

THE HIGH TAXATION OF WORKING FAMILIES

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ABSTRACT

This paper reports the findings of an empirical analysis of the tax treatment of families. The results show that, after two decades of reform, the Australian family tax system now closely approximates one based on the combined income of parents rather than on individual incomes. The study also shows how the effective rate scale that now applies is no longer progressive but tends to exhibit an inverted U-shape, with very high rates on below average incomes. An important distributional effect of the new system has been to shift the tax burden disproportionately towards low and middle-wage families working longer hours by having a second earner. The paper presents empirical evidence on the negative effects of the new rate structure on female labour supply, household saving and fertility. The results suggest that two decades of tax reform and government neglect of child care have contributed to population ageing and restricted the growth of the tax base needed to avoid an ageing crisis.

1 Introduction

Two decades of reform have seen major changes in the tax treatment of Australian families. In the early 1980s individual incomes were taxed at more progressive marginal rates and families received a universal allowance for each child. The overall rate structure of the system was fundamentally sound but there was an urgent need for base broadening measures to reduce revenue losses from the excessive use of tax minimisation schemes. Unfortunately, changes of the kind and on the scale required have never been at the centre of the tax reform agenda. Instead, the focus has been on switching towards a less progressive income tax schedule¹ combined with a highly targeted family benefit system. The period also saw a shift towards regressive indirect taxation and user charges for public services.

This reform agenda has had two important distributional outcomes. First, and most obviously, it has shifted the tax burden from families in which there is at least one high income earner to those on average earnings. Second, there has been a shift in the burden towards the second earner in families at the lower end and across the middle of the wage distribution. This effect is due primarily to the withdrawal of benefits on family income and on the income of the second earner. A regime that bases eligibility for cash or in-kind benefits on these income measures raises *effective* tax rates on the incomes of second earners above the rates they would face as single individuals with the same incomes. A “tax-wedge” of this kind is a defining feature of joint taxation or, equivalently, of income splitting. Most Australian families can now be said to be taxed jointly even though, nominally, the country has a personal tax system based on individual incomes. In fact, according to a recent OECD study, Australia has the highest tax-wedge among comparable member countries (Jaumotte, 2003).

These two effects together have produced a major shift in the tax burden towards families on low to middle wages working longer hours. In effect, these families have contributed

¹ While the top rate is now 47 cent in the dollar, there continues to be strong support among politicians and in the print media for a reduction to 30 cents in the dollar (in line with the company rate) without any matching emphasis on base broadening at the upper end of the distribution.

disproportionately to financing gains at the top and the growth in benefits at the bottom needed to support a rising proportion of “working poor” families, which has been an outcome of ongoing labour market reforms. The evidence on behavioural responses to taxation indicates that this distributional result cannot be justified in terms of incentive gains. Empirical research shows that high tax rates on second earners can have significant disincentive effects on female labour supply and household saving.² There is also evidence that high tax rates on married mothers, together limited access to a high-quality, affordable child care sector, reduce fertility by raising the costs of having children and by providing a strong incentive to postpone child bearing.

The aim of this paper is to estimate empirically the distributional impact of the family tax-benefit system now in place, together with changes contained in the 2004-05 Budget, and to investigate the incentive effects of the rate structure. The paper presents results for effective tax rates faced by single and two-earner families as the hours of work of the second earner vary, taking account of personal income taxes, the Medicare Levy and Family Tax Benefit (FTB) (A) and FTB (B).³

The paper is organised as follows. Section 2 first of all explains in detail how the Medicare Levy and FTB (A) and FTB (B) change fundamentally the structure of effective tax rates on personal income faced by single and two-earner families, based on representative examples. Section 3 estimates the overall impact of the family tax system in the 2003-04 financial year using data for a sample of “in-work” families drawn from the Australian Bureau of Statistics (ABS) 2000 Income Distribution Survey (see ABS, 2003). Section 4 then shows how tax rates will change with the introduction of the 2004-05 Budget measures in July 1, 2005. Section 5 evaluates the 2003-04 rate structure, together with the Budget changes, in terms of conventional fairness and efficiency criteria. Section 6 considers longer term effects on female labour supply in a life cycle

² Empirical studies generally find that female labour supply is much more responsive to a fall in the net wage than male labour supply (for a survey, see Heckman, 1993). The data also show that, *ceteris paribus*, household saving and female labour supply are strongly positively associated (see Apps and Rees, 2003).

³ Assistance for child care provided under “Child Care Benefit” is also discussed.

context and in an ageing population. Section 7 concludes with an outline of alternative directions for reform.

2 Effective tax rates: examples

To illustrate the fundamental change in effective income tax rates introduced by the Medicare Levy and FTB (A) and FTB (B), this section computes the rates faced by two-parent families with one child aged 0-4 and a second aged 5-12. We first show how the rates for these families change with income for those that are single-income. Tax rates are then computed for two-income families. Since the effective tax rate faced by a second earner depends on the income of the primary earner, we take the case of families in which the primary earner has an income of \$31,755, the threshold at which FTB (A) begins to be withdrawn. All incomes are assumed to be earned.

Table 1 lists the income bands and marginal tax rates (MTRs) under the 2003-04 personal income tax in columns 1 and 2, respectively. The normal Medicare Levy is 1.5 per cent. However, for a family with two children, there is an exemption up to a family income of \$30,085, beyond which the rate is 20 cents in the dollar until family income reaches \$32,524. At this point, the rate falls to 1.5 per cent.⁴ Columns 3 and 4 of the table list the new set of income bands and effective marginal tax rates (EMTRs) after the introduction of the Medicare Levy.

