

*Male Earnings Inequality, Women's Earnings, and Family Income Inequality in Australia,
1982–2007*

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Abstract: In the quarter century after 1982, male earnings inequality increased substantially in most industrialized countries, as did women's participation in paid work. Both trends impacted family income inequality. However, this paper's analysis of Australian data shows that the impact of women's earnings on family income inequality changed over the study period of 1982 to 1995–1996. During the same time frame, the growth in women's earnings was concentrated in households with high male earnings, pushing family income inequality higher. However, after 1995–1996, 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. The evidence is also suggestive of a dynamic relationship between rising family income inequality and women's participation in paid work that echoes Thorstein Veblen ([1899] 2008) and James Duesenberry's (1952) ideas regarding the importance of relative income and emulation.

Keywords: earnings inequality, emulation, family income inequality, relative income, women's earnings

JEL Classification Codes: D31, J21, J22

In line with the experience of many other industrialized countries, Australia's labor market has experienced dramatic change in recent decades. Male wage and earnings inequality has increased substantially (see Gottschalk and Danziger 2005, for U.S. evidence; Acemoglu 2002 and Hornstein et al. 2005, for an overview of international trends; and Keating 2003, for recent Australian data). The labor market has also become increasingly feminized 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 labor-force-participation rate grew from 48 to 58 percent and women's share of total employment (measured in jobs) rose from 40 to 46 percent (ABS 2009) (see Goldin 2006, for international data).

The historically 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 U.S. evidence). However, 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 from an institutionalist perspective 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 2007–2008. This analysis, informed by Clair Brown's (1985) institutional model of married women's work decisions, 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' earnings 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 among 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. It is this latter issue in particular that we explore in this paper.

A considerable international literature has developed to examine the “mechanical link” between changes of wage and family income inequality. Most studies have focused on the direct relationship between inequality in earnings and inequality in net incomes, or on the interactions between men's and women's earnings and family income inequality (Amin and Da Vanzo 2004; Burtless 1999; Cancian and Reed 1999; Gottschalk and Danziger 2005; Harkness 2010; Hyslop 2001; Reed and Cancian 2001, 2009; and Schwartz 2010). For example, Peter Gottschalk and Sheldon Danziger (2005) use U.S. 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. Their analysis is supported by that of Susan Harkness (2010) who shows that in the 17 rich countries she examines, raising female employment and reducing employment inequality between women would have a substantial impact on reducing household income inequality.

Research on causal links that might flow the opposite way – that is, theorizing the impact of growth in family income inequality on women's employment in middle and lower income households – is scarce.¹ The atomism embodied in the mainstream model of labor supply contributes to this research gap. The mainstream model does not acknowledge the possibility that a person could be affected by her relative economic position. A married woman's evaluation of paid employment is described as being driven solely by her unique, stable, and exogenously determined 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 model. 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.

Institutional economics identifies atomism as a key deficiency of the mainstream model of economic behavior. Institutional economists argue that more realistic models describe individual preferences, evaluations, and actions as created and recreated by socio-economic systems (Hodgson 2003). Inter-personal comparisons occur constantly and inform people's assessments of the adequacy of their own circumstances and the legitimacy of the alternative actions that are open to them. As Geoffrey Hodgson (2003, 168) explains, humans have a tendency to “interpret, imitate and compare with the behaviour of others”.

Themes relating to the importance of social comparisons are evident especially in early institutional literature. In *The Theory of the Leisure Class*, Thorsten Veblen identified the significance of the human tendency for invidious comparison (emulation) in the determination of patterns of expenditure within and across communities:

[t]he expected standard of expenditure in the community or in the class to which a person belongs largely determines what his standard of living will be. It does this directly by commending itself to his common sense as right and good, through his habitually contemplating it and assimilating the scheme of life in which it belongs; but it does so also though popular insistence on conformity to the accepted scale of expenditure as a matter of propriety, under pain of disesteem and ostracism. (Veblen [1899] 2008, 69)

Veblen also identified an important dynamic between changes in the economic resources of powerful community members and the aspirations and expenditures of others. For example, in his account, when societies transform from nomadic to industrialized types, “the possession of wealth gains in relative importance and effectiveness as a customary basis for repute and esteem ... [and] [i]ts possession in some amount becomes necessary in order to [achieve] any reputable standing in the community” (Veblen [1899] 2008, 22-23).

More recently, Robert Frank (2000) used similar ideas to frame a discussion of the effects of rising wage and income inequality. In his presidential address to the American Economic Association, Frank emphasized the psychological costs of increasing inequality, presenting several examples of the disesteem and ostracism experienced by people who were unable to match the acceptable scale of expenditure in their communities. He also highlighted the way in which increased spending at the top of the income distribution has “raised the costs of achieving basic goals”:

The wealthy are spending more now simply because they have more money. But their spending has led others to spend more as well, including middle-income families. (Frank 2000. 261)

Frank uses several examples to support these arguments. For example, he describes how increased spending on gifts for weddings, anniversaries, and birthdays by people, when their wealth increases, creates pressure on others to match their spending. To do otherwise, a person would risk a loss of esteem if a smaller gift is interpreted as a signal that the relationship is not highly valued by the person concerned. Similarly, increased spending on education by individuals, whose wealth has increased, creates a need for matching levels of spending by others, whenever educational achievement is used as a signal of ability, and thus affects the allocation of good and bad jobs.

Clair Brown (1985) addresses the question of how workforce participation decisions of women in middle- and low-income households is affected by rising levels of expenditures by wealthy families. In her institutional model of married women's work decisions, women are described as evaluating different paid and unpaid work activities "within a social structure that defines her role and its required activities" (Brown 1985, 184). In contrast to the mainstream models of labor supply, in Brown's model women *do not* adjust their consumption of market- 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* as well as 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.

In this institutional model, 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). Family income/expenditure is assessed with reference to "one's neighbors" 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. This will first lift expenditures on market goods of high income families and then raise the target level of expenditure of families on lower incomes, necessitating increased hours of work by women. Brown's model 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 Maria Cancian and Deborah Reed (1999), we assess the impact of women's earnings on income inequality among all families and among couple families. 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: What was the impact on family income inequality of the changes in the working hours of partnered women over the study period? 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 regard to relevant policy settings and changes in the relative economic position of different households.

