Archived at the Flinders Academic Commons:
http://dspace.flinders.edu.au/dspace/

‘This is the peer reviewed version of the following article: Austen, Siobhan, & Redmond, Gerry. (2013). Male Earnings Inequality, Women’s Earnings, and Family Income Inequality in Australia, 1982-2007. Journal of Economic Issues, 47(1), 33-62.,

which has been published in final form at

http://dx.doi.org/10.2753/JEI0021-3624470102

This author accepted manuscript (post print) is made available in accordance with publisher copyright policy’.

Copyright © (2013) Taylor & Francis Group LLC
Male earnings inequality, women’s earnings and family income inequality in Australia, 1982 – 2007


Abstract:

In the quarter century since 1982 male earnings inequality increased substantially in most industrialized countries, as did women’s participation in paid work. Both trends impacted on family income inequality. However, our analysis of Australian data shows the impact of changes in women’s earnings on family income inequality changed over the study period. Between 1982 and 1995-96 the growth in women’s earnings was concentrated in households with high male earnings, pushing family income inequality higher. However, after 1995-96 the growth in women’s earnings had a moderating influence on family income inequality as it was concentrated in households with lower male earnings. These findings contribute new evidence on the importance of trends in family formation and the correlation of husbands’ and wives’ earnings to the evolution of family income inequality. They also are suggestive of a dynamic relationship between rising family income inequality and women’s participation in paid work.

Keywords: Earnings inequality, Women’s earnings, Family income inequality, Australia.

JEL classification numbers: D31, J21, J22
In line with the experience of many other industrialized countries, the Australian labour market has experienced dramatic change in recent decades. Male wage and earnings inequality has increased substantially (see Gottschalk and Danziger, 2005, for US evidence, Acemoglu, 2002, and Hornstein et al., 2006 for an overview of international trends and Keating, 2003 for recent Australian data). The labour market has also become increasingly feminised as a result of a large increase in women’s involvement in paid work. Between the 1986 and 2006 Australian censuses, for example, the female labour force participation rate grew from 48 to 58 per cent and women’s share of total employment (measured in jobs) rose from 40 to 46 per cent (ABS, 2009) (see Goldin 2006 for international data).

The dominant role of male earnings in the composition of family income typically yields a close relationship between male earnings inequality and family income inequality (see Gottschalk and Danziger, 2005, for US evidence). However, in Australia growth in inequality in family income in Australia over recent decades has been relatively modest despite the large growth in male earnings inequality (Saunders and Hill, 2008). One possible explanation for this pattern is that changes in women’s employment have altered the relationship between male earnings inequality and family income inequality. This paper examines this possibility by exploring how changes in the distribution of women’s earnings affected the evolution of family income inequality – and how these relationships changed over the quarter century from 1982 to 2007-08. This analysis is conducted for all women as a group and for partnered women separately.

The relationships examined in this paper are important because the evolution of family income inequality is a critical determinant of change in the distribution of wellbeing (see, for example, Pressman 2007 and 2010). Furthermore, if growth in women’s earnings adds to family income inequality then it is suggestive of patterns of family formation and correlations in husbands’ and wives’ that contribute to economic inequality. However, if, over time, the relationships between male earnings inequality, the growth in women’s earnings and family income inequality change then other economic processes may be at play. These include a growth in employment amongst women from low income households either in response to changes in government policy affecting their incentive to participate in paid work, or in response to the erosion of their family’s relative economic position.

A considerable literature has developed to examine the ‘mechanical link’ between changes wage and family income inequality. Several studies have focused both on the direct relationship between inequality in earnings and inequality in net incomes, and on the interactions between men’s and women’s earnings and family income inequality (Burtless, 1999; Cancian and Reed, 1999; Hyslop, 2001; Reed and Cancian, 2001, 2009; Gottschalk and Danziger, 2005; Amin and Da Vanzo, 2004; Harkness, 2010; Schwartz, 2010). For example, Gottschalk and Danziger (2005) use US data from 1975 to 2002 to examine changes in four distinct distributions: the distribution of wage rates, individual earnings, family earnings and family income adjusted for family size. They identify a close nexus between the growth in male wage inequality and family income inequality. However, they also find evidence that the impact of rising male wage inequality on family income inequality was offset by factors including a rise in women’s earnings in the early 1980s.
Research on causal links that might flow the opposite way – that is, from a growth in family income inequality to women’s employment in lower income households is scarce. This could be because the atomism embodied in the mainstream model of labour supply places little weight on the notion that a person could be affected by concerns for her relative economic position. In the standard mainstream model a married woman’s evaluation of paid employment is only driven by her unique preference for market and non-market goods; by her access to non-wage sources of income; and by her market wage opportunities relative to her productivity in home production. Changes in her own or her partner’s market wage may alter the woman’s evaluation of paid employment within this framework. However, changes in her or her partner’s relative wage – or in the expenditures on market goods by other families – will have no independent impact on her decision about participating in paid work. The idea of interdependent preferences is evident in some analyses of the labour market by behaviouralists who relate worker satisfaction to their relative wage positions (see, for example, Frank, 1984, Kahneman and Thaler, 1991, Clark and Oswald, 1996). However, only Neumark and Postlewaite’s (1998) study of 1979 US Labour Force data explored how the employment rates of married women are affected by their concerns for their family’s relative economic position. This study identified a positive relationship between the employment probability of a married woman and the income gap between the woman’s brothers-in-law and her own partner.