Table 1 EMTRs: Income taxes and the Medicare Levy

Taxable Income \$pa 1	MTR 2	Taxable Income \$pa 3	EMTR 4
\$0 - \$6,000	0.00	\$0 - \$6,000	0.00
\$6,001 - \$21,600	0.17	\$6,001 - \$21,600	0.17
\$21,601 - \$52,000	0.30	\$21,601 - \$30,085	0.30
		\$30,086 - \$32,524	0.50
\$52,001 - \$62,500	0.42	\$32,525 - \$52,000	0.30
		\$52,001 - \$62,500	0.435
\$62,500 +	0.47	\$62,501 - \$85,337	0.485

⁴ There is also a surcharge for individuals and families on higher incomes who do not have private patient hospital cover, calculated at an additional 1 per cent of taxable income

While the personal income tax has a simple structure, with just five income bands and a progressive schedule of marginal rates, with the introduction of the Medicare Levy the system is no longer simple. A key point to note is that the Medicare Levy not only has the effect of increasing the number of bands, it also changes the marginal rate schedule, from one that is progressive to one that has an inverted U-shape. The highest marginal rate no longer applies to the top income band, but to a middle band. There is also a shift in the tax base from individual to family income, because the exemption level is based on family income. As we will now see, FTB (A) has similar effects.

Table 2 lists the more complicated set of income bands in column 1 and the EMTRs that apply in column 2, with the introduction of FTB (A). The maximum rate of FTB (B) for a family with a child aged 0-5 is \$2,920.00. Single income families receive the maximum rate and so the benefit affects their average tax rates (ATRs) but not their EMTRs.

Table 2: EMTRs after adding in FTB (A)

Taxable Income \$pa 1	EMTR 2
\$0 - \$6,000	0.00
\$6,001 - \$21,600	0.17
\$21,601 - \$30,085	0.30
\$30,086 - \$31,755	0.50
\$31,756 - \$32,524	0.80
\$32,525 - \$47,134	0.615
\$47,134 - \$52,000	0.315
\$52,001 - \$62,500	0.435
\$62,501 - \$85,337	0.485
\$85,338 - \$92,637	0.785
\$92638 +	0.485

The maximum rate of FTB (A) is \$3,401.80 for a child aged 0-12 and the base rate is \$1,095.00 for each child (aged 0-18). Benefits up to the base rate are withdrawn at a rate of 30 cents in the dollar on every dollar above the lower family threshold of \$31,755.00. For the family with two children aged 0-4 and 5-12, the income limit at which the benefit, excluding the base rate, is completely phased out is \$47,134.00. As the table shows, EMTRs up to the \$31,755.00 threshold are unchanged. But from this point on up to \$47,134, families face EMTRs of 80.0 and 61.5 cents in the dollar, due to the withdrawal of FTB (A) above the base rate. Like the Medicare Levy, FTB (A) undermines marginal

rate progressivity, by raising effective rates across middle-income bands. A revenue neutral reform with this new EMTR schedule increases the tax burden, at least in relative terms, across the middle of the distribution of single earner families.

Note that, for the two-child family, there is a drop in the EMTR, from 61.5 per cent to 31.5 per cent at \$47,134. This will disappear for larger families for whom the withdrawal of the FTB (A) continues to the threshold at which the base rate is withdrawn. In these cases, the EMTR schedule will exhibit an entirely inverted U-shape.⁵

Table 3 shows the effective tax rates faced by parents in a two-income family where the income of the primary earner is \$31,755.00 for full time work and that of the second earner is \$25,000.00 for full time work. Columns 1 and 2 of the table list the income bands and the respective EMTRs that the primary earner would face under the 2003-04 system, if the family remained single income. The rates are the same as those in Table 2 for a family with an income of up to \$31,755.00. FTB (A) and FTB (B) sum to \$9,723.60 and income taxes and Medicare Levy, to \$6,032.30, so the primary earner receives a transfer of \$3,691.30, reported as a negative “net tax” in the table.

Table 3: EMTRs for primary and second earners

Taxable Income \$pa 1	EMTR: Primary earner 2	EMTR: Second earner 3
\$0 - \$769	0.00	0.50
\$770 - \$1,824	0.00	0.315
\$1,825 - \$6,000	0.00	0.615
\$6,001 - \$11,558	0.17	0.785
\$11,559 - \$15,379	0.17	0.485
\$15,380 - \$21,600	0.17	0.185
\$21,601 - \$25,000	0.30	0.315
\$25,001 - \$30,085	0.30	-
\$30,086 - \$31,755	0.50	-
Net tax \$pa	-\$3,691.30	\$11,723.13
ATR %	-11.62	46.89

Column 3 shows the EMTRs faced by the second earner, typically the mother, on going out to work. With an additional income of \$15,379.00 she loses FTB (A) above the base

⁵ An earned income tax credit (EITC) program of the kind usually proposed achieves the same effect for all families. For a critique, see Apps (2002).

rate, which amounts to \$4,613.60. She also loses all of FTB Part (B). The maximum rate of \$2,920.00 is reduced by 30 cents in each dollar of the secondary earner's income above \$1,824.00, which means it is entirely phased out at an income level of \$11,558.00. In addition, the second earner pays the remainder of the claw-back of the Medicare levy exemption on her husband's income, which is \$142.53, as well as her own Medicare Levy and income taxes. Her total loss of benefits and taxes amount to \$9,501.25, and so her net income of only \$5,877.75. Her ATR is 61.78 cents in the dollar.

If the second earner increases her hours of work to earn \$25,000.00, she pays \$4,047.00 in income taxes and Medicare Levy on her own income. With the withdrawal of FTB (A) and FTB (B) and the Medicare Levy clawback on her husband's income, her effective net tax is \$11,723.13. Her ATR is 46.89 cents in the dollar.

Effective taxes at these levels leave the mother working full time with relatively little net income to pay for child care using government approved care. If she finds care in the informal sector she gets no benefits, like almost two thirds of working mothers. If she claims Part Rate of Child Care Benefit, this will cover less than the tax she pays on the additional income earned to pay for child care. If she stays home, she can provide full care herself, untaxed.

The structure of effective tax rates illustrated by these examples for single and two-earner families drives many of the results in the following sections. The comparison between the single and two-earner families with the same primary income also serves to highlight the fact that, with children present, home production is an alternative to market work. Market child care and related services are costly, and their implicit price may be lower when produced at home. As the data below will show, families make diverse choices in this respect. As a consequence, household income does not provide a reliable measure of family living standards because it omits the contribution of home production. Studies presenting results for the distributional effects of a policy change with respect to

household income can therefore be expected to give entirely misleading results.⁶ Primary income, which is used below, is likely to be a more reliable measure of family living standards.