To assess the policy issues raised by this research, and to gain insights to possible causal links flowing from increased inequality to women's employment, we examine two distinct time periods: from 1982 to 1995–1996 and from 1995–1996 to 2007–2008.² Each of these periods was associated with a distinct policy approach to the labor market and women's roles. During the first period, a slightly left-of-center, Hawke-Keating Labor government prevailed. This government initiated an extensive program of labor 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 while attempting to offset them by improving the implementation and design of the social welfare system under a “restraint with equity” approach (Burke and Redmond 2002; Howe, 2003; and Quiggin 1997). The Hawke-Keating government also introduced a range of measures designed to promote gender equality. McKinnon (2009, 46) 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 of 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 labor market, largely intended to reduce 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 centers 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 1995–1996 actually increased family income inequality for the same period. However, increases in women's earnings acted to reduce family income inequality between 1995–1996 and 2007–2008. 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 1995–1996, 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 1995–1996, 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 very 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 2007–2008 to summarize 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 our kind of analysis. 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," (the policy definition of which changed over the study period). In total, we analyzed ten years of SIH data. In this paper, we report on only three, namely: 1982, 1995–1996, and 2007–2008. These years are 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, 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 generalized-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.³ 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.⁴ 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 analyze this impact in the U.S. over the period 1969 to 1994. We consider three of Cancian and Reed's counterfactuals: (1) that there was a marginal decline in women's earnings; (2) that the mean and dispersion of women's earnings had not changed; and (3) 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 2007-2008?"

The second counterfactual 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 2007-2008?" That is, what would be the effect on inequality if the mean of women's earnings remained constant in real terms between year x and year y , and the distribution of those earnings also remained constant?

The third counterfactual is particularly important for our analysis, as it addresses the question: "How did changes in the relationship between Australian couples' earnings after 1982 affect the evolution of family income inequality?" In this case, we hold constant not only the mean (in real terms) and distribution of women's earnings, but also – in the case of partnered women – the correlation coefficient for year x , and insert these into calculations of inequality in year y . 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 :

$$CV_f^2 = \underbrace{\left(\frac{P_s (\mu_s / \mu)^2 CV_s^2 + P_m (\mu_m / \mu)^2 CV_m^2}{[P_s (\mu_s / \mu)^2 + P_m (\mu_m / \mu)^2] / \mu^2} \right)}_{\text{within}} + \underbrace{\left(P_s (\mu_s / \mu)^2 + P_m (\mu_m / \mu)^2 - 1 \right)}_{\text{between}} \quad (1)$$

Where P_j is the share in the population of group j , μ_j is mean income for group j , μ is mean income for the population, and CV_j^2 is the dispersion measure for the subgroup. Inequality is then decomposed among families headed by couples:

$$CV_f^2 = \left(S_h^2 CV_h^2 + S_w^2 CV_w^2 + S_o^2 CV_o^2 + 2\rho_{hw} S_h S_w CV_h CV_w \right) \\ + 2\rho_{ho} S_h S_o CV_h CV_o + 2\rho_{wo} S_w S_o CV_w CV_o \quad (2)$$

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_k^2 represents the dispersion of each income source; and ρ 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, x (adjusting for price inflation); and by holding CV_w^2 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, ρ_{hw} and ρ_{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 2007-2008?"

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, 1995–1996, and 2007–2008. It includes data on all men and women of working age (whether employed or not employed),⁵ 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-1995–1996 time period and were largest at the top of the male earnings distribution. The CV^2 measure for men almost doubled between 1982 and 1995–1996 before moderating in the following decade. The much larger increase in CV^2 in comparison with the increase in 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 1995–1996 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 labor market, earnings inequality among all men tends to increase, and vice versa. The SIH data show that, in 1982, almost three quarters of men (73 percent) had some earnings from employment. By 1995–1996, this proportion had decreased to 67 percent, and by 2007–2008, it had risen again to 71 percent.

The changes in male earnings inequality also reflect growth in inequality of male employee wage rates. Following a pattern similar to that described by Peter Gottschalk and Sheldon Danziger (2005, 237) for the U.S. between 1975 and 2002, real hourly wages for employed Australian men at the 5th percentile of the male earnings distribution fell by 3 percent between 1982 and 2007–2008. It rose by only 1 percent at the 10th percentile, but increased by 33 percent at the 90th percentile, and by 40 percent at the 95th percentile. These changes were pronounced in the period between 1982 and 1995–1996, where, for example, real hourly wages for men at the 5th percentile fell by 17 percent while, at the 95th percentile, the real hourly wage rate increased by 3 percent. In the decade before 2007–2008, real hourly wage rates increased across the wage distribution, but these changes were greatest at the top. For example, there was an increase of 36 percent 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. Inequality Measures for Men's and Women's Earnings, Australia, 1982 to 2007–08

| | Single and partnered men and women | | | | | Only partnered men and women | | | | |
|-----------------|------------------------------------|-----------------|---------------------|-------|-----------------|------------------------------|-----------------|---------------------|-------|-----------------|
| | All | | Those with earnings | | | All | | Those with earnings | | |
| | Gini | CV ² | p90/p10 | Gini | CV ² | Gini | CV ² | p90/p10 | Gini | CV ² |
| Men | | | | | | | | | | |
| 1982 | 0.477 | 0.811 | 3.664 | 0.280 | 0.314 | 0.454 | 0.732 | 3.622 | 0.278 | 0.309 |
| 1995-1996 | 0.561 | 1.422 | 4.400 | 0.329 | 0.586 | 0.544 | 1.308 | 4.387 | 0.331 | 0.573 |
| 2007-2008 | 0.550 | 1.205 | 5.232 | 0.355 | 0.710 | 0.537 | 1.400 | 4.935 | 0.357 | 0.726 |
| % change | | | | | | | | | | |
| 1982-1996 | +18 | +75 | +20 | +18 | +87 | +20 | +79 | +21 | +19 | +85 |
| 1996-2008 | -2 | -15 | +19 | +8 | +21 | -1 | +7 | +12 | +8 | +27 |
| Women | | | | | | | | | | |
| 1982 | 0.698 | 2.088 | 5.171 | 0.305 | 0.344 | 0.708 | 1.484 | 6.119 | 0.331 | 0.397 |
| 1995-1996 | 0.669 | 1.900 | 5.493 | 0.319 | 0.408 | 0.657 | 1.355 | 5.772 | 0.331 | 0.456 |
| 2007-2008 | 0.636 | 1.812 | 5.647 | 0.338 | 0.545 | 0.620 | 1.751 | 5.730 | 0.343 | 0.594 |
| % change | | | | | | | | | | |
| 1982-1996 | -4 | -9 | +6 | +5 | +19 | -7 | -9 | -6 | 0 | +15 |
| 1996-2008 | -5 | -5 | +3 | +6 | +34 | -6 | 29 | -1 | +4 | +30 |

