptive statistics of the male, female, and reweighted female tax returns. This shows that after using the DFL approach, the reweighted women's sample has a very similar distribution of occupations, and a more similar level of income than the unweighted sample.

These weights are then used to compare the level of each type of deduction made by men with those made by the reweighted female group. The results, presented in Table 8, show that the DFL technique can explain 46 per cent of the observed difference in total deductions, but only 8 per cent of work related expenses.

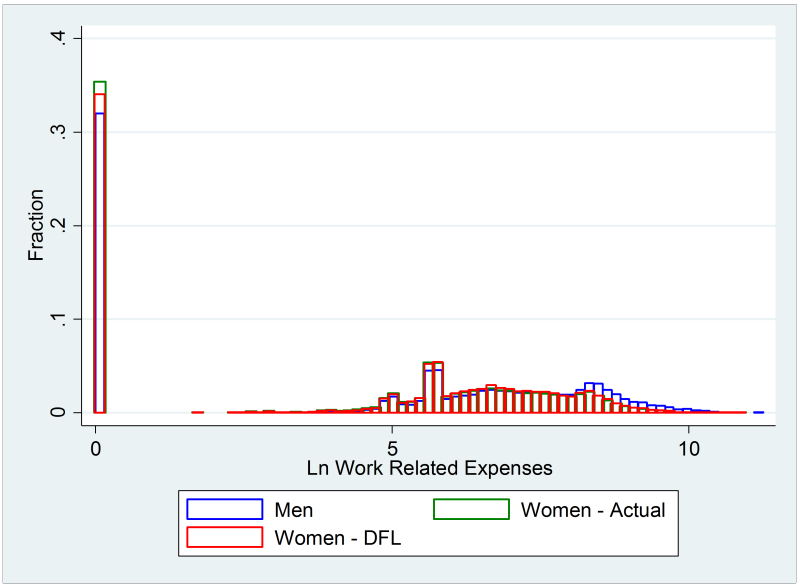
These weights can also be used to create a full counterfactual distribution of deductions that would occur if women had the same observable characteristics as men. Figure 4 shows the distribution of work related expenses amongst men and women, along with the rewrighted distribution of work related expenses using the DFL weights. Figure 5 shows the same comparison for total deductions.

There are two key observations to make from these figures. First, the DFL methodology can explain a significant proportion of the difference between men and women who claim zero deductions, which suggests there is not a systematic difference between men and women at the extensive margin. However, other than this difference at zero deductions, the DFL counterfactual looks very similar to the unweighted women's distribution. This is

Table 8: DFL estimates of the Deduction Gap Between Men and Women

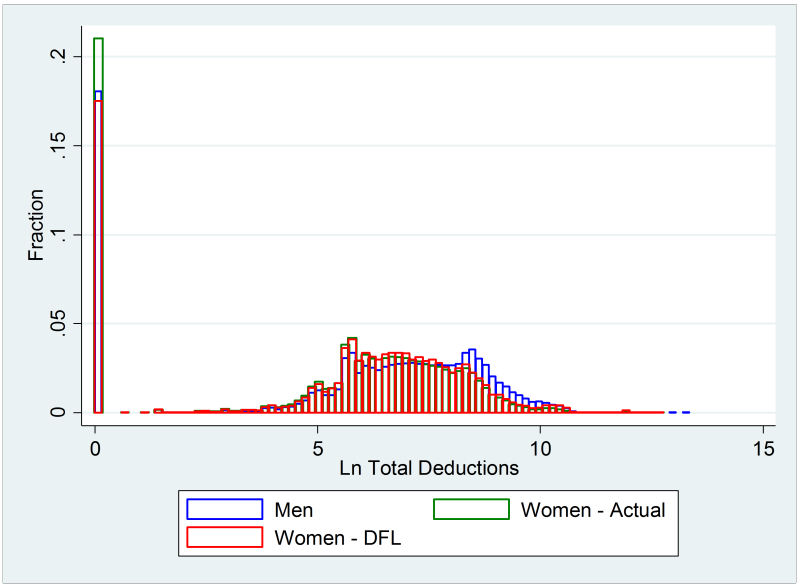
	Men	Women	Women (DFL Weights)
Car WRE	$880	$435	$454
Travel WRE	$242	$80	$90
Uniform WRE	$149	$111	$128
Self Education - WRE	$88	$88	$85
Other WRE	$675	$446	$468
Total WRE	$2032	$1158	$1223
Dividend Deduction	$118	$56	$94
Interest Deduction	$72	$41	$61
Charitable Donation	$253	$209	$372
Non-Employer Superannuation	$323	$241	$476
Cost Tax Affairs	$212	$137	$186
Other Deduction	$224	$87	$113
Total Deductions	$3227	$1922	$2518

Figure 4: DFL Counterfactual Distribution of Work Related Expenses



further evidence that there is a real difference between men and women in tax behaviour, and the difference cannot be explained by differences in observable characteristics. In particular, the large mass of deductions claimed

Figure 5: DFL Counterfactual Distribution of Total Deductions



by men at the top of the distribution cannot be explained using the DFL technique.

5 Family tax planning and different income sources

5.1 Family tax planning

One potential complication with this type of exercise is that couples may organise their tax affairs together, and if there is some discretion about which partner claims a particular deduction, the observed gender difference might actually result from tax planning decisions made by the couple. One issue of particular concern is that under a progressive tax system, there is an incentive to claim deductions against the income of a partner with the higher marginal tax rate. If, on average, men have a higher marginal tax rate than their partner, then there is an incentive to claim any discretionary deductions against the man's income.[15] This could cause the observed gender bias reported in this paper.

Working against this hypothesis is the fact that the largest observed gender differences occur for types of deductions that are hardest to shift be-

[15] 74 per cent of men in the sample file have a higher income than their partner.

tween individuals. If this difference was being driven by family tax planning, we would expect to see a large difference on the types of deductions that are easier to shift between partners (such as charitable donations, superannuation and the cost of tax affairs) and no gap on work related expenses that are specifically tied to a person's earnt income. In the data, we tend to see the opposite. The gap is largest for work related expenses, and negative for charitable giving.

One way to investigate this issue is to restrict the analysis to single individuals.[16] The results of this analysis, shown in Table 16 in Appendix B, show that there is a significantly smaller unexplained gap when between men and women when only looking at the singles in the population. However, it should also be noted that there are significant differences between singles and the total population. For instance, singles are on average much younger, have much lower incomes, and more likely to claim zero deductions. Therefore, it is not possible to say whether this smaller result is evidence that family tax planning is creating the result in the main sample, or just that single men and women are much more similar than men and women generally, which would be consistent with results from the gender pay literature.

Another way to test this hypothesis is to add an additional variable to the Oaxaca-Blinder framework used in Section 3. This variable was constructed based on information on partner's income included in the 2013/14 tax records, and indicates whether an individual is in a lower tax bracket, a higher tax bracket or the same tax bracket than their partner.

$$LnDed_i = \beta_1 LnGrossTaxableIncome_i + \beta_2 Occupation_i + \beta_3 Age_i + \beta_4 Partner_i + \beta_5 LodgmentMethod_i + \beta_6(Hightaxbracket) + \beta_7(lowtaxbracket) + Constant$$

The results of this new specification (shown in Table 9) show strong indications of tax planning at the household level.