3 2003-04 family tax system

The analysis of the 2003-04 family tax system in this section is based on data for a sample of 1098 “in-work”, two-parent families selected from the ABS 2000 Income Distribution Survey (IDS) on the following criteria: earnings are principally from wages and salaries; incomes are non-negative; and the primary earner is in full-time work⁷. All incomes are indexed to the 2003-2004 financial year.

The sample is split into three groups:

- *one-earner*;
- *two-earner, second earner part-time (PT)*; and
- *two-earner, second earner full-time (FT)*.

The split is defined on hours worked by the second earner, the parent with the lower earned income.⁸ The one-earner group contains all records in which the second earner reports zero hours or an earned income of less than \$2000. The two-earner PT group includes families with a second earner working less than 30 hours per week, and the two-earner FT group, those in which the second earner works for 30 hours or more per week.⁹

Table 4 presents the income and tax profiles of families across a quintile ranking by primary income, defined as the private income that the family would have if the second

⁶ The studies are particularly misleading because, as the data show, primary earnings are strongly concentrated around the median, and so a single income family with earnings in, say, the second quintile, can be reranked to the fourth quintile if the second parent switches from home to market work. In effect, a household income ranking confuses low wage two-earner families working long hours in the market place with much higher wage single-income families working fewer market hours and longer hours at home. For a detailed analysis of this issue, see Apps (2002).

⁷ Records for which the annual income of the primary is less than \$5000 are excluded.

⁸ The male partner is the primary earner in 91.42 per cent of families in the sample. As we would expect, the percentage of families with a female primary earner falls as primary income rises.

⁹ The three groups are of almost equal size.

earner withdrew from work.¹⁰ Taxes are calculated as the sum of income taxes and the Medicare Levy, net of FTB (A) and FTB (B).¹¹

Table 4 2003-04: Families in work

Quintile	1	2	3	4	5	All
<u>Full sample</u>						
Primary income \$pa	29865	43591	56028	70084	137413	67515
Primary hours pa	2261	2233	2342	2372	2451	2334
<u>One-earner</u>						
Tax \$pa	-2611	4287	9577	15942	48907	15732
ATR %	-8.74	9.83	17.09	22.75	35.49	23.10
<u>Two-earner PT</u>						
1 Second income PT \$pa	14644	18423	20670	20424	21288	19173
2 Second hours PT	546	689	849	832	757	737
3 Tax \$pa	6415	5941	6172	6407	7071	6423
4 ATR PT %	43.81	32.25	29.86	31.37	33.30	33.50
<u>Two-earner FT</u>						
1 Second income FT \$pa	25106	30868	40038	38203	50554	37801
2 Second hours FT pa	2031	2098	2074	2096	2109	2085
3 Tax \$pa	8714	9196	12441	12763	17632	12411
4 ATR FT %	34.71	29.79	31.07	33.41	34.88	32.83

For ease of presentation, the first two rows of the table report quintile data means for primary income and hours worked by the primary earner, for the full sample.¹² The third row shows the amount of income tax (including the Medicare Levy), net of family tax benefits, that families would pay if all had only one earner (ie, if all second earners withdrew from work). The next row reports the amount as an ATR of primary income. The quintile profile of ATRs suggests that the tax system is strongly progressive, rising from a negative rate of 8.74 per cent in the bottom quintile to a positive rate of 35.39 per cent in the top, with respect to primary income.

¹⁰ The three groups are distributed relatively evenly across a quintile ranking defined on this income variable because they have similar wage rates and demographic characteristics. The only exception is that one-earner families tend to be over represented in quintile 1, where there is also a higher percentage of families with a female primary earner as we would expect.

¹¹ The analysis does not incorporate the (means tested) Child Care Benefit. Its availability has been strictly limited by capping of places in formal care and is used extensively by one-earner families. It is therefore unclear how this benefit is distributed. 1998 HES data do not appear to reconcile with current expenditure.

¹² The private incomes and hours worked by primary earners do not differ significantly across the three groups in each of the quintiles.

The next section of the table presents results for the two-earner PT group of families and the final section, for the two-earner FT group. Within each section, row 1 gives the data means for the second earner's income and row 2, for hours worked by the second earner. Row 3 reports the additional tax paid on the second earnings and row 4 presents the amount as an ATR on the second earner's income from work. The profiles of ATRs for both groups are in stark contrast to the profile for primary income. The highest ATR of 43.81 per cent appears in the bottom quintile for the PT group, and ATRs for second earners average over 33 per cent.

The higher ATRs on the incomes of second earners in the lower quintiles are due to the withdrawal of FTB (B) on the income of the second earner. The rates are then sustained at around 30 percent across the middle of the distribution by the withdrawal of FTB (A) on combined family income, as illustrated in the preceding section. Large increases in these benefits, which were part of "A New Tax System" (ANTS), together with tax cuts for families with at least one high income earner, were introduced in the 2000 package of tax changes. The changes contributed significantly to increasing ATRs on the second income, with two important effects.

First, the package increased the tax-wedge between second earners and single individuals, apart from the very few with high incomes, and therefore moved Australia further towards a family tax system based on joint income. Most families now face a tax-wedge that is much larger than the estimate reported in the OECD study by Jaumotte (2003). For example, a second earner with an income of \$20,000 would, as a single individual, face a tax bill of \$2,680 pa, or an ATR of 13.40 per cent. Instead, with an average income of \$19,173, second earners in part-time work face an effective ATR of 33.50 per cent. This yields an estimate of around 2.5 for the "second earner/single individual" tax rate ratio, which is considerably higher than the estimate of 1.4 obtained by Jaumotte for a two-child family.

Second, by increasing the effective tax burden on second earners, the package reinforced the role of the earnings of married mothers as an important source of revenue and/or cost

saving. We can see this from the final column of Table 4. If all second earners withdrew from work, tax revenue from the families represented by the sample would fall by over a third, due to the loss of revenue of \$6,423 per family collected from the two-earner PT group and \$12,411 per family collected from two-earner FT group.