Trends in earnings inequality among all Australian women are somewhat different, with the gini and CV² decreasing in both examined periods. This reflects 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 CV² 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 2007-2008 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 percent. It increased by 21 percent at the 10th percentile, by 30 percent at the 90th percentile, and 36 percent at the 95th percentile. As in 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 1995-1996, 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, thereby reflecting growth in the workforce participation rate of partnered women. However, while the CV² fell in the first sub-period, it rose in the second. Similarly, among partnered women with earnings, the p90/p10 ratio fell, but the CV² rose. This development indicates that the changes in female earnings inequality were driven by trends 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 under consideration, the measured trend in (equalized) 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 1995–1996, but increased (slightly) between 1995–1996 and 2007–2008. The gini increased moderately for all families and couple families throughout the period. The CV² shows quite a different pattern. It increased substantially from 1982 to 1995–1996 among all households and couple households. It continued to increase from 1995–1996 to 2007–2008 at an even faster rate for all families, and at the same rate for couple families.⁶

Table 2. Inequality Measures for Equalized Family Income, from 1982 to 2007–2008

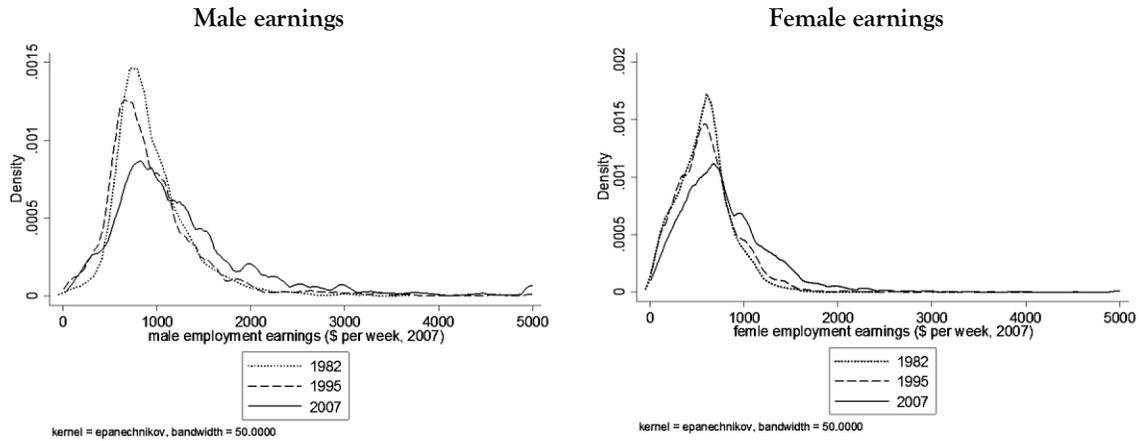
| | P90/P10 | Gini | CV ² | % people in couple families |
|------------------------|---------|-------|-----------------|-----------------------------|
| All | | | | |
| 1982 | 4.30 | 0.296 | 0.304 | |
| 1995–1996 | 4.21 | 0.309 | 0.384 | |
| 2007–2008 | 4.50 | 0.324 | 0.528 | |
| % change 1982–1996 | -2% | +4% | +26% | |
| % change 1996–2008 | +7% | +5% | +38% | |
| Couple families | | | | |
| 1982 | 3.93 | 0.283 | 0.284 | 69.5 |
| 1995–1996 | 3.91 | 0.302 | 0.365 | 66.9 |
| 2007–2008 | 3.97 | 0.309 | 0.468 | 67.1 |
| % change 1982–1996 | -1% | +7% | +29% | -4% |
| % change 1996–2008 | +2% | +2% | +28% | 0% |

Comparison of trends in 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 percent between 1982 and 1995–1996, while male earnings inequality increased by 20 percent. Between 1995–1996 and 2007–2008, male earnings inequality, on the P90/P10 measure, increased by 19 percent, whereas family income inequality rose by only 7 percent. The one exception to this pattern occurs on the CV² measure in the second sub-period. It shows an increase in family income inequality of 38 percent that exceeds the growth in male earnings inequality of 21 percent, and contrasts with a decline in earnings inequality among *all* men of 15 percent.

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 1995–1996 signals an increase in male earnings inequality. Inequality in women’s earnings also increases between 1982 and 1995–1996. 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, 1995–1996, and 2007–2008. The change in this distribution between 1982 and 1995–1996 is slight, but most pronounced at the top of the distribution, giving rise to the increases in the CV² as reported in Table 2. Figure 1 shows that between 1995–1996 and 2007–2008, 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

