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Why an Earned Income Tax Credit Program is a Mistake for Australia

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ABSTRACT

This paper examines the distributional and efficiency effects of an Earned Income Tax Credit (EITC) program of the kind being strongly advocated for Australia by a number of economists. The paper presents an empirical analysis of the Family Tax Credit proposed by the Australian Labor Party at the time of the 1998 election, as a case study. The results show that, due to the structure of effective tax rates implied by the program, introducing such a system would lead to a large shift in the overall burden of taxation to low and median wage two earner families. Drawing on the findings of empirical research on behavioural responses to taxes, the paper goes on to explain why the program can also be expected to lead to a fall in labour supply and household saving. Thus there is reason to be critical of the impact of the policy both on economic growth and on equity of the income distribution.

Keywords: Taxation, Welfare

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1 Introduction

An Earned Income Tax Credit (EITC) program, modelled on that of the US, is being strongly advocated by economists Professors Peter Dawkins, John Freebairn, Ross Garnaut, Michael Keating and Chris Richardson. In an open letter to the Prime Minister in October 1998, the “Five Economists” proposed the program as part of a “wage-tax trade-off” plan to reduce unemployment. Specifically, they recommended a freeze in award wage safety net increases for four years to increase the demand for unskilled workers, together with the introduction of an EITC program.

The economists argue that the provision of “in-work” benefits through an EITC program is a more effective “equity instrument” than award wage rises. A key feature of the program is that the credit is withdrawn on the basis of *household* rather *individual* earnings, so that only low wage earners in low income families benefit. Thus the “Five” propose a cut real in wages for the low paid with compensation limited to those in “working poor” families. As a labour market policy, the plan is based on the widely disputed assumption that lowering the minimum wage will lead to a significant reduction in unemployment, by increasing the demand for labour.¹

The Five Economists also argue that an EITC program will allow simplification of the tax-transfer system and its unification into a single administrative system. They see it as a first step towards combining, in the longer term, taxes and transfers into a simple negative income tax comprising a universal credit financed by a flat rate of tax on income. As summarised by Dawkins et al. (1997, p.3), “... [a] negative income tax is a very viable option, if introduced with care. It should not require very high marginal tax rates at high levels of income. In the short to medium term a 45% marginal rate on high incomes looks achievable and as time goes by this should be able to be brought down steadily. A staged implementation process would be appropriate. The first stage would be to unify the administration of the tax and transfer system.” Garnaut (1999) makes this same point, describing the final step in the process as “the complete integration of the tax

¹ For a discussion of this issue, see Watson (1999).

and social security systems into a negative tax”, with the tax rate set “at 36 per cent...” around 2006.

An EITC program has the following characteristic structure. A credit is phased-in at a specified rate over an initial range of earned family income and then withdrawn, usually at a faster rate, across a higher range of earned family income. The size of the credit may vary with the number of dependent children. The Australian Labor Party adopted the idea at the time of the 1998 Federal election and presented a program entitled Family Tax Credit (FTC) in its tax policy platform document.² The FTC contained a maximum credit of \$3,000 per annum (p.a.) for one child, plus \$300 for each additional child up to a maximum of \$3,900 p.a. The credit was to be phased in at a rate of 10 cents for every dollar of family earned income up to a plateau of \$10,000 p.a., and thereafter phased out at a rate of 15 cents in the dollar.

This paper investigates the distributional and efficiency effects of an EITC program based on the ALP’s proposal, using data from the Australian Bureau of Statistics (ABS) 1997 Income Distribution Survey (IDS). According to ALP estimates, its program would assist 1.43 million two-parent families and 165,400 sole parent families. In other words, of all families assisted, almost 90 per cent would be two-parent families. From these estimates it is clear that the program represents a major reform of the tax-benefit system as it applies to two-parent families. For this reason, the analysis focuses on the effects for these families.

The results show that an EITC scheme, either as part of a “wage-tax trade-off” or as a stand alone program, represents a policy direction that is not in the interests of most Australian families. The reasons lie in its distributional and efficiency effects. When combined with a freeze on award wages, many families working long hours to avoid poverty are not compensated under an EITC program, and so for these families there is no *trade-off*. As a stand-alone scheme, the program is shown to lead to a shift in the overall distribution of the tax burden towards the low and middle wage families under a

² See ALP (1998).

revenue neutral reform, unless it is combined with a more progressive schedule of tax rates on individual incomes. This is clearly not the intention.

The efficiency losses arise from the behavioral effects of higher marginal tax rates for second earners that are a key feature of the reform. When combined with a lower minimum wage, the fall in net pay for many second earners can be substantial. Based on estimated behavioural responses using ABS data, reforms of this kind are predicted to have strong negative effects on female labour supply and household saving. The loss of jobs from these effects can be expected to outweigh the gains, if any, from an increase in the demand for unskilled labour in response to a lower minimum wage.