For instance, the coefficients for charitable giving and cost of managing tax affairs are both large. In the case of charitable giving, the interpretation here is that on average, the partner in the higher tax bracket tends to claim the deduction for charitable giving, and once this is accounted for, the women give even more to charity than men. Non-Employer Superannuation also shows some signs of household tax planning, but in this case, the incentive is to accumulate more superannuation to the lower income partner.[17]

[16] Which excludes people who are married and in de facto relationships.

[17] The incentive for family tax planning with relation to voluntary superannuation could

Table 9: Oaxaca-Blinder results including partner's tax rate

	Difference	Explained	Unexplained	Explained by different tax brackets
Total WRE	52.0	42.5	9.5	10.6
	(1.4)	(1.2)	(1.2)	(0.5)
Total Deductions	57.1	46.8	10.3	1.9
	(1.2)	(1.1)	(1.2)	(0.5)
By Deduction				
Car WRE	43.9	22.4	21.5	6.8
	(1.2)	(1.1)	(1.5)	(0.7)
Travel WRE	22.3	12.0	10.2	2.5
	(0.7)	(0.7)	(0.9)	(0.4)
Uniform WRE	49.0	48.7	0.3	7.5
	(1.1)	(0.9)	(1.1)	(0.5)
Self-Education WRE	-3.0	-2.0	-1.0	-1.5
	(0.6)	(0.4)	(0.7)	(0.3)
Other WRE	47.0	35.1	11.9	12.7
	(1.3)	(1.1)	(1.3)	(0.6)
Dividend Deduction	3.2	0.1	3.0	-0.8
	(0.4)	(0.3)	(0.5)	(0.2)
Interest Deduction	0.7	0.0	0.7	-0.8
	(0.4)	(0.3)	(0.5)	(0.2)
Charitable Gifts	-10.7	12.5	-23.2	9.5
	(1.0)	(0.8)	(1.2)	(0.5)
Superannuation	5.5	2.4	3.1	-5.7
	(0.5)	(0.4)	(0.6)	(0.3)
Cost of Tax Affairs	43.6	36.7	6.9	13.0
	(1.1)	(0.9)	(1.1)	(0.5)
Other Deductions	32.1	8.9	23.1	0.0
	(0.7)	(0.6)	(0.9)	(0.4)

However, table 9 shows some results that are not consistent with the family tax planning hypothesis. In particular, a number of work related expenses are associated with being the higher income earner. While it is possible that some types of work related expenses are substitutable amongst

work in either direction. If neither party has any contributions, there is an incentive to deduct the money from the higher income partner, as with other deductions. However, there is a limit to how much each individual can place in superannuation. If one partner is at this limit, then there is an incentive to make contributions into the lower income partner's account.

different earners in a household, it is also possible that this is a spurious relationship driven by the correlation between income and the variable for having a higher income than your partner.

In summary, the results in table 9 show evidence that tax planning at the family level occurs, and may contribute to the observed gender deduction gap. However, even accounting for this result, there is still a significant unexplained gap of around 10 per cent.

5.2 Different income sources among men and women

A second concern with the main specification used in Section 3 is that men and women earn different types of income (Table 14 in Appendix B). Men tend to receive more business income and superannuation payments, while women tend to receive more fixed interest annuities and government pensions. Since different deductions are claimable against different types of income, these different income profiles may be causing the observed deduction gap in the aggregate data.

In this section, this hypothesis is examined in three ways. The first approach is to perform the Oaxaca-Blinder decomposition from Section 3 using wage and salary income rather than total income as an explanatory variable. Wage and salary income accounts for around seventy-one per cent of income for both men and women (Table 14), and should be a good proxy for income that work related expenses are deducted against. The results of this specification are shown in Table 10.

Using the log of wages and salary rather than the log of total income explains less of the difference, leaving a larger proportion as an unexplained gap.

The second approach is to exclude various individuals from the analysis that may have a strong influence on the results. The analysis is repeated while excluding:

- Individuals with business income greater than $10,000, where business income includes net business income, distributions from partnerships and farm income. This excludes around 10 per cent of individuals.
- Individuals who claim the highest cost of managing their tax affairs. 1 per cent of individuals are removed, which equates to those who claim more than $1832 on tax management costs.
- Individuals aged less than 25 or older than 60 years old.

Table 10: Oaxaca-Blinder results using wage and salary income.

	Total WRE	Total Deductions
Percentage point difference	52.0	57.1
	(1.4)	(1.2)
Explained	31.9	25.9
	(1.1)	(0.9)
Unexplained	20.1	31.2
	(1.1)	(1.2)
Explained by		
Log (Salary and Wages)	13.2	10.4
	(1.0)	(0.8)
Occupation	15.8	10.6
	(0.6)	(0.6)
Age	2.5	4.1
	(0.1)	(0.2)
Lodgment Method	0.3	0.1
	(0.1)	(0.1)
Partner Status	0.1	0.6
	(0.0)	(0.1)

- Individuals who receive more than half of their total income as unearned income (including interests, shares, pensions, superannuation and annuities).
- All of these groups together.

The results of this analysis are shown in Appendix A in Table 17 (Work Related Expenses) and Table 18 (Total Deductions). The results show that in each specification, a significant difference in deductions between men and women remains unexplained. While this does not prove that the gender difference exists in all groups, it does make it highly unlikely that the result is being driven by a small number of unusual tax returns.

A final approach used to investigate the impact that the different composition has on the results in this paper is to include the proportion of each income type as a predictor in the Oaxaca-Blinder decomposition results in

Section 3.[18]

$$LnDed_i = \beta_1 LnGrossTaxableIncome_i + \beta_2 Occupation_i + \beta_3 Age_i + \beta_4 PartnerStatus_i + \beta_5 LodgmentMethod_i + \beta_6 Proportionincome_i j + Constant$$

This model is equivalent to assuming that each type of gross income typically generates a given proportion of deductions, and that this proportion is different for different types of income. In this specification, the different composition of income explains a small proportion of the gender deduction gap (Table 11), which is further evidence that the main results are not being driven by a different composition of income.

6 Conclusion

This paper has explored the difference in deductions claimed by men and women, and found that in general, men are likely to claim more deductions than women. This result is found in 7 of 11 categories of deductions, and in 6 out of 9 industries. After controlling for differences in observable characteristics using the Oaxaca-Blinder framework, the paper finds that men claim around 12 per cent more deductions than women, which equates to around $240 in deductions per year.

The paper has also explored a range of possible explanations of this observed gap, including family tax planning and different compositions of income between men and women, and found that while both factors are important in explaining tax behaviour, they can only explain a small proportion of the observed gap.

However, it should also be noted that beyond these factors, this paper is not able to distinguish between other possible explanations; such as men being more willing to risk audit, men having more information about the deductions available to them, men being more willing to maintain the documentation needed to claim deductions, and men being entitled to more deductions in a way that is not captured by observable characteristics. This creates a potential policy dilemma, as the correct policy response to this observed gap depends on what is driving the underlying result.

If there are parts of the tax system that allow deductions for things commonly used by men, but do not allow deductions for similar deductions

[18] In this case, the proportion of income obtained from income source is equal to the income derived from this source divided by total income for that individual. This amount is then bounded between zero and one to remove the influence of people who claim a very low taxable income (ie, people who report a taxable income of $1).