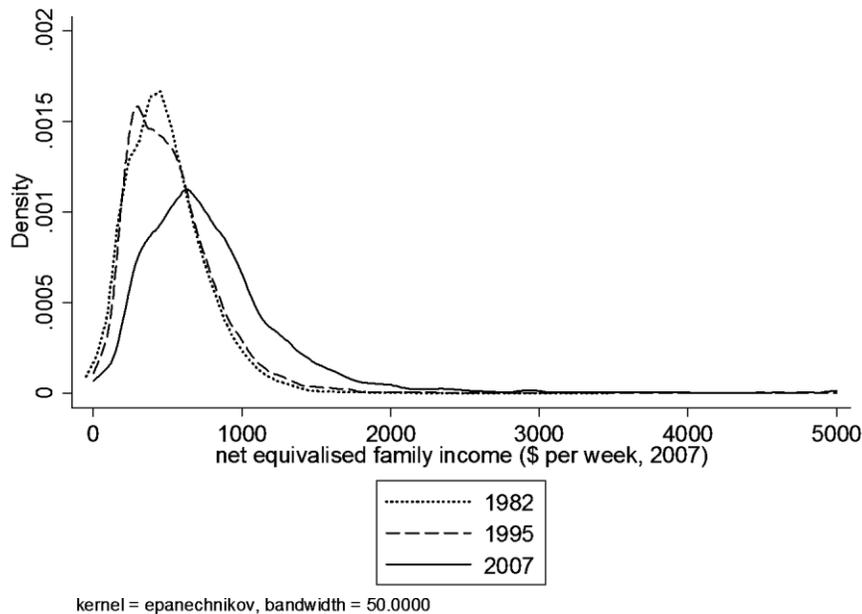
and women with earnings also increased, so that overall earnings inequality measures fell for all men and women, with or without earnings. Figure 2 shows that family income inequality, on the other hand, increases in this period, with a significant decrease in the concentration of incomes, coupled with a large shift in the distribution to the right.

Figure 1. Men and Women's Weekly Earnings and Net Weekly Equalized Family Incomes, All Families, from 1982 to 2007-2008 (\$, December 2007 Prices)



Note: Earnings are deflated to December 2007 prices using Consumer Price Index data for all Australian capital cities. Earnings capped at AUD5,000 per week for presentational purposes. Observations with zero earnings excluded.

Figure 2. Net Weekly Equalized Family Incomes, All families, from 1982 to 2007–2008 (\$, December 2007 Prices)



Note: Incomes are deflated to December 2007 prices using Consumer Price Index data for all Australian capital cities. Incomes capped at AUD5,000 per week for presentational purposes. Observations with zero earnings excluded.

Trends in the Components of Equalized 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.⁷ Although their importance declined in the study period, male employee earnings still accounted for over six in every ten dollars (before deduction of taxes) of disposable family income in 2007–2008.

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 percent of family earnings in 1982 to 63.2 percent in 1995–1996, and to 61.0 percent in 2007–2008. This change was matched by an increase in the importance of female employee earnings. Between 1982 and 1995–1996, the share of total family income accounted for by women's earnings rose from 27.2 to 34.7 percent. However, this share stabilized in the next sub-period, growing to only 35.0 percent by 2007–2008.

The trends in incomes from other sources are also worth noting. The share of total income accounted for by self-employment income declined (in part for methodological reasons, see the footnote to Table 3). The share of total income accounted comprised of private incomes increased, especially in the more recent decade (although this data is 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. However, it 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 years after 2005–2006.⁸

Table 3. Shares of Income Components in Total Equalized Family Income, from 1982 to 2007–2008 (%)

| | Men's employee earnings | Women's employee earnings | Self- employment income | Other private income | Transfers | Taxes | All |
|------------------------|-------------------------------|---------------------------------|-------------------------------|----------------------------|-----------|-------|-------|
| All families | | | | | | | |
| 1982 | 66.7 | 27.2 | 18.7 | 6.8 | 6.9 | -26.3 | 100.0 |
| 1995–1996 | 63.2 | 34.7 | 12.3 | 6.9 | 9.5 | -26.5 | 100.0 |
| 2007–2008 | 61.0 | 35.0 | 8.7 | 11.8 | 6.4 | -23.0 | 100.0 |
| Couple families | | | | | | | |
| 1982 | 69.2 | 23.0 | 22.6 | 7.1 | 5.2 | -27.1 | 100.0 |
| 1995–1996 | 65.4 | 33.1 | 14.9 | 7.3 | 7.4 | -28.0 | 100.0 |
| 2007–2008 | 63.2 | 33.8 | 9.9 | 12.1 | 5.1 | -24.1 | 100.0 |

Notes: All = Men's earnings + Women's earnings + Self-employment income + Other private income + Transfers – Taxes. Self-employment income is affected by changes in definition after 1982. Therefore, some income reported as coming from self-employment in 1982 would likely be reported as being employee earnings in later years.

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 female 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 partners' 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 percent) 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 counterfactual, we simulate a change in the mean and dispersion of women's earnings. With the third one, we model changes in mean, dispersion, and correlations associated with women's earnings. We perform this analysis

using equation (2) above, recalculating the CV^2 for family income in the period 1995-1996-to-2007-2008 after substituting the dispersion and share of women's earnings in family income from the earlier period of 1982-to-1995-1996. Data on mean incomes, shares, dispersions, and correlations between components used in this analysis we present in Table 1 of the Appendix.

Table 4 contains the results from this exercise. Columns two and three contain the results on the first counterfactual. The figures show that a marginal reduction in women's employee earnings would have reduced inequality in the period 1982-to-1995-1996, but increased it in 2007-2008. These findings hold for all families and couple families. They indicate that the increases which occurred in women's share of total family income in the early stages of the study period actually had a dis-equalizing effect on family income, while a small equalizing impact was apparent by 2007-2008. (We comment further on these patterns in the following paragraphs.)