The paper is organised as follows. Section 2 begins with a discussion of three persistent fallacies that underlie a number of widely held but misdirected views on tax-benefit reform and which now underpin the discussion of tax credits. Section 3 outlines the ALP proposal and identifies changes to the structure of effective tax rates that it implies. Section 4 presents an empirical analysis of these changes and their distributional effects, based on data for a sample of two-parent families in work drawn from the ABS 1997 IDS file. The section also presents results for a revenue neutral reform that combines the ALP's scheme with a marginal tax rate schedule specifying a maximum rate of 36 per cent, as proposed by Garnaut (1999). Section 5 discusses supply-side effects. Section 6 contains a concluding comment.

2 Tax reform fallacies

Prior to the early 1980s, Australia combined a highly progressive individual income tax system with universal family allowances. The overall rate structure of the system was fundamentally sound but there was an urgent need for reforms to reverse revenue losses from the excessive use of tax minimisation schemes.³ 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 highly targeted family benefit system and a

³ Obvious examples include the use of trusts (see, for example, Quiggin, 1997) and negative gearing.

less progressive personal income tax, together with a shift towards regressive indirect taxes and charges.⁴ These reforms have the effect of funding welfare payments to a growing population of “working poor” families from revenue savings achieved by reducing entitlements across the middle of the distribution of household income. Since the last two decades have also seen a fall in the top marginal tax rate on income, the main winners have been households in which there is at least one highly paid member. The fundamental criticism of an EITC program is that it is “more of the same”. As the empirical analysis to follow will show, it is essentially a strategy for extending targeting further along the distribution of household income.

Arguments in support of this direction of reform are typically based on a number of pervasive and influential fallacies. Three of the most common are the following:

Fallacy 1: *The distributional effects of a reform can be evaluated in terms of changes in household income, adjusted by an equivalence scale.*

Fallacy 2: *The cost of welfare payments can be computed in terms of outlays on social security and the level of taxation required to finance the outlays.*

Fallacy 3: *Complexity in the rate structure of a tax-transfer system is undesirable and unnecessary.*

This section discusses each of these in turn, and the way in which they are used to promote a highly targeted welfare system and, more recently, the idea of an EITC program.

Fallacy 1

A central proposition of the Five Economists’ argument for their wage-tax trade-off is that the provision of “in-work” benefits through an EITC program is a more effective “equity instrument” than award wage rises. To support this proposition, Dawkins (2001) presents results from Richardson and Harding (1998) showing that low wage earners are not concentrated at the bottom of a decile ranking of households by equivalent income but, instead, tend to be spread throughout the distribution. These findings are interpreted

⁴ The approach is exemplified by the Howard Government’s (1998) plan for “A New Tax System”.

by the economists as evidence for the proposition that “living wage” increases are a “very blunt equity instrument”. They argue that the advantage of an earnings credit is that, unlike increases in the award wages safety net, it targets benefits to low wage earners in low income households. There are no benefits going unnecessarily to low wage earners in families not in the bottom deciles of household income.

The argument rests on Fallacy 1. The economists’ interpretation of the Richardson and Harding results assumes that living standard comparisons can be made on the basis of household income. It is now well established that this is a mistake.⁵ Family living standards and household income, with or without an equivalence scale adjustment,⁶ are poorly correlated, particularly in the case of two-parent families.

One of the most important reasons for this is that parents with the same number of children, in the same phase of the life cycle and with the same wage rates and non-labour incomes, make very different choices regarding the way in which they provide for their children. In some families one parent works in the market place while the other, typically the mother, specialises in providing child care and domestic services at home. In other families, both parents work in the market place and buy in child care and related services. This heterogeneity in the labour supply and domestic work choices of mothers can be explained by the fact that, with the presence of children, the outputs of domestic and market production become close substitutes. As a result, a small difference in domestic productivities can lead to diverse choices.⁷ Under these conditions, studies that use household income to make living standard comparisons confuse low wage two earner families working long hours with higher wage single earner families enjoying a much higher standard of living due to the additional consumption they derive from household production. Many of the two earner families spread across the lower and middle deciles

⁵ The same mistake can be found in the large number of studies. Examples include the negative income tax analysis in Dawkins et al. (1997) and the reporting of distributional outcomes for a tax credit by deciles of weekly income unit disposable income in Dawkins et al. (2000). The ALP’s (1998) analysis of its FTC program presents distributional outcomes by family income, as does the Howard Government’s (1998) document showing the distributional effects of “A New Tax System”.

⁶ For a critique of equivalence scales, see Apps and Rees (2002).

⁷ For a formal analysis, see Apps and Rees (1999a).

of household income are found at the bottom of a ranking defined on a more accurate measure of living standards.

Empirical research shows that errors of this kind are large in studies of inequality based on household income. ABS data clearly indicate that, after controlling for wage rates and demographic characteristics, Australian families divide broadly into *single earner households*, where typically the mother specialises almost entirely in domestic work, and *two earner households* in which her labour supply is significant, approaching that of the male partner in the upper half of the distribution. To obtain reliable estimates of the distributional effects of policy reforms it is essential to take account of this heterogeneity. This can be demonstrated by comparing rankings of the two family types by household income and by the income of the male partner, using data for a sample of families in which the male partner is in full time work and has the higher wage.⁸

Table 1 presents quintile rankings defined on these two income variables for a sample of two-parent families drawn from the ABS 1997 IDS file.⁹ The sample is selected on the criteria that the male partner reports a wage or salary income from full time work and is aged between 20 and 60 years, and at least one dependent child under 16 years (or a student dependent under 18 years) is present.¹⁰ The sample contains a total of 1,207 family records, representing a weighted sample of 1,227,180 records, and is split into single earner and two earner families on the basis of employment status in main job. The single and two earner samples comprise 534 and 673 records, respectively.