Table 11: Oaxaca-Blinder results when including composition of income as an explanatory variable

	Total WRE	Total WRE	Total Deductions	Total Deductions
Includes income types	Yes	No	Yes	No
Percentage point difference	52.0	52.0	57.1	57.1
	(1.4)	(1.4)	(1.2)	(1.2)
Explained	36.0	33.8	47.8	45.5
	(1.2)	(1.2)	(1.0)	(1.0)
Unexplained	16.0	18.2	9.3	11.6
	(1.1)	(1.1)	(1.1)	(1.1)
Explained by				
Log Total income	18.7	19.3	34.5	33.8
	(0.3)	(0.3)	(0.5)	(0.5)
Occupation	12.6	11.9	8.5	7.9
	(0.7)	(1.0)	(0.6)	(0.7)
Age	0.3	2.3	0.1	3.3
	(0.1)	(0.1)	(0.1)	(0.1)
Lodgment Method	2.7	0.2	3.4	0.0
	(0.1)	(0.1)	(0.2)	(0.1)
Partner Status	0.0	0.0	0.3	0.3
	(0.0)	(0.0)	(0.0)	(0.0)
Income types	1.6		1.1	
	(0.1)		(0.3)	

used by women, then the gap could be reduced by identifying and removing this distinction (either by allowing deductions for women, or disallowing deductions for men). While this issue has been debated in Australia in the context of briefcases and purses(Han 2016), it is likely to have a much larger financial impact in other less obvious areas, such as when looking at the tax deductibility of driving a work vehicle (which is deductible), as opposed to commuting to and from work (which is not deductible).

If men are more willing to risk audit than women, either because they think that the tax office won't audit them, or because they are more willing to claim a deduction when they are unsure if it is allowable, then the Australian Tax Office should take gender into account when determining who to audit.

To the extent that women are less informed about the levels of deductions

that are available, then a potential solution would be to provide more information to women about what can be claimed. However, given the strong financial incentives that already exist for people to discover this information, alongside incentives for tax preparers to supply this information, it is unclear that any program of information provided by the government would be effective.

Another solution that would potentially reduce this gap is to automate more parts of the tax return process. This could be done by encouraging more deductions to be claimed at the point of use through salary sacrificing, rather than claiming the deduction at the end of the year. It could also be done by allowing a standard deduction for certain types of deductions, and automatically giving everyone that deduction. Automating more of the tax system in this manner would also potentially have significant welfare impacts. If there are deductions that some people are not collecting because the costs of keeping records is too great, it suggests that there is potentially significant welfare implication of having this deduction in the tax system, as it implies that others are collecting the deduction (which has an impact on tax revenues), but losing much of the value through the recording process.[19]

[19]This issue is explored in the US context in Benzarti (2016). This paper uses a bunching based methodology to look at the cost of itemising a tax return, and finds that this process has an average revealed cost of around $600. While this cost is for the process of itemising all deductions, it suggests that the welfare impact of having to keep records is potentially substantial.

Appendix A: Negative gearing and fringe benefit taxation

Negative gearing of residential properties and fringe benefits taxation are both important aspects of the Australian tax system. Moreover, both feature gender-based trends. However, they are fundamentally different to the tax deductions considered in the main section of the paper, and so including them would have made interpretation difficult. Nevertheless, the techniques used in this paper can be applied to distinguish whether these are more common amongst men or women. The results of this analysis are contained in this appendix.

Negative gearing

Negative gearing of rental properties is a feature of the Australian tax system where losses from rental properties can be used to offset income from other sources. It is often seen as an attractive investment strategy as the capital gains made on rental accommodation is taxed at a lower rate than other income. For the purposes of this exercise, the level of negative gearing is defined to be net rental losses (but equal to zero if there is a net rental gain).

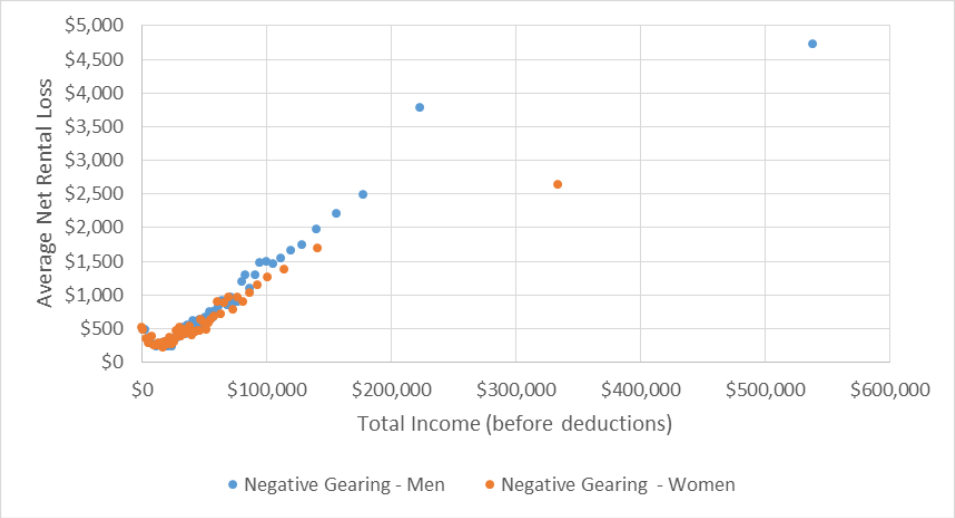
The first result uses the binscatter method from Section 2. This shows that there is a difference in the filing behaviours of men and women conditional on income, and this difference is most pronounced at higher income levels.

This difference is also apparent in the Oaxaca-Blinder framework. When the baseline specification used in Section 3 is applied to negative gearing, we find that men claim 12.9 per cent more than women on average, and that this gap is only reduced a small amount (to 12.5 per cent) once other variables are controlled for in the Oaxaca-Blinder decomposition.[20]

In the context of negative gearing, an observed gender difference most likely represents a more active approach to investment and tax management, rather than a difference in the way in which men and women file their taxes, although it potentially captures larger reported values for property management and depreciation amongst those with investment properties.

[20] As with the analysis in the main section, this result is robust to different empirical specifications, including adding dummies for being in a higher or lower tax bracket than your partner, and excluding different groups of individuals as in Table 17.

Figure 6: Binned scatterplots of negative gearing, by gender



Fringe benefit taxation

Under the Australian personal income tax system, benefits provided to an employee in place of salary or wages are taxable at the highest marginal tax rate. However, a range of exemptions exist that allow fringe benefits to be paid to employees without paying fringe benefits tax. These include a number of exemptions in the community services and health sectors and religious institutions, as well as a lower tax rate on company cars. In such cases, it is often advantageous to arrange employment contracts to maximise benefits paid in this way.

For the purpose of this paper, the trends of fringe benefits paid to different employees is interesting for two reasons. First, from the perspective of equity, women tend to receive more of their income in this way (Figure 7), and to the extent that this represents favourable tax treatment, it may balance out the difference in deductions examined in the main part of this paper. Second, in some cases, Fringe Benefit Tax (FBT) exemptions are substitutable for deductions. For instance, an individual that receives a FBT exempt work vehicle will not be able to claim that vehicle as a deduction against their income tax.