Table 4. Impact on Family Income Inequality of Changes in Women's Employee Earnings

| | Actual | | Counterfactual | | | | |
|---------------------|----------------------|----------------------------------|-----------------|--|-----------------|---|-----------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Actual (CV^2) | Reduce earnings (CV^2) | % Difference | Hold mean earnings & dispersion constant (CV^2) | % Difference | Hold mean earnings, dispersion & correlations constant (CV^2) | % Difference |
| | | | (2)/(1) | | (4)/(1) | | (6)/(1) |
| All families | | | | | | | |
| 1982 | 0.304 | 0.302 | -0.7 | | | | |
| 1995-1996 | 0.384 | 0.381 | -0.7 | 0.353 | -8.2 | 0.286 | -25.5 |
| 2007-2008 | 0.528 | 0.531 | +0.6 | 0.573 | +8.5 | 0.567 | +7.4 |
| Couples | | | | | | | |
| 1982 | 0.284 | 0.280 | -1.5 | | | | |
| 1995-1996 | 0.365 | 0.360 | -1.3 | 0.338 | -7.5 | 0.324 | -11.3 |
| 2007-2008 | 0.468 | 0.469 | +0.1 | 0.491 | +4.7 | 0.520 | +11.1 |

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 four and five of Table 4. They show, first, that if the mean and dispersion of women's earnings had not changed between 1982 and 1995-1996, family income inequality would have been substantially lower in 1995-1996 (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 2007-2008 that was about 9 percent higher than recorded levels.

The results on the third counterfactual provide further insights to sources of change in family income inequality. The data for the first sub-period 1982-to-1995-1996 in columns six and seven 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 of 0.384 in 1995–1996. Comparison of the CV^2 in columns four and six 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 percent to negative 25.5 percent. 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 1995–1996 (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 the third counterfactual for the second sub-period reveal a different pattern. Holding the mean, correlations, and dispersion of women's earnings constant at their 1995–1996 levels would have yielded a level of family income inequality, in 2007–2008, about 7 percent higher than the recorded level. Holding the correlations associated with female earnings constant at 1995–1996 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 the second and third counterfactuals for couple families in Table 4 (columns four through seven). Holding the mean and dispersion of partnered women's earnings constant at 1995–1996 levels would result in a 5-percent increase in income inequality among couple families in 2007–2008. If correlations associated with partnered women's earnings were also held constant at 1995–1996 levels, income inequality among couple families would be 11 percent 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 can be estimated for couple families alone using equation (2) above. 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 we show in Table 5. The effect of reducing partnered women's earnings by a marginal amount is to reduce total inequality in all years (columns three and four). This is consistent with the effect of reducing all women's earnings by a marginal amount in the period 1982-to-1995–1996, where family income inequality also falls, but it is different to that in 2007–2008, where family income inequality rises (see also columns three and four of Table 4). In the latter years, 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 2007–2008, because of the concentration of single women earners in the bottom half of the distribution of family incomes.

Table 5. Impact on Total Family Income Inequality of Changes in Partnered Women’s Employee Earnings

| | Actual | | Counterfactual | | | | |
|-----------|--|------------------------------------|----------------|---|--------------|---|--------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Actual earnings (CV ²) | Reduce earnings (CV ²) | % Difference | Hold mean earnings & dispersion constant (CV ²) | % Difference | Hold mean earnings, dispersion & correlations constant (CV ²) | % Difference |
| | | | (2)/(1) | | (4)/(1) | | (6)/(1) |
| | Impact of change in partnered women’s earnings | | | | | | |
| 1982 | 0.304 | 0.301 | -1.2 | | | | |
| 1995–1996 | 0.384 | 0.379 | -1.4 | 0.354 | -7.8 | 0.344 | -10.4 |
| 2007–2008 | 0.528 | 0.526 | -0.3 | 0.533 | +1.0 | 0.556 | +5.2 |

Results for the second and third counterfactuals confirm that the role of partnered women’s earnings in influencing family income inequality is consistent with the role of women’s earnings overall. The results suggest that Australian women’s earnings generally had a dis-equalizing effect on family income inequality between 1982 and 1995–1996, driven in large part by a growing correlation between partnered men’s and women’s earnings. This result is consistent with findings by Peter Dawkins et al. (2002) showing an increase in assortative mating between 1982 and the mid-1990s. But the results also suggest a generally equalizing effect in the period 1995–1996-to-2007–2008, driven in part by a diminishing correlation between partners’ earnings. These results somewhat nuance the existing international literature on the role of women’s earnings in influencing changes in income inequality. Shahina Amin and Julie DaVanzo (2004) state that the majority of international studies which find that partnered women’s earnings had an equalizing effect on over-time changes in family income inequality. Christine 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 U.S. Her analysis echoes the work of Charles Murray on the relationship between increased assortative mating and growing economic inequality in U.S. society (Herrnstein and Murray 1994; Murray 2012). Our findings for Australia are consistent with those of Schwartz in suggesting 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 of our study, it was inequality-reducing in the latter period of it.

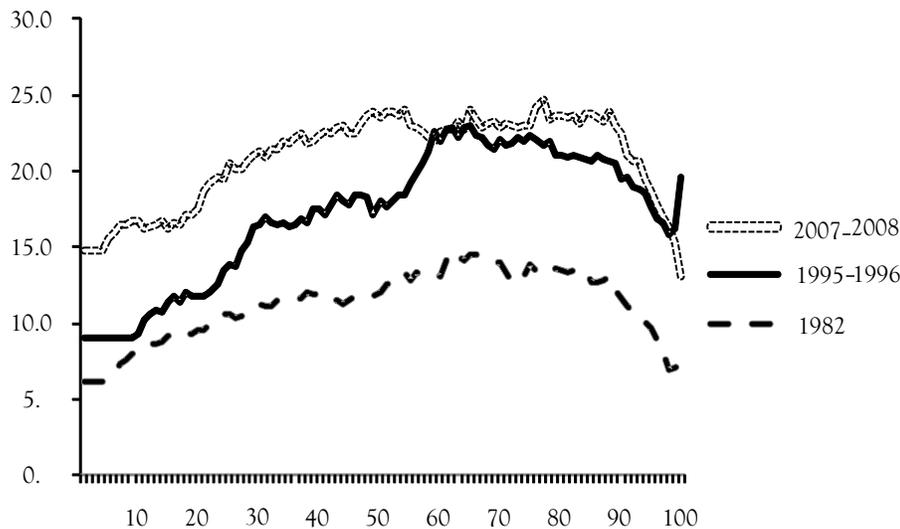
Partnered Women’s Hours of Work and Family Income Inequality in Australia

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 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, 1995-1996, and 2007-2008. It reveals that while hours worked by partnered women increased across the board after 1982, increases in the first period of 1982-to-1995-1996 were more concentrated towards the upper half of the male earnings distribution. At the same time, increases in the second period were more concentrated on the bottom half of it. Moreover, there appears to have been a decline in the hours worked by women with very high earning partners between 1995-1996 and 2007-2008.