In effect, by raising taxes on working married mothers, the government has been able to collect additional revenue for the purpose of funding tax cuts at the top and larger family payments. This approach to tax reform, with its emphasis on shifting towards a more highly targeted family support and welfare system and a less progressive income tax, began in the 1980s despite extensive criticism in the economics literature, and has been pursued ever since. The approach has allowed successive governments to avoid placing reforms to correct the core problem with the Australian tax system, the excessive use of tax minimisation schemes, at the centre of the reform agenda.

4 2004-05 Budget changes

The 2004-05 Budget contains changes to the withdrawal rates of FTB (A) and FTB (B) and in income tax thresholds that can be expected to alter the results in the preceding section. We now estimate the tax and ATRs profiles that “in-work” families will face after July 1, 2005, due to the following:

- FTB (A) and FTB (B) changes: The 2004-05 Budget specifies a reduction in the withdrawal rate between the maximum and base rates of FTB (A) and in the withdrawal rate of FTB (B), from 30 per cent to 20 per cent. There is also an increase in the income threshold for FTB (B) to \$4,000. These changes take effect from 1 July 2004.
- Income tax thresholds changes: The Budget provides for an increase in the income threshold for the 42 per cent tax rate to \$58,001 in 2004-05 and \$63,001 in 2005-06, and an increase in the income threshold for the 47 per cent tax rate to \$70,001 in 2004-05 and \$80,001 in 2005-06.

Table 5 presents the tax and ATR profiles that families will face after July 1, 2005,¹³ incorporating these changes. Results are reported for the three family groups. Row 1 presents the average tax liabilities by quintiles of primary income for one-earner households. The change in tax is shown in row 2. The largest average gains go to quintiles 4 and 5. Nevertheless the changes make the tax-benefit system more progressive in terms of proportional rates with respect to primary income.¹⁴

Table 5 2005-06: Families in work

Quintile	1	2	3	4	5	All
<u>One earner</u>						
1 Tax	-3908	2370	7399	13079	46070	13505
2 Tax change	-1297	-1917	-2178	-2863	-2837	-2227
3 ATR %	-13.08	5.44	13.21	18.66	33.53	19.85
<u>Two earners PT</u>						
1 Tax	5693	6102	6467	6489	7364	6468
2 Tax change	-722	161	295	82	293	55
3 ATR PT %	38.88	33.12	31.29	31.77	34.59	33.74
<u>Two earners FT</u>						
1 Tax	8613	9709	13234	13278	17569	12776
2 Tax change	-101	513	793	515	-63	365
3 ATR FT %	34.30	31.45	33.05	34.76	34.75	33.80

The results for two-earner families show the amount of tax paid effectively by the second earner. All pay more tax, and therefore face higher ATRs, except for those in quintile 1 and the FT group in quintile 5. According to the Budget papers the aim of reducing the withdrawal rate of FTB (A) above the base rate, and of FTB (B), from 30 to 20 cents in the dollar is to lower EMTRs on the second earner in part-time work. However, the results for the PT families across quintiles 2 to 5 show that these measures have not been effective in achieving this outcome. The explanation for the higher rates is that the lower withdrawal rate of FTB (A) extends the taper across a wider band of second incomes. Under a rate of 30 cents in the dollar, FTB (A) increases the effective marginal tax rate of fewer part-time second earners. The results for full-time second earners are as we would

¹³ As in Australian Government (2004a), the FTB calculations do not include indexation increases that will apply from July 2004.

¹⁴ Note that extending the taper is costly. Since primary earners can only gain, the additional cost is financed disproportionately by second earners facing higher ATRs.

expect. The changes shift the tax burden from the primary to the second income earner within households across the middle of the distribution of primary income.

The \$37 billion spending on tax cuts, family assistance, and superannuation measures in the 2004-05 Federal Budget is described by the Treasurer as

“a further major installment in the ongoing reform of the Australian family assistance and tax system to help families raise their children, help them to balance their work and family responsibilities and improve rewards from work”.¹⁵

The results in Table 5 show that the additional family assistance and tax cuts are certainly consistent with the Government's ongoing tax reform agenda – that they are essentially “more of the same”. The major share of spending goes to families in which one parent withdraws from the workforce or opts for a minimal workforce attachment, and the largest gains go to those in the upper two quintiles, due the income tax cuts that apply above \$52,000 pa. This dual shift in the tax burden has, as noted earlier, been a priority of the Howard Government since it gained office, and was a central aim of the family tax changes in the 2000 ANTS package.

Assistance for low and middle wage families facing the greatest difficulties in trying to balance work and family responsibilities, those in which both parents have a significant workforce attachment, receive relatively little to no additional assistance. The 2004-05 Budget changes are designed to ensure that gains for two-parent families decline as the income of the primary earner approaches the middle of the wage distribution and as the labour supply of the second earner becomes significant. If, for example, a family has one child under 5 and each parent earns \$45,000 pa, their gains are zero. A family that can earn the same joint income with only one parent in work gains a \$2,195 tax cut. A further striking feature of the Budget is the minimal spending on additional child care places.

Other household groups with zero gains include singles who earn less than \$52,000 and couples without children in which both partners earn less than \$52,000 pa. These groups, together with two-earner families across the middle of the wage distribution, in effect

¹⁵ See Australian Government (2004a, p.2).

fund family assistance for one-earner families and the tax cuts at the top. It is important to see the distributional outcome from this perspective because the \$37 billion of spending on “more help for families” comes from the pockets of all Australians. Although according to the Budget papers no one loses, those who gain relatively little, or nothing at all, effectively suffer losses.

5 Is the system fair and efficient?

The answer to this question is an unequivocal “No”. A central assumption of public economics is that redistribution matters and, therefore, that achieving a more ethical distribution of living standards is a fundamental consideration in tax design.¹⁶ For efficiency, tax rates need to be structured to minimise behavioural responses to changes in net-of-tax wage rates or prices, in achieving a given redistributional outcome.

A tax-benefit system with the rate structure described in the preceding sections meets neither of these criteria. Not only is the system open to strong criticism on distributional grounds, its effective rate structure can be expected to have significant and large negative effects on female labour supply, due to high effective rates on the second income, especially when combined with limited access to affordable child care.