The data for fringe benefit tax included in the ATO data used in this paper includes taxable fringe benefits and so called quasi-fringe benefits (ATO 2017). These are benefits provided to workers in a public benevolent institu-

Table 12: Oaxaca-Blinder decompostion of negative gearing

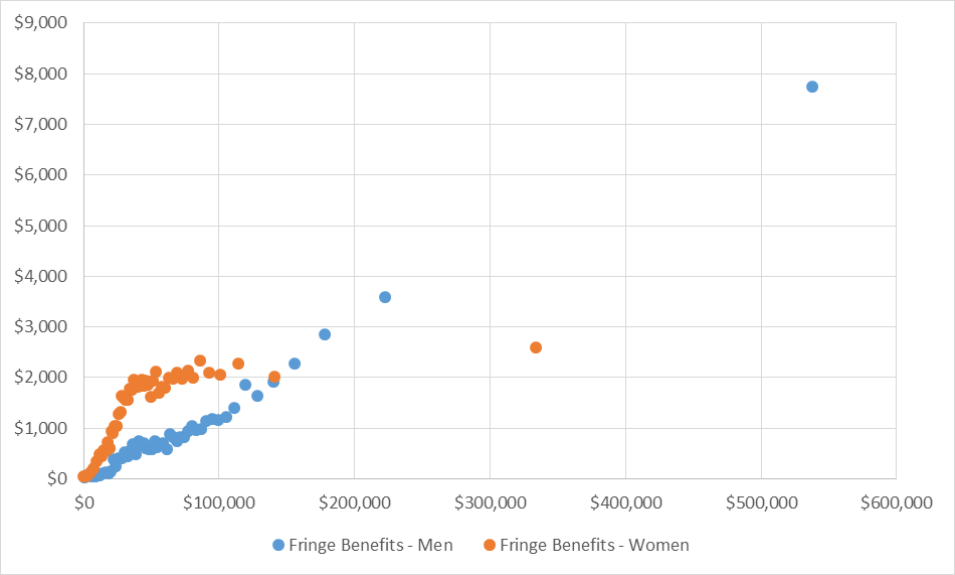
	Negative Gearing (log percentage points)
Total Difference	12.9
	(1.0)
Explained	0.4
	(0.7)
Unexplained	12.5
	(1.1)
Explained by:	
Ln (Total Income)	4.0
	(0.2)
Occupation	-6.2
	(0.6)
Lodgment Method	2.0
	(0.1)
Age Range	-0.1
	(0.1)
Partner Status	0.6
	(0.1)
Number of Observations	257,639

tion, a health promotion charity, a hospital, a public ambulance service and workers in a live-in residential care setting. However, they do not include other FBT exempt items which are not required to be reported to the tax office. Furthermore, the ATO data does not distinguish between individuals that receive taxable fringe benefits and those that receive quasi-fringe benefits. However, by comparing the sample file with data on total tax revenue from fringe benefit taxation (ABS 2016), around 45 per cent of FBT reported in the tax data are tax exempt.

In interpreting the results in this section, it is important to remember that the quasi fringe benefits described above are provided in industries that employ a high proportion of women and it is therefore likely that the observed trend is a result of this sectoral difference, rather than an underlying behavioural difference.

When analysed in the Oaxaca Blinder Framework (Table 13), women are found to receive around 13 per cent more fringe benefits than men in similar

Figure 7: Binned scatterplots of reported fringe benefits, by gender



situations. When evaluated at the mean($960 for men), this is equivalent to a difference of $125 in fringe benefits received. If these are assumed to be tax exempt, these additional exemptions are worth about $40 per person.

Table 13: Oaxaca-Blinder decomposition of reported fringe benefit taxes

	Reported Fringe Benefits (log percentage points)
Total difference	-22.5
	(0.9)
Explained	-9.2
	(0.6)
Unexplained	-13.3
	(1.0)
Explained by:	
Ln (Total Income)	4.5
	(0.2)
Occupation	-14.0
	(0.5)
Lodgment method	2.1
	(0.1)
Age Range	-0.2
	(0.2)
Partner Status	0.2
	(0.0)
Number of observations	257,639

Appendix B: Additional results and figures

Table 14: How income sources vary by gender

	Men	Women	Difference	p value (difference = 0)
Salary/wage	71.3%	71.0%	0.3%	0.063
Allowances	1.4%	0.8%	0.6%	0.000
Employment termination payments	0.3%	0.1%	0.2%	0.000
Gross interest	2.6%	4.5%	-1.9%	0.000
Government pensions or allowances	3.9%	5.4%	-1.6%	0.000
Unfranked dividends	0.2%	0.2%	0.0%	0.002
Franked dividends	2.4%	3.1%	-0.6%	0.000
Dividends franking credit	1.1%	1.4%	-0.3%	0.000
Net rental income	1.8%	2.4%	-0.5%	0.000
Net farm management deposits	0.0%	0.0%	0.0%	0.002
Net primary production business income	0.2%	0.1%	0.1%	0.000
Net non-primary production business income	5.7%	2.8%	2.9%	0.000
Net capital gains	0.7%	0.8%	-0.1%	0.000
Annuity or superannuation income - taxed	0.3%	0.3%	0.0%	0.899
Annuity or superannuation income - untaxed	1.2%	0.7%	0.5%	0.000
Other net foreign source income	0.1%	0.2%	0.0%	0.004
Other income not separately listed	2.8%	2.3%	0.5%	0.000
Net partnership and trusts - primary prod.	0.6%	0.5%	0.1%	0.001
Net partnership and trusts - non-primary prod.	5.0%	5.2%	-0.2%	0.002
Total income	100.0%	100.0%	0.0%	

Table 15: Extended results of Oaxaca-Blinder Decomposition by deduction type

	Difference (percentage)	Percentage points explained by:					Explained	Unexplained	P Value (Explained = 0)
		Ln (Income)	Occupation	Lodgment method	Age Range	Partner status			
Aggregates									
Total WRE	52.0	19.3	11.9	2.3	0.2	0.0	33.8	18.2	0.000
	(1.4)	(0.3)	(1.0)	(0.1)	(0.1)	(0.0)	(1.2)	(1.1)	
Total Deduction Amount	57.1	33.8	7.9	3.3	0.1	0.3	45.5	11.6	0.000
	(1.2)	(0.5)	(0.7)	(0.2)	(0.1)	(0.0)	(1.0)	(1.1)	
By Deduction									
Car WRE	43.9	12.0	2.6	1.8	0.5	0.0	16.9	27.0	0.000
	(1.2)	(0.3)	(0.8)	(0.1)	(0.2)	(0.0)	(0.9)	(1.4)	
Travel WRE	22.3	6.4	4.0	-0.5	0.2	-0.1	10.0	12.3	0.000
	(0.7)	(0.2)	(0.5)	(0.1)	(0.1)	(0.0)	(0.5)	(0.9)	
Uniform WRE	49.0	8.2	32.6	1.5	0.1	-0.1	42.2	6.8	0.000
	(1.1)	(0.2)	(0.7)	(0.1)	(0.1)	(0.0)	(0.8)	(1.1)	
Self-Education WRE	-3.0	2.0	-1.8	-1.0	0.1	0.0	-0.7	-2.3	0.000
	(0.6)	(0.1)	(0.3)	(0.1)	(0.1)	(0.0)	(0.4)	(0.7)	
Other WRE	47.0	17.4	3.5	3.6	0.2	0.1	24.7	22.4	0.000
	(1.3)	(0.3)	(0.2)	(0.2)	(0.1)	(0.0)	(1.0)	(1.2)	
Dividend Deduction	3.2	3.2	-2.3	-0.1	-0.1	0.0	0.8	2.3	0.000
	(0.4)	(0.1)	(0.2)	(0.0)	(0.0)	(0.0)	(0.3)	(0.4)	
Interest Deduction	0.7	2.0	-1.1	-0.2	0.0	0.0	0.6	0.1	0.865
	(0.4)	(0.1)	(0.2)	(0.0)	(0.0)	(0.0)	(0.2)	(0.4)	
Charitable Gifts	-10.7	15.0	-9.7	-0.9	-0.1	0.2	4.6	-15.3	0.000
	(1.0)	(0.3)	(0.6)	(0.1)	(0.2)	(0.0)	(0.7)	(1.1)	
Non-Employer Superannuation	5.5	7.0	0.2	0.1	-0.1	0.1	7.3	-1.8	0.001
	(0.5)	(0.1)	(0.3)	(0.0)	(0.1)	(0.0)	(0.3)	(0.5)	
Cost of Tax Affairs	43.6	12.6	3.3	10.1	0.1	0.0	26.1	17.6	0.000
	(1.1)	(0.3)	(0.6)	(0.5)	(0.2)	(0.0)	(0.8)	(1.1)	
Other Deductions	32.1	7.2	0.3	1.2	-0.3	0.5	8.9	23.1	0.000
	(0.7)	(0.2)	(0.5)	(0.1)	(0.1)	(0.1)	(0.5)	(0.8)	