A more comprehensive approach to the role of relative income concerns is provided by Clair Brown with her institutional model of married women’s work decisions. Generally the institutional approach emphasizes the role of social custom in determining people’s decision making. Brown (1985, 184) adapts this to the case of women’s employment decisions by describing women as evaluating different paid and unpaid work activities “within a social structure that defines her role and its required activities.” In contrast to the mainstream models of labour supply, in this institutional model women do not adjust their consumption of market-produced and home-produced goods and services primarily in response to changes in their market wage opportunities. Rather, patterns of consumption are determined primarily by the level of family money income and social norms relating to the use of market and non-market goods and services. Thus, employed women are hypothesized to do similar amounts of housework and have similar patterns of consumption of market goods as their non-employed counterparts in families with a similar level of total income.

According to institutional models of employment decision making, change in a woman’s employment status will be motivated by changes in her assessment of the adequacy of her family’s consumption of market and non-market goods (in relation to perceived social norms). Reflecting ideas advanced early by Veblen (1973) and Duesenberry (1952) on the importance of relative income and emulation, family income/expenditure is assessed with reference to “one’s neighbours” and efforts are made by the family to match its expenditures to those of other families in its reference group. In Brown’s (1985) analysis, the growth in women’s employment over time can thus be linked to economic growth, which first lifted the expenditures on market goods of high income families and then raised the target level of expenditure of families on lower incomes, necessitating increased hours of work by women. Brown’s model (in line with Neumark and
Postlewaite’s) implies that a likely response to an increase in male wage inequality will be an increase in hours of market work by women whose family’s relative income position has been eroded.

In this paper we use cross-sectional data drawn from the Australian Bureau of Statistics’ (ABS) Survey of Income and Housing (SIH) to first assess the impact of women’s earnings on family income inequality in Australia. Using a number of income decomposition techniques proposed by Cancian and Reed (1999), we assess the impact of women’s earnings on income inequality among all families and among couple families – to assess issues relating to family formation. We then turn our attention to the changing correlation between partnered men’s and women’s earnings, and its influence on the distribution of family incomes. A further part of our study focuses on changes in the hours worked by partnered women located in households characterized by different levels of male earnings. The question we address is: if hourly wage rates are held constant, what was the impact on family income inequality of changes in the hours that partnered women worked over the study period, controlling for the earnings of their partners? In the final part of this paper we discuss the implications of our findings for both understandings of the dynamics of family income inequality and women’s employment, especially with regards relevant policy settings and changes in the relative economic position of different households.

To assess the policy issues raised by this research – and to also gain insights to possible causal links flowing from increased inequality to women’s employment – we examine two distinct time periods: 1982 to 1995-96 and 1995-96 to 2007-08. Each of these periods was associated with a distinct policy approach to the labour market and women’s roles. During the first period a slightly left-of-centre, Hawke-Keating Labour government prevailed. This government initiated an extensive program of labour market and economic restructuring through such mechanisms as floating the exchange rate and trade and financial reform (Shanahan 2009). It also oversaw large increases in income inequality that it attempted to offset by improvements in the implementation and design of the social welfare system under a ‘restraint with equity’ approach (Quiggan, 2007; Howe, 2003; Burke and Redmond, 2002). The Hawke-Keating government also introduced a range of measures aimed at the promotion of gender equality. McKinnon (2009) argues that the government “moved the world forward for women” with targeted policies aimed at promoting women’s education and employment chances (including the introduction of the Sex Discrimination and Affirmative Action Acts) and a large scale expansion in child care facilities (also see Ryan 2003: 204).

In 1996 a conservative Liberal-National Party coalition returned to power and it remained in government until late 2007. This government introduced further regulatory change in the labour market, largely aimed at reducing the role of trade unions in wage bargaining and with less expressed concern for social justice. The government had a clear preference for single earner (predominantly male) couple households, with concrete expression given to this through the tax and transfer system (Apps, 2006; Brennan, 2007). The participation of mothers in the workforce was not supported: operational subsidies for community child care centres were abolished; access to the Child Care Rebate was limited; and the number of child care places that were funded fell (Summers, 2003).
Our findings from this analysis indicate that the increases in women’s earnings that occurred between 1982 and 1995-96 actually increased family income inequality during that time. However, increases in women’s earnings acted to reduce family income inequality between 1995-96 and 2007-08. A significant part of this effect can be explained by changes in the relationship between hours worked by partnered women and the earnings of their partners. Between 1982 and 1995-96, women’s involvement in the formal economy did improve. However, the expansion of hours worked by partnered women was concentrated among those with high earning partners. After 1995-96, women with low (or non-) earning partners started to catch up in terms of hours worked and there was even a slackening off in terms of hours worked by women with high earning partners. This is suggestive of the type of dynamic in women’s engagement in paid work suggested by Brown.