5.1 Efficiency effects

Empirical studies find that the labour supply of married women tends to be much more responsive to a change in the net wage than that of prime aged men. This result is easy to understand. As noted in previously, when there are young children present, the output of household production becomes a close substitute for market output. The most important example of this is child care, which can be provided at home or bought on the market. If the second earner, typically the mother on a lower wage, faces a high effective tax rate and quality child care is not available at an affordable price, she is likely to switch from

market to domestic work. This substitution contracts measured GDP and expands the domestic sector. Jobs go from the market place to the home. Employment and the tax base of the economy contract.

For efficiency, as already noted, tax rates need to be designed to minimise behavioural responses. In other words, consistent with the well established result known as the Ramsey rule, for efficiency tax rates should vary inversely with (compensated) price elasticities. High tax rates on second incomes under a joint tax system are inconsistent with the result. In contrast, the rate structure of a progressive individual income tax complies with the rule, by placing lower rates on the incomes of second earners known to have more responsive labour supplies, and so individual taxation has been shown to be superior to joint taxation on efficiency grounds.¹⁷

5.2 Distributional effects

A longstanding argument in support of joint taxation, and therefore of higher tax rates on the income of second earners, is based on the notion that horizontal equity requires the equal taxation of households with the same joint income.

The idea is fundamentally flawed because a parent who switches from working in the market place to working at home on the arrival of children is switching to the home production of close substitutes for market output. If she works in the market place she is taxed on her income, and she is also taxed on the market goods she buys with her income. By switching to home production she avoids income taxes and the GST. Thus, if the single earner household pays the same amount of tax as the two-earner household with the same joint income, there can be a severe problem of equity.

¹⁶ If distribution did not matter, governments could simply impose poll taxes which, by definition, are non-distortionary. Governments that have attempted to do this have usually lost office. For a formal, but accessible, exposition of these issues, see Stiglitz (2000).

¹⁷ That individual taxation is more efficient than joint taxation on Ramsey principles was first established by Boskin and Sheshinski (1983).

Note that this is also a limitation of a flat rate tax, but to a lesser degree. To see this, consider the case of two families with the same wage rates, non-labour incomes and demographic characteristics. If one family chooses to have one full-time earner and the other two, the latter contributes twice as much to tax revenue. If the revenue is used to finance a universal family payment (ie, we have a simple negative income tax), the two-earner family effectively subsidises the transfer to the one-earner family. Switching to a joint tax or family payment system increases the size of this subsidy, by raising effective tax rates on the second earner. In contrast, a progressive individual income tax reduces the size of the subsidy, by lowering effective tax rates on the typically lower income second earner. It is precisely because a two-earner family pays less tax than a one-earner family with the same joint income under a progressive individual income tax that it can be a fairer system.¹⁸

There is a further point to note. It is usual to define a joint tax (or income splitting) system as one under which combined incomes are taxed at progressive marginal rates. When joint taxation is introduced by a system of family benefits withdrawn on combined income, as in Australia, this produces an inverted U-shaped schedule of EMTRs. The highest EMTRs apply in the middle of the distribution of combined income, not at the top, as illustrated in Section 2 above.¹⁹

A clear result of the detailed design of the tax cuts and additional family assistance in the 2004-05 Budget is to move the family tax-benefit system closer to one of joint taxation under this type of schedule. Two strategies are used to close the gap between the amounts of tax paid by one and two-earner families with the same joint income. The first is to limit the tax cuts to individual incomes above \$52,000. This reduces the progressivity of the personal income tax, to shift the overall burden to lower wage workers and, therefore, to most working married women. Second, the FTB changes are structured to redistribute the tax burden more towards two earner-families with a more equal intra-family income split. The effects of both these strategies are evident in the cases of two-earner families

¹⁸ For a detailed technical analysis of these issues, see Apps and Rees (1999).

¹⁹ As noted previously, the same type of inverted U-shape EMTR schedule can be achieved by an EITC program (see Apps, 2002).

with a 50%-50% income split whose individual incomes are too low to gain from the tax cuts but whose joint incomes are too high to qualify for additional family tax benefits.

Even at joint incomes below the withdrawal thresholds for the base rate of FTB (A), there is a shift in the tax burden towards two-earner families. For example, in 2003-2004, the net tax paid by a single income family on \$60,000 with one child under 5 is \$12,017. A family with the same joint income and in which each parent earns \$30,000 from full-time work pays \$10,149 in tax. The effective tax on the second earner's income is \$10,849, and her ATR is 36.16 per cent. From July 1, 2005, the single income family's tax will fall by \$1,560 while that of the dual income family will fall by only \$600. With a net income of less than \$20,000, the second earner will not be eligible for the full amount of Child Care Benefit due to its withdrawal on joint income. From this example it is easy to see that it can be far more cost effective, at least in the short run, to switch to work at home.

Under this kind of tax reform, two-earner families across the middle of the distribution of primary earnings are again effectively funding tax cuts at the top, as well as compensating for revenue losses due to tax minimisation schemes at the upper end of the distribution of earnings and wealth. Obvious positive distributional outcomes of the 2004 Budget are the gains for families in quintile 1 and for families with a less significant workforce attachment in the middle of the wage distribution. But before applauding these outcomes it is important to keep in mind how they are being funded.

6 Female labour supply and fertility

An insight into the potential negative impact of family tax policy on female labour supply can be gained by comparing the decline in fertility in recent decades with the growth in the female labour supply over the same decades. A priori, we would expect to see the decline in fertility to be associated with a matching increase in female labour supply, due to the fall in demand for domestic work and child care with declining fertility. This has

not happened in Australia, a fact that is often obscured by reference to the overall female participation rate, which has increased quite dramatically.

That this reference is misleading is evident from the fertility, participation and employment rates for 1970 to 2000 shown in Table 6. Over this period the decline in the fertility rate was around 40 per cent. While the overall female participation rate trended upward by over 40 per cent, unemployment and part-time employment rates also trended upward. The rise in full-time employment was only around 20 per cent and in part-time employment, around 33 per cent.