Table 16: Oaxaca-Blinder decomposition for singles and the population

	Singles				All People			
	Difference (percentage)	Explained	Unexplained	Mean deduction (pooled average)	Difference (percentage)	Explained	Unexplained	Mean deduction (pooled average)
Aggregates								
Total WRE	37.3	34.2	3.1	$1583	52.0	33.8	18.2	$1608
	(2.0)	(1.7)	(1.8)		(1.4)	(1.2)	(1.1)	
Total Deduction	23.4	28.4	-5.0	$2180	57.1	45.5	11.6	$2595
	(1.9)	(1.5)	(1.7)		(1.2)	(1.0)	(1.1)	
By Deduction								
Car WRE	34.2	20.1	14.1	$630	43.9	16.9	16.9	$664
	(1.9)	(1.3)	(2.1)		(1.2)	(0.9)	(1.4)	
Travel WRE	12.4	6.6	5.7	$170	22.3	10.0	12.3	$164
	(1.1)	(0.8)	(1.3)		(0.7)	(0.5)	(0.8)	
Uniform WRE	50.2	48.0	2.2	$147	49.0	42.2	6.8	$131
	(1.6)	(1.2)	(1.6)		(1.1)	(0.8)	(1.1)	
Self-Education WRE	-3.2	1.3	-4.4	$107	-3.0	-0.7	-2.3	$87
	(0.9)	(0.6)	(1.1)		(0.6)	(0.4)	(0.7)	
Other WRE	29.9	22.7	7.4	$534	47.0	24.7	22.4	$563
	(1.9)	(1.5)	(1.8)		(1.3)	(1.0)	(1.2)	
Dividend Deduction	-0.5	-2.5	2.1	$55	3.2	0.8	2.3	$88
	(0.5)	(0.3)	(0.5)		(0.4)	(0.2)	(0.4)	
Interest Deduction	-1.6	-1.8	0.2	$31	0.7	0.6	0.1	$57
	(0.4)	(0.3)	(0.5)		(0.4)	(0.2)	(0.4)	
Charitable Gifts	-43.6	-8.8	-34.8	$190	-10.7	4.6	-15.3	$231
	(1.4)	(0.9)	(1.5)		(1.0)	(0.7)	(1.1)	
Non-Employer Superannuation	2.1	0.9	1.2	$100	5.5	7.3	-1.8	$283
	(0.4)	(0.3)	(0.5)		(0.5)	(0.3)	(0.5)	
Cost of Tax Affairs	6.5	16.1	-9.6	$140	43.6	26.1	17.6	$176
	(1.5)	(1.2)	(1.5)		(1.1)	(0.8)	(1.1)	
Other Deductions	9.6	2.9	6.7	$87	32.1	8.9	23.1	$158
	(0.8)	(0.5)	(1.0)		(0.6)	(0.5)	(0.8)	

Table 17: Oaxaca-Blinder decomposition for work related expenses while excluding subgroups

	Baseline model (from Section 3)	Excluding high cost of tax affairs	Excluding high business income	Excluding high other income	Just prime aged workers	Excluding high unearned incomes	Excluding all groups
n (men)	134961	132693	117962	126446	94618	121069	88230
n (women)	123812	122377	112056	118402	86834	106799	83872
Percentage point difference	52.0	51.9	74.5	52.0	56.1	41.5	72.2
	(1.4)	(1.4)	(1.4)	(1.4)	(1.5)	(1.4)	(1.4)
Explained	33.8	33.9	54.4	35.0	31.1	23.7	61.2
	(1.2)	(1.2)	(1.1)	(1.2)	(1.3)	(1.1)	(1.1)
Unexplained	18.2	17.9	20.0	16.9	25.0	17.7	11.0
	(1.1)	(1.1)	(1.2)	(1.2)	(1.4)	(1.2)	(1.4
Explained by:							
Ln(Total Income)	19.3	19.4	25.9	20.8	24.9	21.2	38.6
	(0.3)	(0.4)	(0.4)	(0.4)	(0.5)	(0.4)	(0.6)
Occupation	11.9	12.1	25.8	11.8	3.5	-0.1	19.3
	(1.0)	(1.0)	(0.9)	(1.0)	(1.2)	(1.0)	(0.8)
Age	2.3	2.2	0.1	0.2	0.5	0.0	0.7
	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)
Lodgment Method	1.2	0.2	2.5	2.2	2.3	2.6	2.6
	(0.1)	(0.1)	(0.2)	(0.1)	(0.2)	(0.1)	(0.2)
Partner Status	0.0	0.0	0.1	0.0	-0.1	0.0	-0.1
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

Table 18: Oxaca-Blinder results for total deductions while excluding subgroups

	Baseline model (from Section 3)	Excluding high cost of tax affairs	Excluding high business income	Excluding high other income	Just prime aged workers	Excluding high unearned incomes	Excluding all groups
n (men)	134961	132693	117962	126446	94618	121069	88230
n (women)	123812	122377	112056	118402	86834	106799	83872
Percentage point difference	57.1	55.3	68.4	55.2	64.4	50.3	65.2
	(1.2)	(1.2)	(1.2)	(1.2)	(1.3)	(1.2)	(1.3)
Explained	45.5	44.2	54.8	45.9	43.5	38.1	57.0
	(1.0)	(1.0)	(1.0)	(1.0)	(1.1)	(0.9)	(1.0)
Unexplained	11.6	11.1	13.6	9.3	20.9	12.2	8.2
	(1.1)	(1.2)	(1.1)	(1.2)	(1.3)	(1.2)	(1.3)
Explained by:							
Ln(Total Income)	33.8	32.7	37.3	34.6	38.5	31.8	40.9
	(0.5)	(0.5)	(0.6)	(0.5)	(0.6)	(0.5)	(0.7)
Occupation	7.9	8.1	13.9	8.1	2.3	2.7	13.3
	(0.7)	(0.7)	(0.6)	(0.7)	(0.8)	(0.7)	(0.7)
Age	0.1	0.0	-0.1	0.0	0.0	0.4	0.1
	(0.1)	(0.1)	(0.1)	(0.1)	(0.0)	(0.1)	(0.1)
Lodgment Method	3.3	3.1	3.3	3.1	3.0	3.2	2.8
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Partner Status	0.3	0.3	0.3	0.2	0.2	0.1	-0.2
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