**Data and Method**

We use the Australian Bureau of Statistics (ABS) Survey of Income and Housing (SIH) from 1982 to 2007-08 to summarise the changes that have occurred in the distribution of men’s and women’s earnings in Australian households and to relate these to changes in the distribution of Australian family incomes. The SIH is the only Australian income survey series that has been carried out throughout the period of interest, and although changes in method over the years have reduced somewhat the comparability of the different surveys in the series (Saunders and Bradbury, 2006), it is still the most comprehensive Australian data source available for the kind of analysis attempted here. Our approach, moreover, aims to achieve a high degree of comparability between the different survey years, for example through harmonizing the definition of ‘dependent child’ (who policy definition changed over the period examined). In total, we analysed 10 years of SIH data. We report on only three in this paper: 1982, 1995-96, and 2007-08, chosen for their relevance to changes in the policy context over the entire study period. We report some summary statistics and inequality estimates for each of these years in the Appendix tables.

Our primary sample includes all men and women aged 18-64, and the income units that they live in. An income unit is an administrative term for a nuclear family comprising an adult, their partner (if they have one) and any dependent children who live with them. Non-dependent children, other relatives and other household members are therefore placed in their own income units, and a household can comprise several of these units. In this paper we use the short-hand ‘family’ for income unit. In order to ensure consistency across all survey years, income units (or families) include all children aged up to 24 years living with their parents if those children are engaged in full-time study. Otherwise, only (non-partnered, non-parent) children aged up to 17 years are included in the family.

Our variables of interest include men’s and women’s employee earnings, self-employment earnings of family members, private incomes of family members from other sources, transfer payments received by family members, and incomes taxes paid by them. Where raw income figures from different years are reported, they are deflated (to December 2007 prices) to account for price inflation. Family incomes and the components
of family incomes are also adjusted to take account of family size and composition using what is commonly known as the ‘adjusted OECD scale’, where the first family member (the head) is assigned a weight of 1, the head’s spouse (if there is one) is assigned a weight of 0.5, and each dependent child is assigned a weight of 0.3. This scale therefore suggests that a family comprising a couple and two dependent children would require 2.1 times the income of a single person in order to achieve the same standard of living.

We measure earnings and income inequality using three measures – the Gini Coefficient, the ratio of the 90th to the 10th percentiles, and the Squared Coefficient of Variation ($CV^2$). The P90/P10 ratio and the Gini are commonly used in analyses of income inequality, and are widely understood. However, in common with several other authors who specifically examine the influence of women’s earnings on family income inequality (Cancian and Reed, 1999; Harkness, 2010; Schwartz, 2010) we also make use of the $CV^2$ measure as it is particularly sensitive to inequalities at the top of the family income distribution, and because it is decomposable. Interpretation of $CV^2$ (in common with other similar measures in the Generalised Entropy group of measures) is somewhat difficult in that, although a value of 0 signals equality (everyone has the same income), unlike the Gini, there is no upper limit on the value that the measure can take. The index is therefore best interpreted in comparison, across income groups, types or years.

In this study we make use of the ability to decompose $CV^2$ to identify the contribution to family income inequality made by women’s employee earnings in each survey period. We focus in particular on employee earnings because the SIH has good information on the hours that employees work, but little or no information in most years on the hours that self-employed people work. We use two approaches. The first focuses on the impact of wives’ earnings on changing family income inequality and makes use of a method proposed by Cancian and Reed (1999), who examine a number of counterfactuals to analyse this impact in the US over the period 1969 to 1994. We consider three of Cancian and Reed’s counterfactuals: that there was a marginal decline in women’s earnings; that the mean and dispersion of women’s earnings had not changed; and that the mean, dispersion and correlation of women’s earnings with income from other sources had not changed.

The first counterfactual simply involves multiplying women’s earnings by 0.95 in all survey years and calculating the effect on $CV^2$. This counterfactual addresses the question: ‘were Australian women’s employee earnings equalizing on family income at the margin between 1982 and 2007-08?’

The second counterfactual (that the mean and dispersion of women’s earnings did not change between the study periods) addresses the question: ‘how did changes in the size and dispersion of Australian women’s employee earnings contribute to changes in family income inequality in Australia between 1982 and 2007-08?’

The third counterfactual (that the mean, dispersion and correlation of women’s earnings with income from other sources had not changed) is particularly important for our analysis, as it addresses the question of ‘how did changes in the relationship between Australian couples’ earnings after 1982 affect the evolution of family income inequality?’.
Counterfactuals 2 and 3 are based on the following decomposition equations for $CV^2$ for family income $f$: First, inequality is decomposed by population group (within each population group, and between population groups) of families headed by a single person $s$, and families headed by a couple $m$:

\[
CV^2_{f} = \left( \frac{P_s (\mu_s / \mu)^2 CV^2_s + P_m (\mu_m / \mu)^2 CV^2_m}{\mu^2} \right) + \left( \frac{P_s (\mu_s / \mu)^2 + P_m (\mu_m / \mu)^2}{\mu^2} - 1 \right) \tag{1}
\]

Where $P_j$ is the share in the population of group $j$, $\mu_j$ is mean income for group $j$, $\mu$ is mean income for the population, and $CV^2_j$ is the dispersion measure for the subgroup. Inequality is then decomposed among families headed by couples:

\[
CV^2_{f} = \left( S_h^2 CV^2_h + S_w^2 CV^2_w + S_o^2 CV^2_o + 2 \rho_{hw} S_h S_w CV_h CV_w + 2 \rho_{ho} S_h S_o CV_h CV_o + 2 \rho_{wo} S_w S_o CV_w CV_o \right) \tag{2}
\]