Table 6 Fertility, participation and employment, 1970-1997

Year	1970	1980	1990	1997	2000
Fertility rate	2.86	1.90	1.91	1.78	1.75
<u>Female labour supply:</u>					
Female participation rate* %	46.5	52.7	62.1	63.7	66.1
Female employment rate* %	45.4	45.2	55.0	55.6	60.2
Female FT employment rate* %	**	29.4	33.8	32.8	35.7

*% of population aged 15-64 years ** Data not available

Even these figures are misleading because they obscure the dramatic decline in female labour supply that still occurs after the arrival of the first child. Despite the significant fall in average family size, the market hours of married mothers remain surprisingly low, due to the strong substitution of domestic for market work. This is evident in the time use data presented below. Much of the growth in full time female labour supply comes from the postponement of the first birth and, therefore, from the expansion of the life cycle phase in which women typically work full time.

6.1 Life cycle female labour supply

To identify the effects of the tax-benefit system on female labour supply before and after the arrival of children, the analysis to follow presents life cycle profiles of family labour

supplies based data for a sample of 1938 couples drawn from the ABS 1997 Time Use Survey (TUS).²⁰ The sample is split into six phases defined as:²¹

- Phase 1: the couple does not yet have children
- Phase 2: there are children of preschool age present
- Phase 3: the children are of primary school age
- Phase 4: the children are of high school age or have left school
- Phase 5: at least one partner is of working age but children have left home
- Phase 6: the partners are retired

Table 4 presents data means for the allocation of time to market and domestic work, and for total hours of work, across these phases. Columns 1 to 3 list the means for the male partner and columns 4 to 6, for the female partner. Figure 1 plots the labour supply means to produce profiles that show graphically the very dramatic decline in female hours with the arrival of children in phase 2. Female hours fall from around 80 per cent of male hours in phase 1 to less than 25 per cent in phase 2, and barely rise to more than 50 per cent of male hours at any later phase of the life cycle, even after the children have left home.

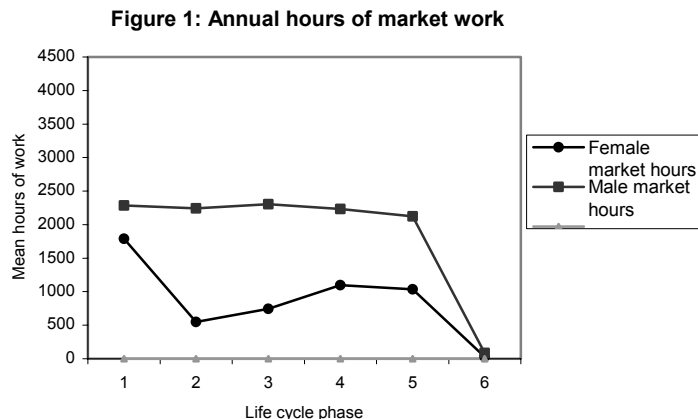
TABLE 7 Annual hours of market and domestic work pa*

Life cycle phase	Male hours		Female hours		# kids
	Market 1	Domestic 2	Market 4	Domestic 5	
1	2286	614	1789	1012	-
2	2241	1532	551	3590	2.01
3	2305	1421	745	2913	2.16
4	2232	989	1099	1927	1.62
5	2123	848	1035	1675	-
6	87	1415	27	1782	-
All	1784	1167	811	2169	

*Weighted 1997 TUS data means

²⁰ The time use data are collected for ten activity episode classifications comprising labour market activities and nine major categories of non-market activities (see ABS, 1998). Here, market hours are calculated as the sum of time allocations to all subcategories of labour market activities excluding travel to work and job search. Domestic work is computed as the sum of time allocations to the categories “domestic activities” and “purchasing goods and services”. Domestic child care is the category “child care/minding”. For further details, see Apps and Rees (2003).

²¹ The sample includes all couple income units except for those without children and in which the female partner is aged 40 to 45, on the assumption that these couples are likely to represent those who are unable, or have chosen, not to have children. The number of records in each phase is 211,336, 302, 342, 344, and 403, respectively.



From these profiles we can see that postponing the birth of the first child can be a major factor in the growth of full-time female employment, because it extends the phase in which both partners usually work full-time. In later phases, female labour supply (and also leisure) falls, due to substitution of work at home for market work. The data reveal that almost all of the additional domestic time involves child care, indicating a strong substitution from market work, as well as from leisure, to domestic child care by the female partner.²² The male partner also spends a considerable amount of time on child care but reduces leisure to do this, rather than switching from market work.²³

The preceding life cycle time use profiles conceal the high degree of heterogeneity in the labour supply of the female partner, which was evident in the analysis of one and two-earner households in the preceding sections. To illustrate this, we select a sample of in-work households from the TUS and partition the sample into two groups of equal size across phases 2 to 5 according to the female partner's usual hours of work. Households with zero to marginal female hours are labelled *type 1* and the remainder with more significant to full-time hours, *type 2*.²⁴

²² Of the average 3590, 2913 and 1927 female hours of work at home in phases 2, 3 and 4, 2253, 1447 and 336, respectively, are spent on child care.

²³ Of the average 1532, 1421 and 989 male hours of work at home in phases 2, 3 and 4, 876, 689 and 198, respectively, are spent on child care.

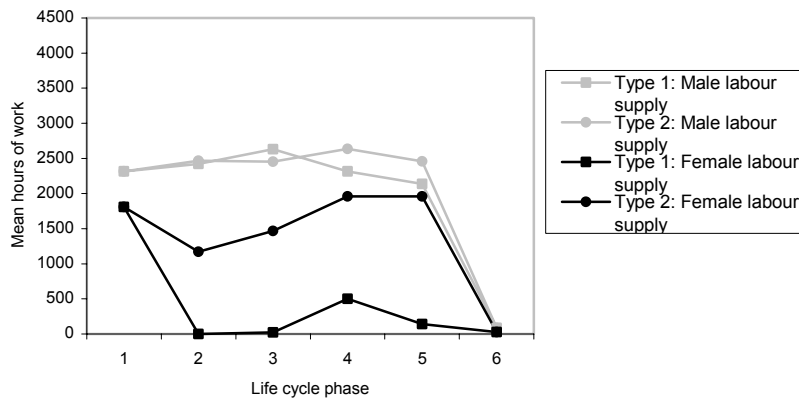
Table 8 presents data means for market and domestic hours with separate results for type 1 and type 2 households across phases 2 to 5. The labour supply profiles are plotted in Figure 2. They reveal the strong tendency of households to split into the two types. Note that the average number of children per household (final column) is much the same. The two types are also found to have similar wage rates and non-labour incomes. These