Figure 8: Binned scatterplots of each deduction, by gender

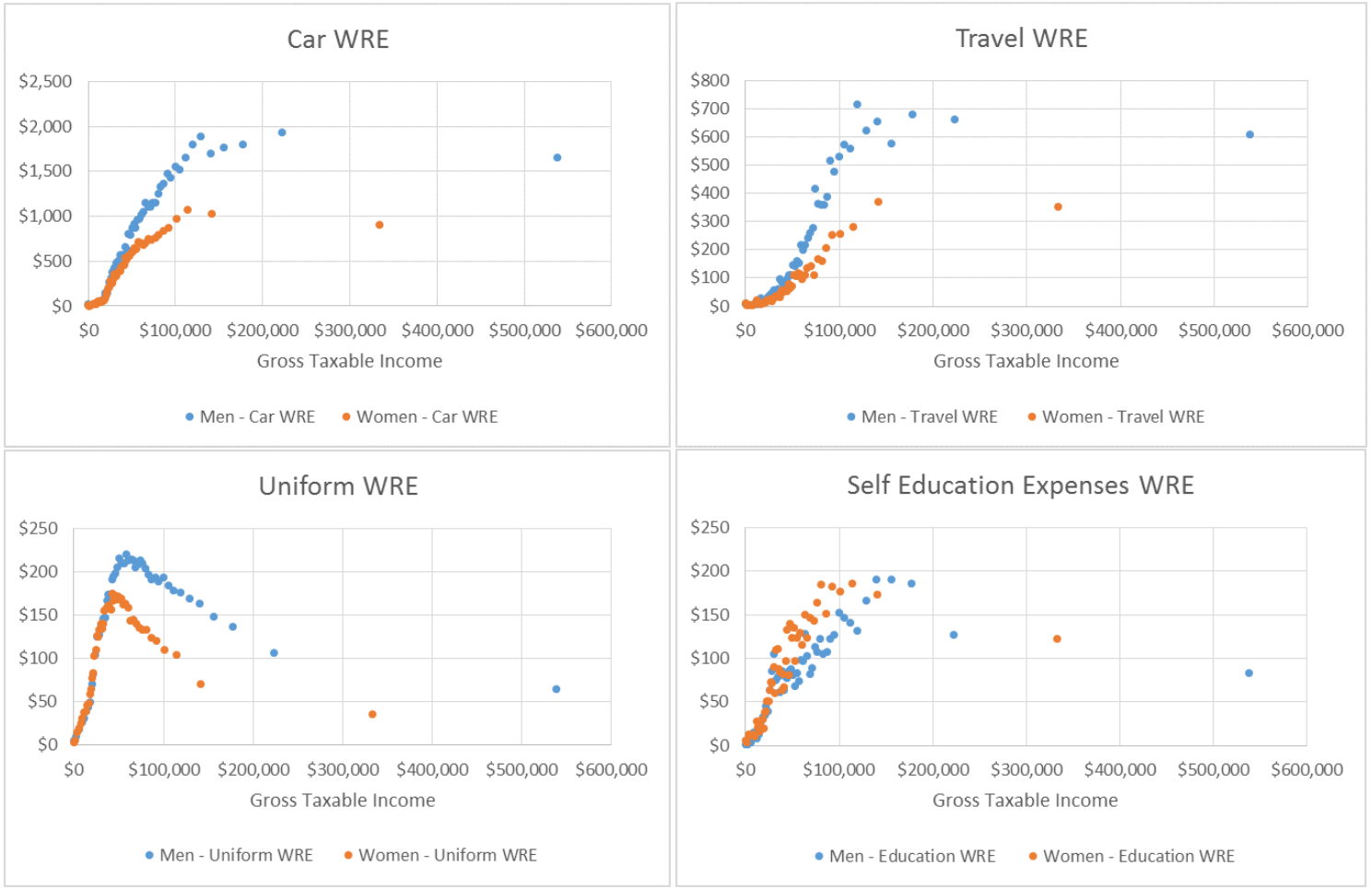


Figure 9: Binned scatterplots of each deduction, by gender (cont.)

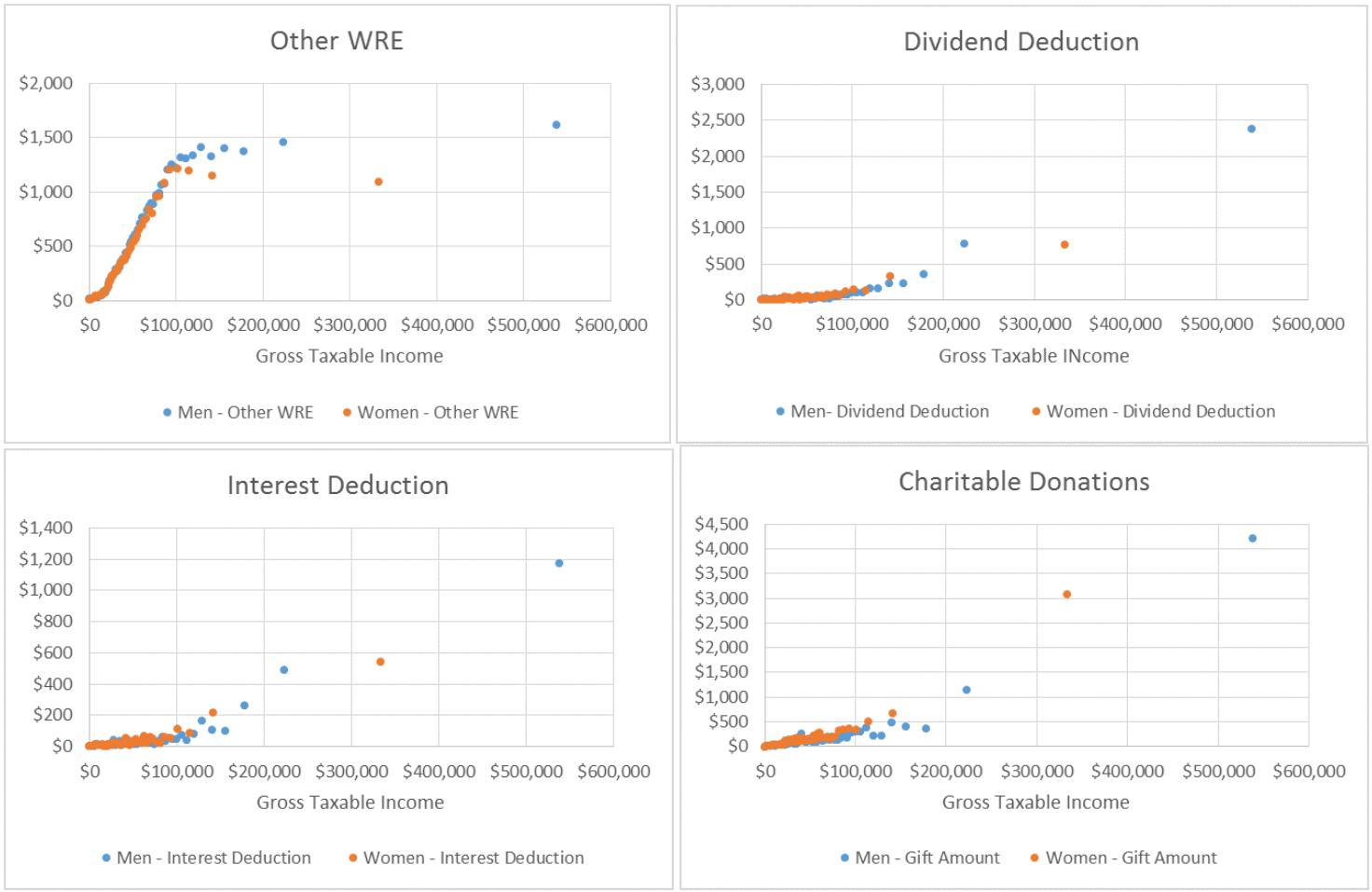


Figure 10: Binned scatterplots of each deduction, by gender (cont.)