Inequality is also decomposed among all families using Equation (2) on its own in order to test counterfactuals 1, 2 and 3 on all women’s earnings. Equation (2) (discussed more fully in Cowell, 1995) comprises three summary statistics for each element of family income (comprising six elements in the analysis we conduct, but here shortened to three to simplify the description of the procedure – men’s employee earnings $h$, women’s employee earnings $w$, and income from other sources $o$). $S_k$ represents the share of each income source in the total; $CV^2_k$ represents the dispersion of each income source; and $\rho$ represents the correlation between each pair of income sources, $h$, $w$ and $o$. In order to model counterfactual 2, $S_k$ is recalculated for each income source in current year $y$ by holding the mean of women’s employee earnings at the level prevailing in a previous year, denoted here by $x$ (adjusting for price inflation); and by holding $CV^2_o$ in year $y$ at the levels that prevailed in year $x$. Where just partnered women’s earnings are decomposed, recalculated mean income and dispersion data are fed into the population decomposition equation (1) above, to re-estimate total dispersion across families headed by single people and couples. To model the third counterfactual (the mean, dispersion and correlation of women’s earnings with income from other sources had not changed), $\rho_{hw}$ and $\rho_{wo}$ are also held constant at year $x$ levels.

In our second approach to measuring the contribution to Australian family income inequality made by women’s employee earnings we focus on the relationship between changes in the paid work hours of partnered women and the earnings of their partners. For this analysis we develop a non-parametric technique, extending work by Reed and Cancian (2009), to simulate the effect on family income inequality of changes in the sorting of husbands’ and wives’ incomes between year $x$ and year $y$. We divide the distribution of partnered male earnings in year $x$ into 100 centiles. We then calculate mean female partners’ hours worked in each centile in year $x$, and apply this mean to each centile in the distribution of partnered male earnings in year $y$. This gives a counterfactual family income distribution which can be used to assess the impact of sorting on changes in family income.
inequality. With this simulation we address the question: ‘how did changes in hours worked by partnered women as employees, given their husbands’ earnings, modulate changes in the distribution of family incomes between 1982 and 2007-08?’

*Trends in Earnings Inequality in Australia*

Paralleling the experience of most other industrial countries, earnings inequality has risen in Australia since the early 1980s. Table 1 gives a number of inequality measures for men’s and women’s earnings in the years 1982, 1995-96 and 2007-08. It includes data on all men and women of working age (whether employed or not employed), and data for those who reported earnings from employment or self-employment in the SIH. The table also separately reports these data for partnered men and women only.

It shows that male earnings inequality increased over the entire study period – this is true of all inequality measures, including the Gini (which focuses on changes around the median of the distribution) and $CV^2$, which focuses on changes at the top. However, changes in male earnings inequality were concentrated in the 1982 to 1995-96 time period and were largest at the top of the male earnings distribution. The $CV^2$ measure for men almost doubled between 1982 and 1995-96, before moderating in the following decade. The much larger increase in $CV^2$ over the other two measures implies a particularly marked growth in earnings inequality at the top of the distribution.

These changes in male earnings inequality reflect in part the decline that occurred in the male employment rate prior to 1995-96 and recovery in this rate in the second time period as Australia entered a period of economic expansion. As men become unemployed or leave the labour market earnings inequality increases (and vice versa). The SIH data show that in 1982, almost three quarters of men (73 per cent) had some earnings from employment; by 1995-96, this proportion had decreased to 67 per cent; by 2007-08, it had risen again to 71 per cent.

The changes in male earnings inequality also reflect growth in the inequality in male employee wage rates. Following a pattern similar to that described by Gottschalk and Danziger (2005: 237) for the US between 1975 and 2002, real hourly wages for employed Australian men at the 5th percentile of the male earnings distribution fell by 3 per cent between 1982 and 2007-08; rose by only 1 per cent at the 10th percentile; but increased by 33 per cent at the 90th percentile and by 40 per cent at the 95th percentile. These changes were pronounced in the 1982 to 1995-96 period where, for example, real hourly wages for men at the 5th percentile fell by 17 per cent while, at the 95th percentile, the real hourly wage rate increased by 3 percent. In the decade to 2007-08 real hourly wage rates increased across the wage distribution but these changes were greatest at the top (for example, 36 per cent at the 95th percentile as compared to 16 percent at the 5th percentile) (SIH data).

Growth in earnings inequality among partnered men was similar to growth in earnings inequality among all men, except that in the latter decade, growth in inequality at the top of the distribution of earnings was somewhat stronger among partnered men than among men overall.

*Table 1 about here*
Trends in earnings inequality among all Australian women are somewhat different, with both the Gini and \( CV^2 \) decreasing in both periods examined; most likely reflecting the influence of the growth in the female participation rate. Among women with earnings, on the other hand, the p90/p10 ratio, the Gini and \( CV^2 \) all increased, albeit by a smaller amount than the growth in male earnings inequality. This could reflect a re-balancing of working hours across the female earnings distribution and/or a less rapid growth in inequality in women’s hourly rates of pay. Change in the real hourly wage rates of Australian women employees between 1982 and 2007-08 was somewhat less unequal than that recorded by their male counterparts. At the 5th percentile of the female earnings distribution, the real hourly wage rose by 23 per cent; it increased by 21 per cent at the 10th percentile; 30 per cent at the 90th percentile and 36 per cent at the 95th percentile. As was the case with men, increases in real hourly wages were concentrated in the latter part of the study period, that is, in the years after 1995-96 when Australia entered a period of economic expansion (SIH data).