Figure 3. Average Hours Worked by Partnered Women, by Centiles of Their Partners' Earnings from Employment (Employee and Self-Employed)



Note: data are presented in moving 10 percentile averages.

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. We sort all couple families according to male earnings, employee and self-employed. We sort families with no male earnings randomly. We also 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 does not include hours worked by self-employed people in most years). We repeat this process for each centile of male earnings in 1995–1996. We then apply the 1982 distribution of hours to women according to the centile of their partners' earnings in 1995–1996. We repeat the process in 2007–2008, using the 1995–1996 distribution of hours worked by women according to their partners' earnings.⁹

In order to estimate family income using the simulated working hours of women in 1995–1996 and 2007–2008, we multiply the estimated hours by the average actual hourly wage rates of wives in each centile of male earnings in a 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 for all families we present in Table 6. Because this exercise is based on a simulation rather than a decomposition of the 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 1995–1996 changed their hours to those worked by women, whose partners had similar levels of earnings in 1982, the three measures indicate that family income inequality would fall. On the other hand, if women in 2007–2008 switched their hours to those worked by women, whose partners had similar levels of earnings in 1995–1996, the P90/P10 measure suggests that inequality would fall, while the gini and the CV^2 measures suggest it would increase.

Table 6. Inequality among All Families in the Counterfactual Situation Where Women's Hours of Work Are Fixed at 1982, and 1995–1996 Levels in Relation to Partner Earnings

| | P90/P10 | | | Gini | | | CV^2 | | |
|-----------|---------|----------|----------------|--------|----------|----------------|--------|----------|----------------|
| | Actual | Adjusted | Difference (%) | Actual | Adjusted | Difference (%) | Actual | Adjusted | Difference (%) |
| 1982 | 4.30 | | | 0.296 | | | 0.304 | | |
| 1995–1996 | 4.21 | 3.89 | -7.7 | 0.309 | 0.300 | -2.7 | 0.384 | 0.375 | -2.5 |
| 2007–2008 | 4.50 | 4.46 | -0.8 | 0.324 | 0.330 | +2.1 | 0.528 | 0.543 | +2.8 |

A qualified conclusion from this analysis holds that the increase in women's working hours between 1982 and 1995-1996 was dis-equalizing in terms of its impacts on family income. However, the further increase between 1995-1996 and 2007-2008 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 1995-1996, changes in the distribution of partnered women's working hours across the male earnings distribution contributed to the dis-equalizing 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 1995-1996 and 2007-2008 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 of 1982-to-2007-2008. 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 been sufficiently emphasized in the literature about the relationship between women's earnings and family income inequality. One key point is 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. Another one is 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.

Our third point is perhaps the most important one. It points that in the first sub-period of 1982-to-1995-1996, 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. However, in the second sub-period between 1995-1996 and 2007-2008, a different pattern emerged. The correlation between partnered men's and women's earnings fell in this time period, thus exerting downwards pressure on family income inequality.

These results cast some light on the impact that different gender-equality-intended policies can have on family income inequality. Growth in women's employment in the first sub-period of our study – associated with the Hawke/Keating Labor government – followed the implementation of equal opportunity legislation and the expansion of child care provision. The extensive labor market deregulation also affected women's employment as it caused expansion of part-time service sector 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 happened 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 John Howard government, occurred in the context of changes in tax-benefit policies which arguably dis-incentivized women with young children and an employed partner to seek paid work. For example, during this period a generous payment, termed Family Tax Benefit Part B, was instituted for families with just one earner, with the implicit intention of encouraging partnered mothers to remain at home¹⁰ (Apps 2006; Brennan 2007). It is notable, therefore, that growth in the correlation of men's and women's earnings within households stalled after 1995–1996, 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. As social comparison is important in people's evaluation of their own economic circumstances, they tend to emulate the living standards of others. Thus, as Clair Brown suggests, 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, especially after 1995–1996, is consistent with such behavior. In particular, it is consistent with an attempt by families to match the consumption of a particular type of market goods achieved by high income families, including more expensive housing. Home-ownership has an almost iconic significance in the Australian context. As Richard Ronald (2008) argues in relation to Australia (and similar countries):

[w]hat appears significant about the meaning of home in contemporary homeowner societies is that not only has the 'home' become integrated with the understanding and expression of the self, the family and the private sphere, it has also become appropriated by those who own a house or apartment. The meaning of "a home of one's own" has changed over the twentieth century and in many societies no longer means living in self-contained dwelling but rather being an owner-occupier. ... Tenure has thus become integrated strongly with meanings and idealized images of the house and home (Ronald 2008, 50).

House prices began to increase relative to family incomes in Australia from the early 1980s (Yates and Milligan, 2007), reflecting in part an increase in the average size of new houses by 40.3 percent between 1984–1985 and 2002–2003 (ABS 2005). By the mid-to-late 1990s, housing affordability (the relationship between ordinary time earnings and average house prices) had dropped markedly. Thorstein Veblen's ([1899] 2008, 22-23) argument that possession of wealth in some amount is necessary to maintain social standing implies that low and middle income families may have increasingly felt pressured to raise their hours of paid work to achieve middle-class Australian norms associated with home ownership. The pattern also supports Robert Frank's (2000) argument that increased wealth in the top half of the income distribution raises the costs for everybody of achieving basic goals in order to avoid loss of esteem.

Further research on the relationships between the increasing levels of earnings inequality, family income inequality, and women's workforce participation are warranted. Studies of the links have the potential to add new knowledge to the determinants of women's involvement in paid work, the economic and social impacts of rising family income inequality, and the relevance of motivations such as emulation. Research on these links will also contribute important information to the determinants of family income inequality, with obvious relevance to a range of social-economic policies and outcomes.