Rows 1 and 5 of the table report quintile means for annual household income and the male partner's annual income, respectively. Rows 3 and 4 show male and female annual hours of market work for the ranking by household income and rows 7 and 8, for the

⁸ Under these conditions, and assuming assortative pairing, the latter income variable can be taken as an indicator of family living standards.

⁹ All income variables are indexed to 1999/2000 dollars.

¹⁰ In addition, the sample is restricted to records reporting income primarily from wages and salaries, in order to exclude records with income data reflecting tax avoidance, for example by negative gearing, or records classified as sole traders for the purpose of tax avoidance.

Table 1 Families in full time work

Quintiles	1	2	3	4	5	Means
<u>Household income ranking</u>						
1. Household income \$p.a.	28641	46508	59851	75299	120568	66038
2. Single earner households (%)	82	58	37	25	23	44
3. Male hours p.a.	2150	2216	2291	2318	2466	2287
4. Female hours p.a.	306	637	977	1212	1310	887
<u>Male partner's income ranking</u>						
5. Male partner's income \$p.a.	22664	34444	43071	53746	93061	49700
6. Single earner households (%)	52	43	40	41	44	44
7. Male hours p.a.	2148	2158	2267	2356	2511	2287
8. Female hours p.a.	786	926	959	940	824	887

ranking by the income of the male partner. Row 2 reports the quintile distribution of single earner families by household income and row 6, by the income of the male partner. The key result is the conflict between these distributions. Household income concentrates single earner households in the lower quintiles, with only 23 per cent appearing in quintile 5, in contrast to 44 per cent in the ranking by the income of the male partner. From the data means for hours of work it can be seen that household income is strongly positively correlated with the market hours of the female partner. There is little variation in male hours across quintiles but female hours range from a mean of 306 in quintile 1 to a mean of 1,310 in quintile 5.

Time use data show that single earner families work fewer hours in the market place and spend correspondingly more time on work at home.¹¹ At any level of family income, they therefore enjoy a higher level of *full* consumption, defined to include domestic output as well as market goods. Because a household income ranking ignores domestic output, it implies, for example, that a single earner family on, say, \$60,000 p.a. for full time work (quintile 3) is no better off than a two earner family in which each parent works full time for \$30,000 p.a. If both families have young children, the two earner family must, at the very least, buy in market substitutes for child care and related services produced at home by the single earner family.

¹¹ See Apps and Rees (2001).

From the table it can be seen that a low wage two earner family, whose true position is in the lower quintiles, can be misrepresented as a relatively well-off family in an upper quintile, by using household income as the ranking variable. The potential for such a high degree error is due to the fact that the majority of workers earn around the median wage and the distribution of full time earnings is skewed to the right. Consequently, studies that report gains and losses of a reform by household income can give entirely misleading results.¹²

Fallacy 2

The idea that the cost of welfare can be measured simply in terms of outlays on social security, or the level of taxation required to finance the outlays, is a second fallacy that has driven the trend towards a highly targeted welfare system over the last two decades. Put simply, the argument is that a more targeted system represents a more efficient use of tax revenue, because tax dollars are directed to where they are most needed.

The same fallacy now underpins support for further targeting through an EITC program and appears in the discussion of a simple negative income tax system, comprising a guaranteed income financed by a flat rate tax on income, in Dawkins et al. (1997). The authors argue that a universal or guaranteed income would impose a “heavy burden” because it would require a tax rate in the order of 57 cents in the dollar. On the basis of this finding, they conclude that such a system “is unlikely to be the best solution, at least in the short run”. They go on to suggest, as an alternative short term solution, tax credits that taper out as incomes approach high levels. Thus they advocate an effective tax rate schedule with even higher rates at intermediate levels of income, in order to lower the rate at the top.

These ideas conflict with those of the mainstream tax reform literature in which the “cost” of a tax-transfer system is defined in terms of its *efficiency cost* estimated as a weighted sum of welfare losses arising from compensated behavioural responses to price

¹² It is interesting to note that the Howard Government (1998) and the ALP (1998) both emphasise the merits of their proposed reforms by reporting gains and losses by family income.

distortions. To evaluate the efficiency cost of a tax reform it is necessary to estimate the effects of changes in net-of-tax wages and prices on household decisions to work, save, invest in education, and so on. The level of tax revenue, or of spending on social security, does not provide a guide to the efficiency cost of a tax-benefit system. Both can depend arbitrarily on institutional arrangements for collecting revenues and making transfer payments. What matters is the structure of effective marginal tax rates (EMTRs). A credit that tapers out at lower income levels can give rise to greater efficiency losses than a progressive schedule of marginal tax rates (MTRs) if the labour supply of low income earners is sufficiently more responsive to changes in the net wage than that of high income earners. These issues are discussed in more detail in Section 5.