The changes in the inequality of earnings among partnered women are more complex. For all partnered women the Gini decreased in both periods, reflecting growth in the workforce participation rate of partnered women. However, whilst the \( CV^2 \) fell in the first sub-period it rose in the second. Similarly, among partnered women with earnings, the p90/p10 ratio fell, but \( CV^2 \) rose. This indicates that the changes in female earnings inequality were driven by changes at the top of the earnings distribution.

**Trends in Family Income Inequality in Australia**

Table 2 shows that in each of the two time periods examined, the measured trend in (equivalised) family income inequality was moderately upwards for the most part. The p90/p10 measure remained fairly stable for all families and couple families between 1982 and 1995-96 but increased (slightly) between 1995-96 and 2007-08. The Gini increased moderately for all families and couple families throughout the period examined. \( CV^2 \) shows quite a different pattern. It increased substantially from 1982 to 1995-96 among all households and couple households. It continued to increase from 1995-96 to 2007-08 at an even faster rate for all families, and at the same rate for couple families.

Table 2 about here

Comparison of trends on Tables 1 and 2 shows that family income inequality did not increase as rapidly as male earnings inequality over the study period. On the P90/P10 measure, for example, family income inequality fell by 2 per cent between 1982 and 1995-6 whilst male earnings inequality increased by 20 per cent. Between 1995-96 and 2007-08 male earnings inequality, on the P90/P10 measure, increased by 19 per cent whilst family income inequality rose by only 7 per cent. The one exception to this pattern occurs on the \( CV^2 \) measure in the second sub-period. It shows an increase in family income inequality (of 38 per cent) that exceeded the growth in male earnings inequality (of 21 per cent), and contrasted with a decline in earnings inequality among all men of 15 per cent.
Figure 1 shows these trends graphically for men’s and women’s earnings. The diminished concentration of men’s earnings around the mean between 1982 and 1995-96 signals an increase in male earnings inequality. Inequality in women’s earnings also increases between 1982 and 1995-96. However, the significant increase in the proportion of women with earnings offsets growth in inequality at the top of the women’s earnings distribution. Figure 2 shows the shape of the distribution of net family incomes in 1982, 1995-96 and 2007-08. The change in this distribution between 1982 and 1995-96 is slight, but most pronounced at the top of the distribution, giving rise to the increases in CV$^2$ as reported in Table 2. Figure 1 shows that between 1995-96 and 2007-08, both male and female earnings distributions become even less concentrated around the median and shift to the right. In this period however, the proportions of men and women with earnings also increased, so that overall earnings inequality measures (for all men and women, with or without earnings) fell. Figure 2 shows that family income inequality on the other hand increases in this period, with a significant decrease in the concentration of incomes, coupled with a large shift in the distribution to the right.

Figures 1 & 2 about here

Trends in the Components of Equivalised Family Income

The distribution of male earnings drives the distribution of family incomes in many countries due to the dominant role of these earnings in families’ incomes. Table 3 shows that male employee earnings also comprise the large majority of Australian family income. Although their importance declined in the study period, they still accounted for over six in every ten dollars (before deduction of taxes) of disposable family income in 2007-08.

Nonetheless, the table also shows that the decline in the importance of male employee earnings over the study period was substantial; falling from 66.7 per cent of family earnings in 1982 to 63.2 per cent in 1995-96 and further, to 61.0 per cent, in 2007-08. This change was matched by an increase in the importance of women’s employee earnings. Between 1982 and 1995-96 the share of total family income accounted for by women’s earnings rose from 27.2 to 34.7 per cent. However, this share stabilized in the next sub-period, growing to only 35.0 per cent by 2007-08.

The trends in incomes from other sources are also worth noting. The share of self-employment income in the total declined (in part for methodological reasons – see the footnote to the table). The share of private incomes in the total increased, especially in the more recent decade (although these data in particular are subject to the influence of large outliers). The share of transfers in disposable incomes increased in the early period, not least as a result of falling levels of employment among men, but then fell back in the most recent decade as employment expanded, despite a significant rise in levels of transfer payments to families with children. But the share of taxes in total income remained fairly constant throughout the period, only falling in the most recent years (after 2005-06). Table 3 about here

The share of male and female earnings in family income has important consequences for trends in family income inequality. For one, the large share of male
earnings in total family income means that changes in male earnings inequality are likely to have a strong impact on family income inequality. As women’s earnings increase in significance, inequality in their distribution will have a larger influence on family income inequality. However, these relationships are complex because the correlation between male and female earnings across households will also affect how the addition of women’s earnings impacts on family income inequality. These observations are important for the analysis conducted in the next section.