TABLE 8 Annual hours of market and domestic work, by household type

HH type	Life cycle phase	Male hours		Female hours		# kids
		Market 1	Domestic 2	Market 3	Domestic 4	
1&2	1	2314	554	1811	1014	-
	2	2419	1420	0	4023	2.07
1	3	2629	1246	22	3340	2.21
	4	2318	1002	501	2255	1.63
	5	2137	771	143	2043	-
2	2	2468	1551	1171	3140	1.82
	3	2455	1460	1466	2543	2.15
	4	2636	889	1959	1937	1.62
	5	2459	871	1962	1356	-
1&2	6	87	1415	27	1782	-

*Weighted 1997 TUS data means

Figure 2: Annual hours of market work by household type



²⁴ The sample is selected on the criterion that the male partner's usual hours of work exceed 25 per week and contains 204, 308, 276, 307, and 318 records in phases 1 to 5, respectively.

factors therefore cannot provide an explanation for the diversity in female labour supply and domestic work choices. An explanation can, however, be found in the tax-benefit system, in combination with limited access to high quality, affordable child care.

6.2 Life cycle taxes and benefits

Table 9 presents life cycle profiles of taxes and government indirect benefits by household type, using data for a matching sample of families drawn from the ABS 1998 Household Expenditure Survey (HES). The table also lists, in column 1 to 3, data means for household private income, female earnings and household saving. From the difference between the means across types it is clear that the additional private income of the type 2 household is derived almost entirely from the higher labour supply of the female partner. Moreover, this additional income is associated with a much higher level of saving - in other words there is a high propensity to save out of the second income. Column 4 lists the means for direct taxes net of direct benefits and column 5, for government indirect benefits.²⁵ The final column lists *net tax*, computed as the sum of all taxes net of all benefits.

TABLE 9 Taxes and benefits by household type* (\$pa)

HH type	Life cycle phase	H'hold priv. income 1	Female earnings 2	Saving 3	Direct taxes- direct benefits 4	Indirect benefits 5	Net tax ** 6	
1&2	1	68978	28279	8079	16520	3908	17505	
	2	45372	489	-2972	7176	12800	-922	
	1	3	53502	5123	1070	8896	17059	-3054
		4	64949	9710	-2754	13283	17425	1765
		5	59242	5814	3134	12501	5361	12566
2	2	66185	22300	3628	13262	11412	7188	
	3	67893	25953	3487	14208	16866	3166	
	4	86277	30418	5221	19760	16440	10061	
	5	76568	27740	8842	17365	4932	18513	

*Weighted 1998 HES data means **Includes indirect taxes

²⁵ The HES estimates of indirect government benefits cover non-cash benefits and services for education, health, housing and social security and welfare. For details of the calculation of these benefits, see ABS (2001).

The profile of direct taxes net of direct benefits (column 4) shows the gap between the amount of tax paid by the two household types across the working phases of life cycle after the arrival children. In phase 2, for example, type 1, in which only the male partner works in the market place, pays \$7176 pa whereas type 2 pays \$13262, almost twice as much, even though it has an additional income of only \$20,813 and works much longer hours. The higher level of taxation is due to income tax on the second earnings and loss of family benefits. The gap between the *net taxes* of the two types is even greater, because type 2 households pay more in indirect taxes and receives a slightly lower level of indirect benefits. Again for example, in phase 2 the type 1 household receives, on average, a transfer of \$922 pa. whereas the type 2 household pays \$7188 pa. in tax. The tax differential is over \$8,000 pa. Similar results hold for subsequent working phases.

There is a further anomaly in the system. From column 5 of the table it can be seen that, across the phases in which children are present, indirect benefits are at their lowest in phase 2. This is due to a much lower level of spending on child care and education in this phase. Families with children at school or in tertiary education receive by far the largest support - in the order of \$8,000 pa per family. This contrasts with an average spending of only \$1,093 per family on child care and education in the pre-school phase.²⁶

Thus type 2 households pay much higher taxes while receiving relatively little assistance for the cost of child care in phase 2. In addition, in the retirement phase, with higher levels of saving, they are less likely to be eligible for the income tested age pension. In effect, families with high a female labour supply save for their own retirement and pay higher taxes to finance transfers and pensions for those in which the female partner specialises in domestic work.²⁷

²⁶ The data means for indirect government benefits include medical costs. In phase 2 these cover the costs for the birth of a child. Indirect benefits in phase 2 also include \$4052 pa spending on education for school aged children who are also present in the household. Thus, when we subtract spending on health and school aged benefits, it becomes evident that the assistance for families with very young children in no way matches the resources allocated to those with older children.

²⁷ Quite extraordinarily, a recent report of the Australian Government (2004b) on demographic change describes the family tax system as “neutral” in its treatment of dual and single income families. The report states: “The Government has already introduced extensive changes to taxes and benefits to assist families.

It is important to see this highly unequal distribution of the tax burden between the two household types is an outcome of a policy agenda directed towards funding lower taxes at top and higher benefits at the bottom from the middle of the wage distribution. Under alternative reform agenda that focussed, for example, on base broadening, tax rates on low and middle wage two-earner families could be reduced without increasing rates on single-earner families. In other words, there is no necessary conflict of interest between the two groups, as is often implied. Rather, the conflict of interest is between families on low and average earnings and those in at the top of the distribution with access to tax minimisation schemes.

Neither household type can be expected to gain under this type of regime. Married mothers who withdraw from the market in the early child rearing phases can expect to face a lower wage in later phases, due to depreciation of their skills. This offers an explanation for the observed “persistence” of female labour supply behaviour,²⁸ that is, for the observation that women who work in the early phases tend to continue doing so throughout the working age years of the life cycle. And those who do not return to work after the children have left home are very likely to be among those who did not work during the early child rearing phases.