Fallacy 3

Numerous studies criticise the complexity of the existing tax-benefit system, arguing that complexity is both undesirable and unnecessary. However the idea that a well-designed tax-transfer system can have a simple structure, such as that of a negative income tax comprising a guaranteed income financed by a flat rate tax, can be rejected because it ignores the inevitable complexity of the “tax problem”. That complexity arises not only from well known information asymmetries that rule out lump sum taxation, but because in many cases the need for redistribution is a result of widespread market failure, particularly in the case of insurance and capital markets. Important examples of the former include the inherent limitations of the private sector to develop perfect insurance markets to cover risks associated with employment, health and retirement.

In a perfect capital market each individual, including a child, would be able to allocate their lifetime income optimally over the life cycle, by borrowing while young at a reasonable interest rate and repaying the debt at a later phase in the life cycle.¹³ This is clearly not possible for members of lower income families. Many of the problems that need to be addressed in tax design, such as poverty among children and among female single parents, are the result of capital market failure, together with distortions in the labour market that give rise to earnings inequality by gender. They are not the outcome

¹³ For a discussion of capital market failure in this context, see Apps and Rees (2002).

of individual choices made in a perfectly competitive environment. For these reasons, a well-designed tax system need not involve a trade-off between efficiency and equity but may simultaneously reduce inequality and improve the efficiency of the economy.

The search for a simple solution also ignores the complexities associated with varying family structure and the heterogeneity in market/domestic work choices discussed under Fallacy 1. For example, financing a guaranteed income by a flat rate of tax on income will give rise to horizontal inequities in the treatment of single and two earner families with the same wage rates and family responsibilities. This is because the two earner family in which both parents work full time contribute twice as much to the guaranteed income as a family in which only one parent works in the market place while the other works at home. Under these conditions, single earner families are subsidised by two earner families who may be no better off. Progressive marginal tax rates on individual incomes can partly address this problem, and can also be expected to improve efficiency by lowering MTRs on secondary earners with more responsive labour supplies.¹⁴ Thus, replacing a simple linear tax with a more complex progressive rate structure can achieve gains in terms of both efficiency and equity.

Thus, although pointless complexity is to be avoided, the complex issues that need to be considered in the design of a tax system imply corresponding complexity in the structure of the system itself. This is not to say that the existing tax-benefit system is without pointless complexity. To the contrary, many of the reforms in recent years directed towards reducing outlays on social security, by targeting benefits more tightly on household income, are open to this criticism. Even worse, many are open to the criticism that they increase inequality at a cost to efficiency.

3 Changes in tax rates implied by an EITC program

This section first of all describes in more detail the program set out in the ALP (1998) policy document and then identifies changes to the structure of average tax rates (ATRs)

¹⁴ See Apps and Rees (1999a,b).

and MTRs that it implies. The major change is shown to be an overall reduction in tax rates for primary earners and an increase in rates for secondary earners at relatively low income levels.

Table 2 shows the phase-in, plateau, and phase-out ranges of gross family earned income, together with the maximum credit, of the ALP's proposed annual Tax Credit. As already noted the maximum credit varies with the number of dependent children up to 16 years (or student dependents under 18 years) beginning at \$3,000 for one child, increasing by \$300 for each additional child, and reaching a maximum of \$3,900 for four or more children. The credit phases in at a rate of 10 cents for every dollar of family earned income up to a plateau of \$10,000, and then phases out at a rate of 15 cents in the dollar. Earned family income is defined to include total wage and salary income, and the positive business income of both parents together. Families with more than \$5,000 in annual unearned income are ineligible. The estimated cost of the program is around \$3 bn for a full year.

Table 2 Ranges of family income of the ALP's proposed annual Tax Credit

No of children	Phase-in at 10 cents	To maximum Credit of	Maximum Credit applies to plateau of	Phase-out at 15 cents
One	\$1-\$30000	\$3000	\$30000-\$40000	\$40001-\$60000
Two	\$1-\$33000	\$3300	\$33000-\$43000	\$43001-\$65000
Three	\$1-\$36000	\$3600	\$36000-\$46000	\$46001-\$70000
Four or more	\$1-\$39000	\$3900	\$39000-\$49000	\$49001-\$75000

The program implies two key changes: (i) a new schedule of MTRs on personal income, and (ii) a change in the tax base to which MTRs apply. The second is crucial. Australia has a personal income tax system based on individual incomes. The specification of family income as the base for the phase-in and phase-out rates represents a shift towards a system of joint income taxation.

The effects of (i) can be illustrated by comparing the existing schedule of MTRs with the new schedule that would apply if all households had only one earner. Under this condition, the fact that the phase-in and phase-out rates are based on family income

would not be important, other than in terms of incentive effects. Introducing the ALP's FTC program would be equivalent to replacing the existing schedule of marginal rates with a new set of schedules, where the relevant schedule for a particular family depended on the number of children. Table 3 illustrates the implied changes in the schedule of MTRs for single earner families with one dependent child. Columns 1 and 2 of the table list the taxable income bands and respective marginal tax rates that applied in the 1999-2000 financial year. Columns 3 and 4 give the taxable income bands and the new schedule of MTRs that would apply under the FTC program.