**Women’s Earnings and Family Income Inequality in Australia**

In order to assess the impact of women’s earnings on family income inequality, we replicate three counterfactuals proposed by Cancian and Reed (1999). First, what would be the effect on family income inequality if all women’s employee earnings were reduced by a marginal amount (5%) in all years? Second, what would be the effect of holding constant in later years the mean and dispersion of women’s employee earnings? And third, what would be the effect of holding constant in later years the mean and dispersion of women’s employee earnings, and the correlation of their earnings with income from other sources? With the first counterfactual, therefore, we are only concerned with a change in average women’s earnings; with the second, we simulate a change in the mean and dispersion of women’s earnings; with the third, we model changes in mean, dispersion and correlations associated with women’s earnings. We perform this analysis using Equation (2) above, recalculating \( CV^2 \) for family income in the later year (1995-96 and 2007-08) after substituting the dispersion and share of women’s earnings in family income from the earlier year (1982 and 1995-96). Data on mean incomes, shares, dispersions and correlations between components used in this analysis are presented in the Appendix.

Table 4 presents results from this exercise. Columns 2 and 3 contain the results on the first counterfactual. The figures show that a marginal reduction in women’s employee earnings would have reduced inequality in 1982 and 1995-96, but increased it in 2007-08. These findings hold for all families and for couple families. They indicate that the increases that occurred in women’s share of total family income in the early parts of the study period actually had a disequalising effect on family income, whilst a small equalizing impact was apparent by 2007-08. We comment further on these patterns in the paragraphs below.

Table 4 about here

The results on the second counterfactual, which involve holding constant the mean and dispersion of women’s employee earnings in each sub-period, are summarized in columns 4 and 5 of Table 4. They show, first, that if the mean and dispersion of women’s earnings had not changed between 1982 and 1995-96, family income inequality would have been substantially lower in 1995-96 (at \( CV^2=0.353 \) for all families) than was actually recorded (\( CV^2=0.384 \)). This effect was reversed in the second sub-period, where holding the mean and dispersion of women’s earnings constant would have produced a level of family income inequality in 2007-08 that was about 9 per cent higher than recorded levels.

The results on counterfactual 3 provide further insights to sources of change in family income inequality. The data for the first sub-period (1982 to 1995-96) in columns 6 and 7 of Table 4 indicate that the combined effect of the changes in the mean, dispersion
and correlations associated with women’s earnings was to increase family income inequality among all families. That is, where mean, dispersion and correlations associated with women’s earnings are held constant at 1982 levels, the simulated \( CV^2 \) is only 0.286, a quarter lower than the actual \( CV^2 \) in 1995-96, of 0.384. Comparison of \( CV^2 \) in columns 4 and 6 show that taking account of the change in the correlations associated with women’s earnings altered the impact of changes in women’s earnings on family income inequality from negative 8.2 per cent to negative 25.5 per cent. This indicates that in the first sub-period increases in women’s earnings were concentrated in couple households and, within this group, in those with relatively high male earnings. The correlation between partnered men’s and women’s earnings rose from 0.22 to 0.28 between 1982 and 1995-96 (Appendix 4b). This alone explains a large proportion of the total increase in family income inequality recorded in the first sub-period.

The results on counterfactual 3 for the second sub-period reveal a different pattern. Holding the mean, correlations and dispersion of women’s earnings constant at their 1995-96 levels would have yielded a level of family income inequality in 2007-08 about 7 per cent higher than the level actually recorded. Holding the correlations associated with women’s earnings constant at 1995-96 levels did not greatly alter the effects of changes in women’s earnings on family income inequality in this time period. Indeed, a decrease in the correlation between partnered men’s and women’s earnings in this period (from 0.28 to 0.21 – see Appendix 4b) exerted downward pressure on family income inequality. This is seen in the differential effects of Counterfactuals 2 and 3 for couple families in Table 4 (columns 4-7). Holding the mean and dispersion of partnered women’s earnings constant at 1995-96 levels would result in a 5 per cent increase in income inequality among couple families in 2007-08; if correlations associated with partnered women’s earnings were also held constant at 1995-96 levels, income inequality among couple families would be 11 per cent higher.

The impact of changes in the level and pattern of partnered women’s earnings on overall levels of family income inequality can be identified using a further technique pioneered by Cancian and Reed (1999). The three counterfactuals discussed above and in Table 4 can be estimated for couple families alone using Equation (2), from Section 3. The data on simulated means and dispersions can then be fed into Equation (1) to give an estimate of the impact of changes in the level and pattern of partnered women’s earnings on overall income inequality.

The results of this simulation exercise are shown in Table 5. The effect of reducing partnered women’s earnings by a marginal amount is to reduce total inequality in all years (columns 3 and 4). This is consistent with the effect of reducing all women’s earnings by a marginal amount in 1982 and 1995-96 where family income inequality also falls, but different to that in 2007-08, where family income inequality rises (see also columns 3 and 4, Table 4). In the latter year, the dampening effect on family income inequality of reducing just partnered women’s earnings is the result of increased concentration of partnered families in the top half of the income distribution. On the other hand, a reduction in all women’s earnings causes family income inequality to rise in 2007-08.
because of the concentration of single women earners in the bottom half of the distribution of family incomes.