Figure 11: Binned scatterplots of total deductions, by occupation

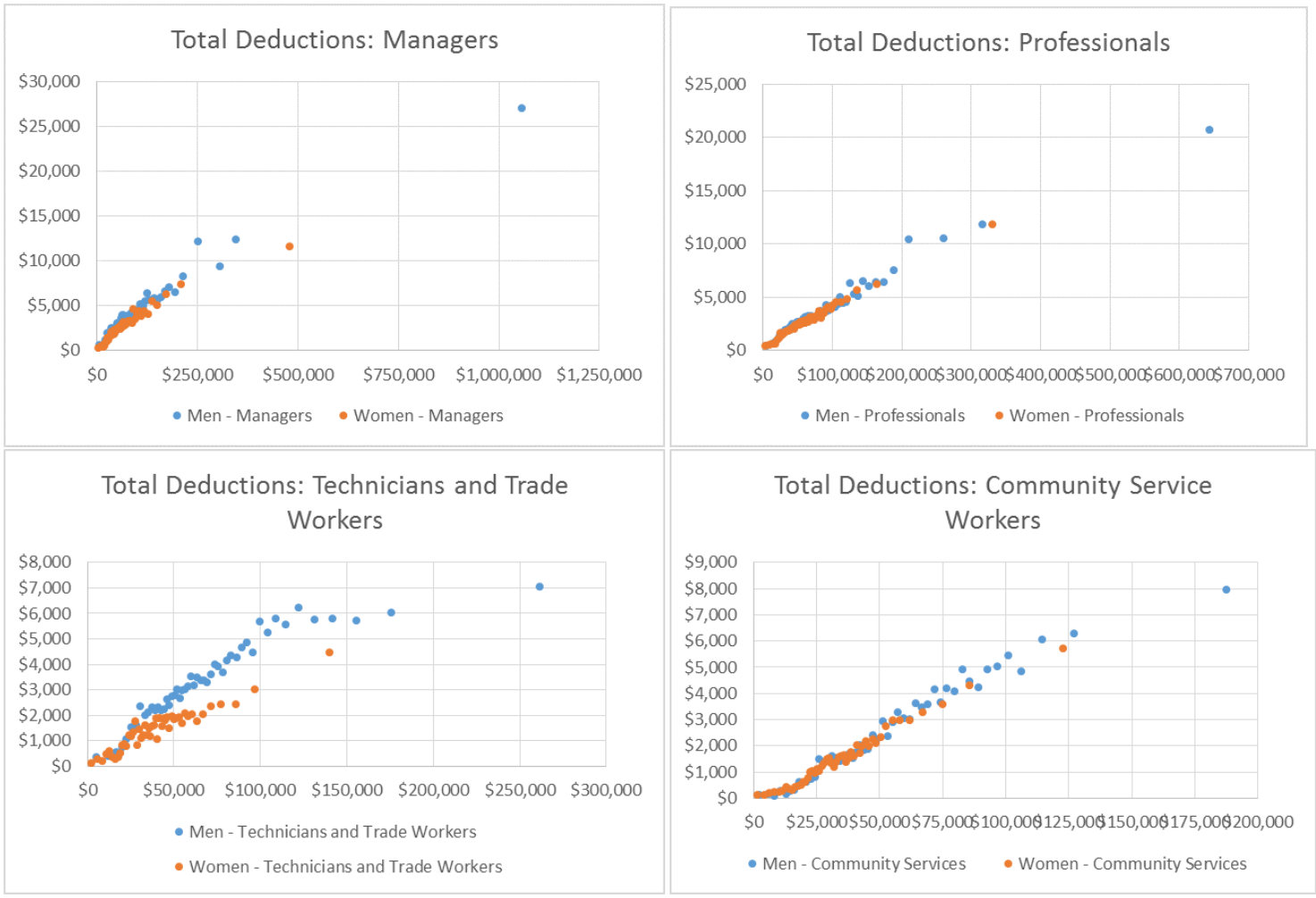


Figure 12: Binned scatterplots of total deductions, by occupation (cont.)