Table 3 **Single earner families**

1999-2000 income tax scale		ALP's FTC program	
Taxable income band	MTR (%)	Taxable income band	MTR (%)
1	2	3	4
\$0-\$5400	0	\$0-\$5400	-10
\$5401-\$20700	20	\$5401-\$20700	10
\$20701-\$38000	34	\$20701-\$30000	24
		\$30001-\$38000	34
\$38001-\$50000	43	\$38001-\$40000	43
		\$40001-\$50000	58
\$50000+	47	\$50001-\$60000	62
		\$60000+	47

Under the new schedule, families on relatively low incomes face lower MTRs while those in an interval further along the distribution face higher rates. Since the available empirical evidence suggests that low income earners tend to have responsive labour supplies, we could expect an overall positive effect on labour supply. Moreover, since gains accrue to those with incomes below \$60,000, the reform as reported has obvious distributional merits. Such outcomes are emphasised by the Five Economists. However, if lower marginal rates are offset by lower wages, these gains may not be realised.

From column 4 it can be seen that the program produces a profile of steadily increasing MTRs with a sharp drop at \$60,000+. Under the new marginal rate schedule the highest rates apply to incomes from \$40,000 to \$60,000, and not to the highest incomes as under the existing schedule. This feature of the reform raises a number of concerns that are not immediately obvious because the program is unfunded and therefore appears to provide

gains for all families. Presenting results for an unfunded program can obscure the fact that what matters is the change in the overall distribution of the tax burden. Results need to be derived for a revenue neutral reform to avoid this problem. Under the constraint of revenue neutrality, it is immediately obvious that, in addition to the higher rates on incomes from \$40,000 to \$60,000, there must be higher rates somewhere else along the distribution, to fund the lower rates at the bottom.¹⁵ If, as argued by the Five Economists, the aim is to reduce the top marginal rate in the future, then this rules out higher rates at the top, and so the reform must imply even larger rate increases across the middle of the distribution.

We now turn to the tax rate effects of (ii), the shift in the tax base from individual to household income. Consider a two earner family with one child and both parents in working full time to earn \$30,000 p.a. each. The income tax bands and MTRs for each partner under the 1999-2000 income tax schedule are shown in Table 4, columns 1 and 2,

Table 4 Two earner families

	1999-2000 tax rates MTR (%) Primary & second	FTC program MTR (%) Primary	FTC program MTR: (%) Second
Taxable income band 1	2	3	4
1. \$0-\$5400	0	-10	0
2. \$5401-\$10000	20	10	20
3. \$10001-\$20700	20	10	35
4. \$20700-\$30000	34	24	49
Family income	ATR (%)	ATR (%)	ATR (%)
5. \$30000	20.74	10.74	30.74

rows 1 to 4. Under the 1999-2000 system both partners face the same marginal rates, and therefore the same ATR of 20.74 per cent of their individual incomes of \$30,000 p.a. (shown in row 5). Columns 3 and 4 give the new MTRs under the FTC program, for primary and secondary income partners, respectively. The program lowers marginal rates for the primary earner but raises them for the second earner. The result is that the

¹⁵ The higher effective rates could, of course, be hidden in a number of ways, for example, by bracket creep.

primary earner's ATR falls from 20.74 per cent to 10.74 per cent, and that of second earner rises to 30.74 per cent, almost twice that of the primary earner. This type of change in tax rates is characteristic of a shift from individual to joint taxation.¹⁶

4 Impact on families in work

The analysis to follow examines the impact of the tax rate changes described above for families in work, using data from the ABS 1997 IDS file. A sample of families is selected from the file on the criteria that at least one parent reports wage or salary income from part time or full time work and at least one dependent child under 16 years (or a student dependent under 18 years) is present. The latter criterion is for the purpose of consistency with the eligibility requirements specified for the ALP program. The sample is also limited to families in which the primary earner is aged between 20 and 60 years.¹⁷ The sample contains 1,248 records, and represents a weighted sample of 1,244,537 records. The sample contains 568 (46 per cent) single earner families and 680 (54 per cent) two earner families.

Results are presented for quintile rankings of families by the income of the primary earner,¹⁸ as an indicator of family welfare, and by household income.¹⁹ Table 5 reports these rankings, showing data means for primary income in row 1, secondary income in row 2 and household income in row 5. The distribution of each household type across the rankings is shown in rows 3 and 6. Row 4 of the table reports the percentage of households in which the primary income partner is female. The concentration of single earner households with a female primary earner in the lower quintiles is due in part to

¹⁶ Note that, consistent with the definition of a joint tax system, both partners face the same MTR on an additional dollar. However, under a system of joint taxation, partners from families with identical wage rates and demographics do not face the same MTR if they differ with respect to type. Consider, for example, two families in which each partner can earn \$30,000 p.a. for full time work. The MTR faced by partners of a single earner family is only 24 cents in the dollar, as shown in Table 4, whereas that faced by a two earner family is 49 cents in the dollar.