Table 5 about here

Results for counterfactuals 2 and 3 confirm that the role of partnered women’s earnings in influencing family income inequality is consistent with the role of women’s earnings overall. Together, the results suggest that Australian women’s earnings generally had a dis-equalising effect on family income inequality between 1982 and 1995-96, driven in large part by a growing correlation between partnered men’s and women’s earnings; and a generally equalizing effect between 1995-96 and 2007-08, driven in part by a diminishing correlation between partners’ earnings. These results nuance somewhat the existing international literature on the role of women’s earnings in influencing changes in income inequality. Amin and DaVanzo (2004) state that the majority of international studies find that partnered women’s earnings had an equalizing effect on over-time changes in family income inequality. More recently, Harkness (2010) finds in her international comparison that the effect of female earnings on household income inequality is generally equalising. Schwartz (2010) on the other hand argues that growing correlation between spouses’ earnings, particularly at the top of the distribution, has contributed to significant growth in family income inequality in the US. Our findings for Australia are consistent with those of Schwartz in that they suggest that correlations between male and female partners’ earnings were an important influence on changes in family income inequality. However, we also find that while the effect was inequality-increasing in the earlier period examined, it was inequality-reducing in the latter period. We now turn to examine the relationship between partnered men’s and women’s earnings in more detail.

Partnered Women’s Hours of Work and Family Income Inequality in Australia

This section takes the analysis of the effects of changes in partnered women’s earnings on family income inequality one step further by exploring the separate impact of changes in women’s working hours. The discussion in preceding sections has alluded to the changes in the mean, dispersion and correlations of women’s earnings as being produced by changes in the distribution of wage rates and changes in the distribution of working hours. This section aims to give that discussion more focus.

Figure 3 shows average hours worked by partnered women, by centiles of their partners’ earnings in 1982, 1995-96 and 2007-08. It reveals that while hours worked by partnered women increased across the board after 1982, increases in the first period (1982 to 1995-96) were more concentrated towards the upper half of the male earnings distribution, while increases in the second period were more concentrated on the bottom half. Moreover, there appears to have been a decline in the hours worked by women with very high earning partners between 1995-96 and 2007-08.

Figure 3 about here
The hours worked by Australian women are now more equally distributed across their partners’ earnings than was the case in the mid 1990s. The distribution of hours worked by women in the mid 1990s was, in turn, more unequally spread across their partner’s earnings than was the case in 1982. The question we wish to address here is: how have shifts in hours worked by partnered women, controlling for the earnings of their partners, influenced the distribution of family income since 1982?

In order to address this issue, we extend a technique proposed by Reed and Cancian (2009) to measure the impact of changes in the joint distribution of two income elements between two points in time. In this paper, we sort all couple families according to male earnings (employee and self-employed). We sort families with no male earnings randomly (like Reed and Cancian, we tried a few alternative methods of sorting men with no earnings, but the effects on the results were not large). We divide the male earnings distribution into centiles and simulate the distribution of hours worked by women in year \( t+1 \) based on their actual hours worked and their husbands’ earnings in year \( t \). That is, for each centile of male earnings in 1982, we calculate the average number of hours worked by their employee partners (the SIH data do not include hours worked by self-employed people in most years). We repeat this process for each centile of male earnings in 1995-96. We then apply the 1982 distribution of hours to women according to the centile of their partners’ earnings in 1995-96. We repeat the process in 2007-08 using the 1995-96 distribution of hours worked by women according to their partners’ earnings.

In order to estimate family income using the simulated working hours of women in 1995-96 and 2007-08, we multiply the estimated hours by the average actual hourly wage rates of wives in each centile of male earnings in each survey year. That is, we multiply imputed working hours from the previous year by hourly wage rates for the survey year. We then adjust income taxes paid by the family according to the proportional change in total family market income after adjusting wives’ earnings, and recalculate family income. Results are presented for all families in Table 6. Because this exercise is based on a simulation rather than a decomposition of \( CV^2 \), it is possible to present results for the three inequality indices used earlier in the paper. Not all indices give consistent findings across the two sub-periods. If women in 1995-96 changed their hours to those worked by women whose partners had similar levels of earnings in 1982, the three measures are agreed that family income inequality would fall. On the other hand, if women in 2007-08 switched their hours to those worked by women whose partners had similar levels of earnings in 1995-96, the \( P90/P10 \) measures suggests that inequality would fall, while the Gini and \( CV^2 \) measures suggest it would increase.

Table 6 about here

A qualified conclusion from this analysis is that the increase in women’s working hours between 1982 and 1995-96 was disequalising in terms of its impacts on family income, but that the further increase between 1995-96 and 2007-08 had a general, but not universal, equalizing effect on family income. Comparison of the results in Table 6 with those in Table 5 suggests that between 1982 and 1995-96 changes in the distribution of partnered women’s working hours across the male earnings distribution contributed to the disequalising effects of partnered female earnings on family income. The results also
confirm that a significant factor in the moderating impact of changes in women’s earnings on family income inequality between 1995-96 and 2007-08 was associated with an equalizing of the distribution of partnered women’s hours of work across the male earnings distribution.

**Discussion**

This paper has identified a number of different trends in wage and income inequality in Australia across the study period, 1982 to 2007-08. Our findings show that male earnings continue to dominate the determination of family income in Australia. However, their importance has lessened over time, while the importance of women’s earnings to total family income has increased. The contribution of other components of family income, such as government transfers and taxes, changed only marginally over the study period.

Our analysis reveals a number of important points that have not perhaps been sufficiently emphasized in the literature on the relationship between women’s earnings and family income inequality: first, that conclusions about the contribution of women’s earnings to inequality are likely to be influenced by the period of time examined, the counterfactual, and the inequality measure used; second, that changes in all women’s earnings, and partnered women’s earnings can have differential effects on family income inequality. In short, the relationship between changes in women’s earnings and family income inequality is complex.