Notes

1. A small number of studies have explored the relationship between a worker's job satisfaction and his/her relative wage positions (see, for example, Clark and Oswald 1996; Frank 1984; and Kahneman and Thaler 1991). However, only David Neumark and Andrew Postlewaite's (1998) study of the 1979 U.S. labor force data explored how the employment rates of married women were 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.
2. Our analysis ends in 2007 because it marks the end of the conservative era. In addition, our focus is on the comparison of inequality between more and less progressive policy environments.
3. An analogous decomposition of the gini coefficient by income source is also possible. Robert Lerman and Shlomo 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's and wife's incomes. However, we have tested our results to the extent that the method allows using a gini decomposition, and we also find them to be consistent with those for the decomposition of the CV^2 . (Results are available from the authors upon request.)
4. 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.
5. As such, the earnings of non-employed individuals are zero.
6. 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, namely, from 2005–2006 to 2007–2008. For example, in 2005–2006, the gini was 0.296 and the CV^2 was 0.365. (See Table 3 in Appendices).
7. As noted in an earlier section, we separate employee earnings for men and women from self-employment earnings at 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.

8. See Table 2 in Appendices, from which shares of total income components for all survey years, including 2005–2006, can be calculated.
9. 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 upon request.)
10. The payment replaces a spouse tax rebate.

Appendices

Table 1. Summary Statistics and Basic Measures of Income Inequality from the Income and Housing Surveys, 1982, 1995–1996, and 2007–2008

| Year | N | Population | Mean income | Std dev | p10 | p50 | p90 |
|------------------------|-------|------------|-------------|---------|--------|--------|----------|
| All | | | | | | | |
| 1982 | 15792 | 8704344 | 494.67 | 272.956 | 194.71 | 457.17 | 836.90 |
| 1995–1996 | 6985 | 10723234 | 531.05 | 329.074 | 216.18 | 477.39 | 909.74 |
| 2007–2008 | 8938 | 12585638 | 811.71 | 589.886 | 303.01 | 707.00 | 1362.08 |
| Couple Families | | | | | | | |
| 1982 | 8491 | 6052324 | 514.18 | 274.054 | 219.49 | 463.88 | 861.43 |
| 1995–1996 | 3495 | 7176868 | 569.31 | 343.869 | 246.80 | 508.91 | 963.78 |
| 2007–2008 | 4457 | 8449629 | 889.28 | 608.600 | 367.08 | 785.71 | 1,457.33 |

Note: N is number of income units in the samples. Population is grossed up number of persons in the sample.

Mean and percentiles are in Australian dollars per week, are deflated to December 2007 prices and equalized using the modified OECD scale.

Table 2. Equalized Family Income: Mean Values by Component, Income and Housing Surveys, 1982, 1995–1996, and 2007–2008

| | Men's employee earnings | Women's employee earnings | Self- employment earnings | Other private income | Transfers | Taxes | Total |
|------------------------|-------------------------------|---------------------------------|---------------------------------|----------------------------|-----------|---------|--------|
| All | | | | | | | |
| 1982 | 330.13 | 134.46 | 92.39 | 33.81 | 33.95 | -130.08 | 494.67 |
| 1995–1996 | 335.85 | 184.11 | 65.07 | 36.44 | 50.48 | -140.91 | 531.05 |
| 2007–2008 | 494.94 | 284.28 | 70.99 | 96.11 | 52.22 | -186.84 | 811.71 |
| Couple Families | | | | | | | |
| 1982 | 355.95 | 118.14 | 116.39 | 36.76 | 26.53 | -139.58 | 514.18 |
| 1995–1996 | 372.2 | 188.41 | 84.56 | 41.7 | 42.04 | -159.61 | 569.31 |
| 2007–2008 | 562.37 | 300.19 | 87.84 | 107.54 | 45.65 | -214.3 | 889.28 |

Note: total income = Men's employee earnings + Women's employee earnings + Self-employment earnings + Other private income + Transfers – Taxes. All income components are deflated to December 2007 and equalized using the modified OECD scale.

Table 3. Equalized Family Income: Alternative Measures of Inequality, Income, and Housing Surveys, 1982, 1995–1996 and 2007–2008

| | p90/ p50 | p50/ p10 | p90/ p10 | p95/ p5 | Gini | CV | CV ² | Atkinson (0.5) | Atkinson (1) | Atkinson (1.5) | Atkinson (2) | GE(-1) | GE(0) | GE(1) | GE(2) |
|------------------------|-------------|-------------|-------------|------------|-------|-------|-----------------|-------------------|-----------------|-------------------|-----------------|--------|-------|-------|-------|
| All | | | | | | | | | | | | | | | |
| 1982 | 1.831 | 2.348 | 4.298 | 6.384 | 0.296 | 0.552 | 0.304 | 0.078 | 0.174 | 0.324 | 0.573 | 0.672 | 0.191 | 0.147 | 0.152 |
| 1995–1996 | 1.906 | 2.208 | 4.208 | 6.290 | 0.309 | 0.620 | 0.384 | 0.081 | 0.168 | 0.291 | 0.536 | 0.577 | 0.184 | 0.163 | 0.192 |
| 2007–2008 | 1.927 | 2.333 | 4.495 | 6.999 | 0.324 | 0.727 | 0.528 | 0.091 | 0.185 | 0.327 | 0.655 | 0.950 | 0.204 | 0.192 | 0.264 |
| Couple Families | | | | | | | | | | | | | | | |
| 1982 | 1.857 | 2.113 | 3.925 | 5.570 | 0.283 | 0.533 | 0.284 | 0.071 | 0.159 | 0.296 | 0.530 | 0.564 | 0.173 | 0.136 | 0.142 |
| 1995–1996 | 1.894 | 2.062 | 3.905 | 6.024 | 0.302 | 0.604 | 0.365 | 0.077 | 0.157 | 0.253 | 0.388 | 0.317 | 0.171 | 0.155 | 0.182 |
| 2007–2008 | 1.855 | 2.140 | 3.970 | 6.077 | 0.309 | 0.684 | 0.468 | 0.082 | 0.162 | 0.271 | 0.569 | 0.660 | 0.177 | 0.174 | 0.234 |