The time use profiles in Table 7 indicate that parents work longer hours in total, particularly the mother, in the early child rearing phases to support their children. They are also found to cut back on consumption.²⁹ This evident suggests that parents tend to avoid using the capital market to smooth consumption and leisure over the life cycle, as predicted by the standard life cycle model. An explanation for this behaviour can be found in the data on borrowing available in the HES. These data indicate that many families in the early child rearing phases are already in the position of having to borrow short term at interest rates well above the lending rate, to finance long term contractual

Analysis has shown that the tax and social security system is neutral in its treatment of dual verses [sic] single income families. That is, the balance is about right.” The source of the “analysis” is not cited.

²⁸ See, for example, Shaw (1994).

²⁹ Consumption here refers to *full consumption*, computed as the sum of market consumption spending and implicit expenditure on domestic production. An estimate of adult full consumption can be obtained by

saving in the form of home ownership³⁰ and superannuation. Many are therefore likely to find that further borrowing for their children is too costly, and so they reduce their own consumption and leisure instead.

In this type of imperfect capital market, limited access to quality child care at an affordable price can have a particularly strong negative effect on female labour supply.³¹ Faced with high effective taxes and a relatively low female wage in phase 2 many families would need to borrow to finance the high cost of privatised market child care, or cut back further on their leisure and consumption, if the mother goes out to work. In an imperfect capital market, they face the possibility of running up a debt that exceeds the discounted value of the female partner's future wage income unless her wage rises sufficiently over the life cycle. But this is uncertain. Under these conditions it is not surprising to observe the postponement of the birth of the first child, and a decline in average family size. The conditions also offer an explanation for the dramatic decline in female labour supply after the arrival of children and for the high degree of heterogeneity in female hours across seemingly identical families who are making different assessments of the risks involved.

7 Concluding comment

This paper has shown that, after two decades of tax reform, the Australian system of family taxation now closely approximates one of joint taxation. The distributional effect of this has been to shift the overall tax burden disproportionately towards low and middle wage families working longer hours by having a second earner. The result is that, in terms of real tax burdens, a low to middle wage family with both parents employed full-

subtracting the costs of children, including home child care, for household full consumption. For details, see Apps and Rees (2003).

³⁰ Families have an overwhelming incentive to invest in owner occupied housing if, ultimately, they are to buy housing over their life time at an affordable (and potentially negative) user cost.

³¹ To appreciate the inefficiencies and consequent high cost of market child care, one need only consider the impact that government financial support, central planning and regulation has had on primary school care and education, and what would have happened to female labour supply and school attendance if that sector had been treated in the same way as child care.

time now effectively works much longer hours for the government than a higher wage single-earner family with the same family income.

Following the distributional analysis of family taxes and benefits, the paper has presented empirical evidence on the negative effects of the system on female labour supply, household saving and fertility, and on the distortionary impact of limited access to affordable child care. The results suggest that two decades of family tax reform and government neglect in the area of child care have contributed to population ageing and simultaneously contracted the growth of the tax base needed to avert an “ageing crisis”.

The analysis highlights the need for a change in direction, for a policy agenda that focuses on:

- Placing measures to cut revenue losses from the use of tax minimisation schemes at the centre of the tax reform agenda.
- Developing a high quality, efficient public sector child care system. The economic justification is as a second best solution to the distortionary effects of an imperfect capital market, together with wage uncertainty.
- Reversing the trend towards joint taxation and an inverted U-shaped effective tax rate scale. The simulation model in Apps (1991), using wage elasticities estimated on Australian data, shows that reforms supporting individual taxation at progressive rates would result in an increase female labour supply and in the tax base required for funding pensions.
- Eliminating FTB (B). This would help to achieve a more “neutral” treatment of single- and two-earner families, and a more progressive tax system with respect to two-parent family living standards.

Consistent with the findings of theoretical and empirical studies for OECD countries, reforms of these kinds can be expected to increase female labour supply, GDP and fertility,³² and to improve the fairness of the tax-benefit system.

³² See Apps and Rees (2004).

References

Australian Bureau of Statistics, (2003), *Survey of Income and Housing Costs, Australia, 2000-01*, Confidentialised Unit Record file Technical Paper, ABS Cat No 6541.0.30.001, Canberra.

Australian Bureau of Statistics, (2001), *Government Benefits, Taxes and Household Income*, ABS Cat No 6537.0, Canberra.

Australian Bureau of Statistics, (1998), *Time Use Survey, Australia, 1997, User's Guide*, ABS Cat No 4150.0, Canberra.

Australian Government, (2004a), *More Help for Families, 2004-05 Budget – Overview*, Canberra.

Australian Government, (2004b), *Australia's Demographic Challenges*, Canberra.

Apps, PF, (2002), Why an Earned Income Tax Credit Program is a Mistake for Australia, *Australian Journal of Labour Economics*, 5, 549-568.

Apps, PF, (1991), Tax Reform, Population Ageing and the Changing Labour Supply Behaviour of Married Women, *Journal of Population Economics*, 4, 201-216.

Apps, PF, and R Rees, (2004), Fertility, Female Labour Supply and Public Policy, *Scandinavian Journal of Economics*, 106, forthcoming (<http://www.iza.org>, DP 409)

Apps, PF, and R Rees, (2003), Life Cycle Time Allocation and Saving in an Imperfect Capital Market, NBER Summer Institute Session on: *Aggregate Implications of Microeconomic Consumption Behavior*, Boston, July 21-25. (<http://www.iza.org>, DP 1036).

Apps, PF, and R Rees, (1999), On the Taxation of Trade Within and Between Households, *Journal of Public Economics*, 73, 241-263.

Boskin, MJ, and E Sheshinski (1983), Optimal Tax Treatment of the Family, *Journal of Public Economics*, 4, 1-25.

Heckman, JJ, (1993), What has been learned about labor supply in the past twenty Years?, *American Economic Review, Papers and proceedings*, 83, 116-121.

Jaumotte, F, (2003), *Female Labour Force Participation: Past Trends and Main Determinants in OECD Countries*, WP No 376, Economics Department, OECD.

Shaw, K (1994), The Persistence of Female Labor Supply: Empirical Evidence and Implications, *Journal of Human Resources*, 29, 348-378.

Stiglitz, JE (2000), *The Economics of the Public Sector*, WW Norton & Co.