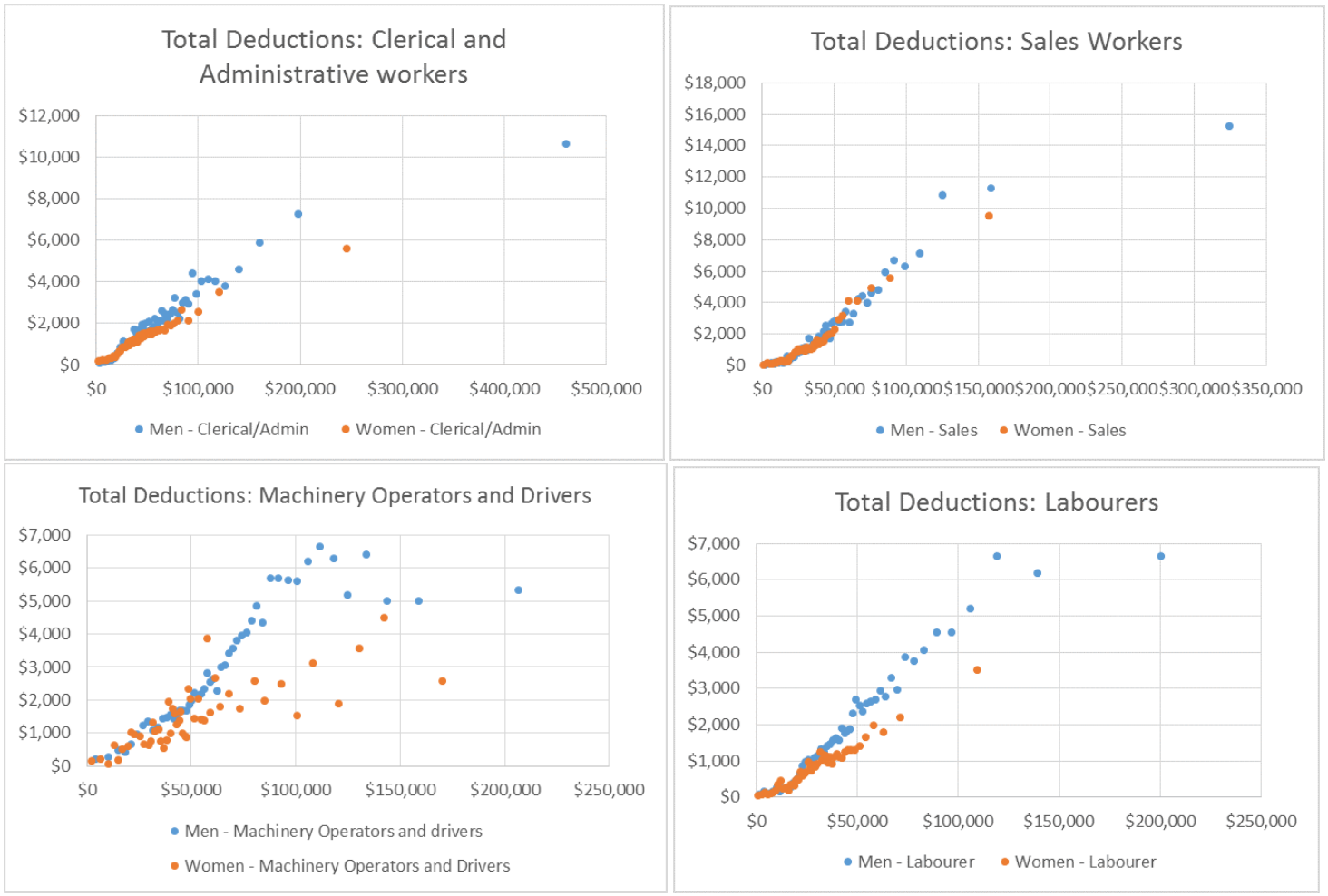
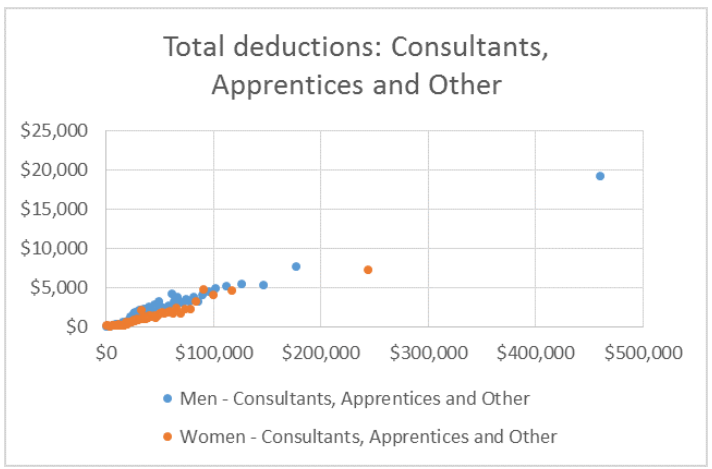
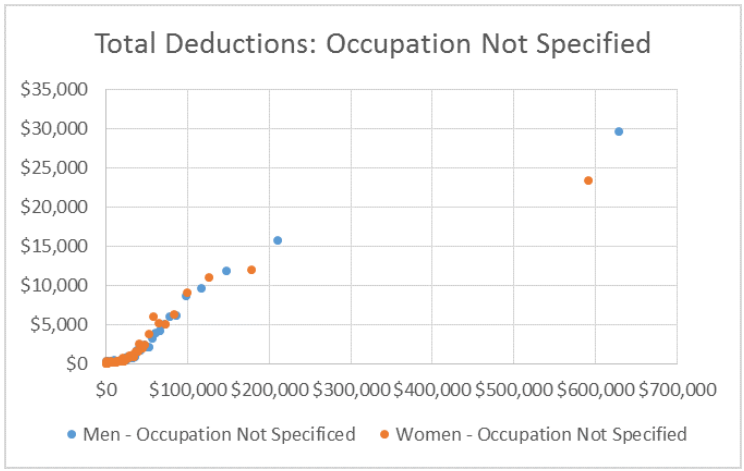


Figure 13: Binned scatterplots of total deductions, by occupation (cont.)





References

ABS (Australian Bureau of Statistics) (2008), 'How Australian Use Their Time' – 2006, Cat. No. 4153, Table 4, released 21 Feb 2008.

ABS (Australian Bureau of Statistics) (2016), 'Taxation Revenue', Cat. No. 5506, Released 26 April 2016.

ATO (2017), 'Benefits included in the reporting requirements, FBT: Employer's Guide.' Available from the ATO website.

Benzarti, Y. (2016), 'How Taxing Is Tax Filing? Leaving Money on the Table Because of Compliance Costs', Working Paper.

Blau. D and Kahn. L, (2016), 'The Gender Wage Gap: Extent, Trends and Explanations', IZA Discussion Paper Series No 9656.

Blinder, A. S. (1973), 'Wage discrimination: Reduced form and structural estimates', Journal of Human Resources, Volume 8, pp. 436–455.

Croson, R and Gneezy, R. (2009). 'Gender Differences in Preferences', Journal of Economic Literature, Volume 47(2), pp. 448-474.

DiNardo, J., Fortin, N. and Lemieux, T. (1996), 'Labor Market Institutions and the Distribution of Wages', 1973-1992: A Semiparametric Approach, Econometrica Volume 64 pp. 1001-1044.

Eckel, C. and Grossman, P. (2008). 'Forecasting risk attitudes: An experimental study using actual and forecast gamble choices.' Journal of Economic Behavior and Organization Volume 68(1), pp. 1-17.

Fortin, N. Lemieux, T. and Firpo, S. (2011), 'Decomposition Methods in Economics', Book chapter published in O. Ashenfelter and D. Card (ed.), 2011. Handbook of Labor Economics, Elsevier, Edition 1, Volume 4, No. 4.

Gillitzer, C. and Skov, P.E. (2013), 'Evidence on Unclaimed Charitable Contributions from the Introduction of Third-Party Information Reporting in Denmark', EPRU Working Paper Series No. 2013-04.

Glover, S., Bumpus, M., Logan, J. and Ciesla, J. (1997), 'Reexamining the

influence of individual values on ethical decision-making', Journal of Business Ethics, Volume 16, pp. 1319–1329.

Han, M. (2016), 'Man-bags are tax-deductible, but handbags are not', Australian Financial Review.

Jann, B. (2008), 'The Blinder–Oaxaca decomposition for linear regression models', The Stata Journal, Volume 8(4), pp.453-479.

Kleven, H. J., Knudsen, M. B., Kreiner, C. T., Pedersen, S. and Saez, E. (2011), 'Unwilling or Unable to Cheat? Evidence From a Tax Audit Experiment in Denmark'. Econometrica, Volume 79, pp. 651–692.

McGee, R. (2014) 'Gender and the Ethics of Tax Evasion: An Empirical Study of 82 Countries.', in 'The Ethics of tax Evasion' ed. McGee, pp.415-439.

Mesch, D. (2010), 'Women Give 2010: New Research about Women and Giving', Women's Philanthropy Institute, Centre on Philanthropy at Indiana Institute.

Oaxaca, R. (1973) 'Male-female wage differentials in urban labor markets'. International Economic Review Volume 14, pp. 693–709.

Paetzold, J. and Winner, H. (2014), 'Unwilling, Unable or Uninformed to Cheat? Evidence on Evasion Spillovers via Self-Reporting in Austria', Working Paper.

Piper, G. and Schnepf S.V. (2008), 'Gender differences in charitable giving in Great Britain'. Voluntas: International Journal of Voluntary and Nonprofit Organizations, Volume 19(2), pp. 103–124.

Schwartz, J. and Steffennsmeier, D. (2008), 'Nature of Female Offending: Patterns and Explanation' (From Female Offenders: Critical Perspectives and Effective Interventions, Second Edition), pp. 43-75.

Stanley, T. D., and S. B. Jarrell. (1998), 'Gender wage discrimination bias? A metaregression analysis.' Journal of Human Resources, Volume 33, pp.

947–973.

Stepner, M. (2014), 'Binscatter: Binned Scatterplots in Stata, presentation to the Stata Conference', August 1.

Weichselbaumer, D., and Winter-Ebmer, R. (2005), 'A meta-analysis of the international gender wage gap'. Journal of Economic Surveys, Volume 19, pp. 479–511.