Table 4a. Key Elements of the Decomposition of Equalized Family Income, All Families, 1982, 1995–1996 and 2007–2008 (SIH Data)

| | Men's employee earnings | Women's employee earnings | Self- employment earnings | Other private income | Transfers | Taxes |
|---------------------------|-------------------------------|---------------------------------|---------------------------------|----------------------------|-----------|----------|
| 1982 | | | | | | |
| Mean | 330.130 | 134.464 | 92.392 | 33.811 | 33.954 | -130.084 |
| CVsq | 1.146 | 3.006 | 10.010 | 11.765 | 3.927 | 1.503 |
| Share | 0.667 | 0.272 | 0.187 | 0.068 | 0.069 | -0.263 |
| <i>Correlation with:</i> | | | | | | |
| Men's employee earnings | 1.000 | | | | | |
| Women's employee earnings | -0.070 | 1.000 | | | | |
| Self-employment earnings | -0.257 | -0.104 | 1.000 | | | |
| Other private income | -0.084 | -0.039 | 0.208 | 1.000 | | |
| Transfers | -0.371 | -0.231 | -0.110 | -0.054 | 1.000 | |
| Taxes | -0.483 | -0.270 | -0.528 | -0.346 | 0.311 | 1.000 |
| 1995–1996 | | | | | | |
| Mean | 335.854 | 184.113 | 65.073 | 36.442 | 50.477 | -140.905 |
| CVsq | 1.520 | 2.197 | 18.908 | 9.498 | 2.929 | 1.945 |
| Share | 0.632 | 0.347 | 0.123 | 0.069 | 0.095 | -0.265 |
| <i>Correlation with:</i> | | | | | | |
| Men's employee earnings | 1.000 | | | | | |
| Women's employee earnings | 0.031 | 1.000 | | | | |
| Self-employment earnings | -0.139 | -0.017 | 1.000 | | | |
| Other private income | -0.008 | -0.019 | 0.019 | 1.000 | | |
| Transfers | -0.380 | -0.327 | -0.097 | -0.093 | 1.000 | |
| Taxes | -0.673 | -0.409 | -0.451 | -0.146 | 0.342 | 1.000 |
| 2007–2008 | | | | | | |
| Mean | 494.938 | 284.279 | 70.993 | 96.113 | 52.225 | -186.843 |
| CVsq | 1.541 | 2.021 | 20.697 | 20.736 | 3.248 | 2.486 |
| Share | 0.610 | 0.350 | 0.087 | 0.118 | 0.064 | -0.230 |
| <i>Correlation with:</i> | | | | | | |
| Men's employee earnings | 1.000 | | | | | |
| Women's employee earnings | 0.025 | 1.000 | | | | |
| Self-employment earnings | -0.139 | -0.052 | 1.000 | | | |
| Other private income | 0.050 | -0.011 | 0.014 | 1.000 | | |
| Transfers | -0.312 | -0.286 | -0.074 | -0.078 | 1.000 | |
| Taxes | -0.631 | -0.366 | -0.285 | -0.511 | 0.271 | 1.000 |

Table 4b. Key Elements of the Decomposition of Equalized Family Income, Couple Families, 1982, 1995–1996 and 2007–2008 (SIH Data)

| | Men's employee earnings | Women's employee earnings | Self- employment earnings | Other private income | Transfers | Taxes |
|---------------------------|-------------------------------|---------------------------------|---------------------------------|----------------------------|-----------|----------|
| 1982 | | | | | | |
| Mean | 355.952 | 118.136 | 116.386 | 36.755 | 26.529 | -139.583 |
| CVsq | 0.801 | 2.558 | 7.420 | 10.636 | 4.648 | 1.389 |
| Share | 0.692 | 0.230 | 0.226 | 0.071 | 0.052 | -0.271 |
| <i>Correlation with:</i> | | | | | | |
| Men's employee earnings | 1.000 | | | | | |
| Women's employee earnings | 0.225 | 1.000 | | | | |
| Self-employment earnings | -0.359 | -0.105 | 1.000 | | | |
| Other private income | -0.111 | -0.029 | 0.225 | 1.000 | | |
| Transfers | -0.341 | -0.204 | -0.099 | -0.046 | 1.000 | |
| Taxes | -0.452 | -0.354 | -0.539 | -0.371 | 0.253 | 1.000 |
| 1995–1996 | | | | | | |
| Mean | 372.20 | 188.41 | 84.56 | 41.70 | 42.04 | -159.61 |
| CVsq | 1.163 | 1.711 | 12.022 | 8.121 | 3.324 | 1.672 |
| Share | 0.654 | 0.331 | 0.149 | 0.073 | 0.074 | -0.280 |
| <i>Correlation with:</i> | | | | | | |
| Men's employee earnings | 1.000 | | | | | |
| Women's employee earnings | 0.277 | 1.000 | | | | |
| Self-employment earnings | -0.203 | -0.003 | 1.000 | | | |
| Other private income | 0.003 | -0.010 | 0.014 | 1.000 | | |
| Transfers | -0.361 | -0.340 | -0.107 | -0.097 | 1.000 | |
| Taxes | -0.721 | -0.517 | -0.399 | -0.158 | 0.324 | 1.000 |
| 2007–2008 | | | | | | |
| Mean | 562.37 | 300.19 | 87.84 | 107.54 | 45.65 | -214.30 |
| CVsq | 1.218 | 1.608 | 15.599 | 12.789 | 3.217 | 1.959 |
| Share | 0.632 | 0.338 | 0.099 | 0.121 | 0.051 | -0.241 |
| <i>Correlation with:</i> | | | | | | |
| Men's employee earnings | 1.000 | | | | | |
| Women's employee earnings | 0.212 | 1.000 | | | | |
| Self-employment earnings | -0.184 | -0.053 | 1.000 | | | |
| Other private income | 0.071 | -0.006 | 0.011 | 1.000 | | |
| Transfers | -0.288 | -0.315 | -0.070 | -0.104 | 1.000 | |
| Taxes | -0.709 | -0.458 | -0.282 | -0.408 | 0.277 | 1.000 |

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