¹⁷ Again, the sample is also restricted to records reporting income primarily from wages and salaries.

¹⁸ The income of the primary earner, rather than that of the male partner, is used as the ranking variable because the sample now includes families in which the male partner may be out of the work. In these cases the female partner will be the primary earner.

¹⁹ Again, all income variables are indexed to 1999/2000 dollars.

defining household type on current employment status, an endogenous variable. If there is significant casualisation of the workforce, “true” two earner families in which the male partner is temporarily out of work will be classified as single earner, and the incomes of these families will reflect the typically low earnings of female partners.²⁰ This is evident in the results. Although there are only 12 per cent of families with a female primary earner, quintile 1 contains 26 per cent of such families, while quintile 5 contains only 3 percent. Apart from this effect, the ranking of the two household types by primary income tends to match the ranking by male partner’s income in Table 1.

Table 5 Families in full time and part time work

Quintiles	1	2	3	4	5	Means
<u>Primary income ranking</u>						
1. Primary income \$p.a.	22570	34749	43509	53856	94170	49700
2. Secondary income \$p.a.	7755	13526	15897	19157	17467	14756
3. Single earner households (%)	62	45	37	38	44	46
4. Female primary earners (%)	26	12	14	9	3	12
<u>Household income ranking</u>						
5. Household income \$p.a.	26424	44727	58486	74027	119053	64456
6. Single earner households (%)	84	58	37	25	23	46

The 1999-2000 tax-benefit system is taken as the pre-reform reference for evaluating the program. Table 6 reports the quintile distribution of taxes and ATRs under this system, by primary income and household income. Taxes are computed as *net taxes*, given by the sum of direct taxes on income, including the Medicare levy, less family assistance and government cash benefits. The ATR is computed as the ratio of taxes to private income in each quintile, expressed as a percentage of private income. The tax on primary income shown in row 1 is computed for each record as the amount of tax the primary income partner would pay if the secondary income partner had zero income. The tax on the second income is then computed as the additional tax the family pays on that income, holding primary income constant. Row 2 shows the average tax on the income of secondary earners in all families. If we take two earner families alone, the average tax

²⁰ In Table 1 the ranking is defined on the male partner’s income, and the sample is restricted to households

computed for the secondary earner is, of course, much higher. The result is given in row 3. The profiles of ATRs for each partner shown in rows 4 and 5 are computed for all families. Row 7 gives the ATR with respect to household income, for all families.

Table 6 1999-2000 tax-benefit system

Quintiles	1	2	3	4	5	Means
<u>Primary income ranking</u>						
<u>All families</u>						
1. Tax on primary income \$p.a.	-3090	3989	8240	12769	31073	10563
2. Tax on secondary income \$p.a.	2559	3769	4233	5395	4736	4138
<u>Two earner families</u>						
3. Tax on secondary income \$p.a.	6088	6188	6322	7872	7544	6864
<u>All families</u>						
4. ATR on primary income (%)	-14	15	19	24	33	21
5. ATR on secondary income (%)	33	28	27	28	27	28
<u>Household income ranking</u>						
6. Tax \$p.a.	-2003	7754	12222	18067	37651	14704
7. ATR (%)	-8	17	21	24	32	23

As we would expect, taxes on primary income are progressive, with ATRs rising from -14 per cent to 33 per cent. Overall, primary earners pay an average of \$10,563 p.a. in tax on an average private income of \$49,700 p.a., and therefore have an ATR of 21 per cent. In contrast, secondary earners on a much lower average income of \$14,756 p.a. pay \$4,903 p.a. in tax, which gives an ATR of 28 per cent. Although the personal income tax base is individual income, cash transfers are targeted on household income, and so the existing system already resembles one of joint taxation, with secondary earners facing higher marginal and average rates of tax than primary earners at the same income level. The overall result is that two earner households who, on average, may be no better off than single earner households, contribute more to tax revenue at any given level of primary income, particularly in the middle of the distribution. This effect of the tax-benefit system is lost in the results for the household income ranking because low wage two earner families working longer hours are placed in the same quintile as single earner families on higher wages, as illustrated previously.

in which he is employed full time, to avoid this endogeneity problem.

Table 7 shows the new distribution of taxes and ATRs under the ALP's FTC program in the same format as Table 6. The program is unfunded, and so all families in receipt of the credit, in part or in full, are shown to gain, while none lose. According to the household income ranking, gains accrue to families in quintiles 1 to 3, and so the reform appears to make the tax system much more progressive. The ATR falls from -8 to -16 per cent in quintile 1 and remains at 32 per cent in quintile 5. However, the results conceal a crucial effect of the reform, which is to widen the gap between the ATRs of primary and secondary earners, particularly in the middle of the distribution of primary income. In effect, the program is a mechanism for introducing large increases in tax rates on secondary earners in quintiles 2 and 3. Because the program is unfunded, it is not immediately apparent that this implies a major shift in the overall tax burden towards two earner families in these quintiles of the primary wage income distribution.