The third point is perhaps the most important. The results presented in this paper show that in the first sub-period (between 1982 and 1995-96) increases in women’s earnings occurred primarily in couple households, especially those with relatively high male earnings. The correlation between partnered men’s and women’s earnings rose during this period and was a major reason for the increase in family income inequality that was recorded. However, in the second sub-period (between 1995-96 and 2007-08) a different pattern emerged. The correlation between partnered men’s and women’s earnings fell in this time period and this exerted downwards pressure on family income inequality.

These results cast some light on the impact that different policies aimed at increased gender equality can have on family income inequality. Growth in women’s employment in the first sub-period in our study - associated with the Hawke/Keating Labor government - followed the implementation of equal opportunity legislation, the expansion of child care provision but also extensive labour market deregulation which was accompanied by expansion of part-time service sector employment (and a concomitant decline in mostly male industrial employment) (Burke and Redmond, 2002). Our results indicate that the strongest advances in women’s earnings during this period occurred in households with relatively high male earnings. Thus, it appears that improved gender equity was achieved at some cost to family income inequality.

The growth in women’s earnings in the second sub-period of our study - associated with the tenure of the conservative Howard government occurred in the context of changes in tax-benefit policies that arguably provided disincentives for women with young children
and an employed partner to seek paid work. For example, during this period a generous payment, Family Tax Benefit Part B, was instituted for families with just one earner with the implicit intention of encouraging partnered mothers to remain in the home (Apps, 2007; Brennan, 2004). It is notable, therefore, that growth in the correlation of men’s and women’s earnings within households stalled after 1995-96, despite the strong employment growth recorded in the economy as a whole. One possible explanation for this change is that women’s employment in households with relatively low male earnings grew, at least in part, in response to the prior growth in family income inequality. Social comparison is important in people’s evaluation of their own economic circumstances, and we have a propensity to want to emulate the living standards of others. Thus, when a family’s relative income position is falling, women have a motivation to raise their hours of market work. The concentration of the growth in working hours among women in households with low levels of male earnings that we observed is consistent with such behaviour.

These patterns are deserving of further research for a number of reasons. First, studies of the links between rising family income inequality and women’s employment growth have the potential to add new knowledge on the determinants of women’s involvement in paid work. Second, research on these links will contribute important information on the determinants of family income inequality. Third, the relationships are important to evaluations of wellbeing and inequality based on family income data.

The paper ends with a brief elaboration on this latter point. The data and arguments presented in this paper indicate that an important reason why family income inequality didn’t rise dramatically in Australia in recent decades was a growth in the paid work hours of women living in families located towards the bottom of the income distribution. This evidence could support an argument that the employment opportunities that became available for women during this time have been particularly beneficial for low income families; enabling them to at least maintain their relative economic position. However, it is also the case that this balancing of the consequences of rising male wage inequality has come at a cost for some (especially low income) women via an increase in their total hours of work. A question remains as to whether family wellbeing inequality has really remained stable in Australia in recent decades given that some families have needed to increase their total (paid and unpaid) working hours to remain in touch with others. A preferable approach to measuring change in the inequality of family wellbeing is to include information on income and hours of both of paid and unpaid work.

Notes

1. Our analysis stops in 2007 because it marks the end of the conservative era – and our focus is on the comparison of inequality between more and less progressive policy environments.

2. An analogous decomposition of the gini coefficient by income source is also possible. Lerman and Yitzhaki (1985) show that the product of the share in total income of element k, its gini and its correlation with the rank of total income, can be used to
compute $k$’s contribution to overall inequality, as well as the impact on the overall gini of a small percentage change in $k$. This decomposition is less powerful in our view because it is not possible to examine the effect of changes in the correlation between two income elements, such as husband and wife incomes (important for our analysis). However, we have tested our results to the extent that the method allows with a gini decomposition, and find them to be consistent with those for the decomposition of $CV^2$. Results are available from the authors on request.

3. However, we found that in analyses where we examined earnings from employment and self-employment together for men and women, results were generally comparable with those where we examined employee earnings separately.

4. As such, the earnings of non-employed individuals are zero.

5. It is interesting to note that much of the increase in inequality in the more recent decade as recorded in the Income Surveys occurred between the two most recent survey periods (2005-06 to 2007-08). For example, in 2005-06 the Gini was 0.296; and the $CV^2$ was 0.365. See Appendix Table 3.

6. As noted in an earlier section, we separate employee earnings for men and women from self-employment earnings from this point because we do not have hours of work data for self-employed persons in most of the Income Surveys. Later in the paper we decompose changes in inequality in Australia controlling for changes in hours in paid work among women employees.

7. See Appendix Table 2, from which shares of income components in the total for all survey years analysed (including 2005-06) can be calculated.

8. It is worth noting that data on hours worked are only available for employees in most SIH years. In most years moreover, the hours worked indicator is banded into a few categories in the publicly released dataset. However, our estimates of average hourly wages for male and female employees in the SIH match well with those from other sources produced by ABS. Details are available from the authors on request.

9. The payment replaces a spouse tax rebate.

Appendices here

References


Reed, Deborah and Cancian, Maria. “Rising Family Inequality: the Importance of Sorting”, mimeo, (2009), Institute for Research on Poverty, University of Wisconsin.