Table 7 FTC Program - unfunded

Quintiles	1	2	3	4	5	Means
<u>Primary income ranking</u>						
<u>All families</u>						
1. Tax on primary income \$p.a.	-5258	851	5351	11242	30991	8599
2. Tax on secondary income \$p.a.	2702	4918	5767	6354	4774	4903
<u>Two earner families</u>						
3. Tax on secondary income \$p.a.	6805	8008	8589	9179	7603	8048
<u>All families</u>						
4. ATR on primary income (%)	-23	2	12	21	33	17
5. ATR on secondary income (%)	35	36	36	33	27	33
<u>Household income ranking</u>						
6. Tax \$p.a.	-4333	5111	11265	18013	37651	13502
7. ATR (%)	-16	11	19	24	32	21

To see more clearly that this is the case, consider what the cost of the program would be if secondary incomes were zero, or if taxes on secondary incomes were held constant. The unfunded cost can be computed as \$1,964 per family. This is the difference between \$10,563, the average tax paid by the primary earner under the 1999-2000 system, and \$8,599, the tax paid by the primary earner under the unfunded FTC program. However, the FTC program raises taxes on secondary earners by more than a third, and by far the largest average increase appears in quintile 3, with the next largest being in quintile 2.

For the sample of two earner families, the increases in tax across quintiles 1 to 5 are \$717, \$1,820, \$2,267, \$1307 and \$59, respectively. In effect, two earner families, particularly in quintiles 2 and 3, provide funding for the program which reduces the unfunded cost from \$1,964 to just under \$1,200 per family. This large shift in the overall burden of taxation to these families becomes even greater under a revenue neutral reform that simultaneously lowers the top marginal tax rate.

Table 8 presents a revenue neutral reform, in the same format as the preceding two tables. For the purpose of highlighting the long term goal emphasised by the Five Economists, the revenue neutral reform specifies a top marginal tax rate of 36 cents in the dollar, as proposed by Garnaut (1999). The reform is defined by allowing the income tax rates on bands above the threshold to vary, subject to the constraints of revenue neutrality and a top rate of 36 cents in the dollar, and ignoring behavioural responses. All other elements of the 1999-2000 tax-benefit system are unchanged. To achieve revenue neutrality, a rate of just over 30 cents in the dollar on the second income band is required.

Table 8 Revenue neutral reform

Quintiles	1	2	3	4	5	Means
<u>Primary income ranking</u>						
<u>All families</u>						
1. Tax on primary income \$p.a.	-3989	2493	6852	11996	27841	9009
2. Tax on secondary income \$p.a.	3219	5708	6650	7341	5542	5692
<u>Two earner families</u>						
3. Tax on secondary income \$p.a.	7131	9285	9899	10589	8825	9319
<u>All families</u>						
4. ATR on primary income (%)	-18	7	16	22	30	18
5. ATR on secondary income (%)	42	42	42	38	32	39
<u>Household income ranking</u>						
6. Tax \$p.a.	-2937	7055	13315	19976	36269	14704
7. ATR (%)	-11	16	23	27	30	23

According to the results for the household income ranking, the reform lowers ATRs in the bottom two quintiles, and so it seemingly has considerable distributional merit, even though the top quintile also gains. However, as before, the household income ranking gives a misleading picture. The primary income ranking reveals the two key effects of a

revenue neutral program incorporating a lower top marginal rate on income. First, all primary earners gain. Those towards the lower end of the distribution gain from the phasing-in of the credit and those on higher incomes, from the cut in the top marginal rate. And whereas the unfunded FTC program raises MTRs to 58 and 62 cents in the dollar on income bands \$40,001-\$50,000 and \$50,001-\$60,000, respectively, the funded scheme reduces these rates to 51 cents in the dollar, by lowering the top marginal rate on individual incomes to 36 cents in the dollar.

The second major effect of the reform is a shift in the tax burden from primary to secondary earners, consistent with the results for the unfunded program. Overall, the reform lowers the average tax on all primary earners from \$10,563 to \$9,009, and raises that on secondary earners from \$4,138 to \$5,692. ATRs are now 18 per cent for primary earners and 39 per cent for secondary earners. This result implies a substantial gain for single earner families financed by two earner families towards the middle of the distribution of primary income, with the largest contribution coming from second earners in quintiles 2 and 3. For the sample of two earner families, taxes paid by secondary earners in quintiles 1 to 5 increase by \$1,043, \$3,097, \$3,577, \$2,716 and \$1,281, respectively. If we subtract the loss for the secondary earner from the gain for the primary earner in each quintile, we find that two earner families in quintiles 1 to 4 face net losses of \$144, \$1,601, \$2,189 and \$1,944, respectively. In contrast, two earner families in quintile 5 gain by \$1951 because the losses for the secondary earner are more than offset by the gains for the primary earner in this quintile.

From these results it can be seen that an EITC program is essentially a mechanism for funding an expansion of welfare support for families facing falling wages and incomes due to labour market reforms, by raising taxes on low and middle wage families with both parents in work. And as a step towards a negative income tax system, as proposed by the Five Economists, it is also a mechanism for funding tax cuts for high income earners from the same source.

5 Supply-side effects

A central question on the supply-side effects of the program for two-parent families is whether positive behavioural responses by primary earners facing lower EMTRs will outweigh negative responses by secondary earners facing higher EMTRs. This section considers these labour supply effects and also the likely impact on household saving.

The findings of empirical research on labour supply have long indicated that married women as secondary earners tend to have much higher wage elasticities than married men. In a review article Heckman (1993) suggests that this result may be due to the fact that married women are represented disproportionately among workers on low wages and at the “extensive” margin or point of entry or exit to the workforce. Given the magnitude of the increases in MTRs for secondary earners indicated by the preceding analysis, the stylised results suggest that the negative labour supply responses of married women could strongly dominate any positive responses by primary earners facing lower EMTRs. This outcome is even more probable if the tax credit gains for low wage unskilled workers are offset by a fall in pay.

More recent work, such as Duncan, Giles and MacCrae (1999), has obtained relatively low wage elasticity estimates for second earners. Using these estimates, the authors find that while there are negative effects on the labour supply of two-parent families, they are small and, overall, are offset by more strongly positive effects on the labour supply of single parents. However, the results need to be interpreted cautiously. The wage elasticities in Duncan et al. are estimated for a model of the family that does not take account of domestic child care as a substitute for bought-in child care. The latter is treated as a cost of working while home child care is defined as leisure. This asymmetric treatment of child care at home and in the market place, which was not a feature of many of the earlier studies, can be shown to lead to an underestimate of the wage elasticities of secondary earners.

A number of studies have examined behavioural responses to the EITC program in the US. For example, Eissa and Hoynes (1998) analyse EITC expansions between 1984 and 1996. The authors find that the labour force participation of married men increased only slightly while that of married women fell by a full percentage point. The study concludes that the EITC program “effectively subsidises married mothers to stay at home”. Ellwood (1999) also finds a negative, although more modest, impact on the labour supply of married mothers. These studies may also underestimate wage elasticities for secondary earners because, following convention, the modelling framework they use does not fully integrate domestic production.

Much larger female wage elasticities are obtained for a model that explicitly incorporates domestic production and treats the output of work at home as a substitute for market output (Apps and Rees, 2001). The model is estimated on ABS data for couples²¹ to obtain wage elasticities for married women in five pre-retirement phases of the life cycle defined as:

- Phase 1: household members are of working age and do not yet have children;
- Phase 2: the household has children of pre-school age;
- Phase 3: the children are of primary school age;
- Phase 4: the children are of high school age or have left school;
- Phase 5: the adults are still of working age but the children have left home.

The results for are reported in Table 9. Separate estimates are presented for those in full time and part time work during phases 2 to 5.²² The most striking feature of the results is that the female wage elasticity rises dramatically with the arrival of children in phase 2 and stays relatively high until the children have left home in phase 5. Our explanation for this, and for the stylised differences by gender reported in the literature, is that, with the presence of children, market and domestic services become close substitutes, and so market and domestic work are close substitutes for married women as second earners.

²¹ The data are from the ABS 1993 HES, 1994 IDS and 1992 TUS. See Apps and Rees (2001) for details of the sample selection criteria.

²² Almost all women work full time before the arrival of children, and so we present a wage elasticity only for this case.

Table 9 Female wage elasticities and time allocations

Life cycle phase	1	2	3	4	5
Female wage elasticities					
1. Full time work	0.0531	0.2524	0.3345	0.3212	0.1254
2. Part time work	-	0.8604	1.0514	0.9248	0.5595
Hours of work: data means					
3. Female market p.a.	1481	507	737	1023	773
4. Female domestic p.a.	1244	3838	3149	2150	1830
5. Male market p.a.	1733	1734	1809	1733	1505
6. Male domestic p.a.	805	1503	1317	928	910

This thesis is also supported by the data means for male and female time allocations to market and domestic work, reported in rows 3 to 6 of Table 9. From the life cycle profiles of time allocations it can be seen that pre-retirement male hours of market work are relatively constant across all phases, apart from a decline in the final phase. The tendency for male partners to work the same hours before having children as they do after children arrive suggests that, consistent with estimates of their wage elasticities, they tend not to substitute domestic for market work. In contrast, female market hours vary widely and inversely with domestic hours, indicating a high degree of substitutability with the presence of children. A crucial implication of these results is that when mothers switch from market to domestic production, there is a loss of jobs because they take market work with them. Overall, the market economy contracts.

Using the estimated wage elasticities to simulate the effects of a change in tax rates of the kind implied by an EITC program we find that there is not only a strong negative effect on the labour supply of second earners but also on household saving. This is not surprising given that the data show that household saving is undertaken mainly by two earner families at any given wage level. Table 10 reproduces the results for the different household types across phases 2 to 5, and for couples in full time employment in phase 1.

On average, household saving by single earner families is negative up till the final pre-retirement phase. In contrast, household saving by two earner couples is, on average, positive in all phases. By far the greater share of household saving is undertaken by two

²³ See Apps and Rees (2001).

earner households in full time work. These differences between the saving behaviour of single and two earner households were found to carry across a quartile ranking defined on full income. Thus, it is not only high income two earner households that save, but two earner households throughout the wage distribution.

Table 10 Saving in 1993 \$p.a. and numbers of children

Life cycle phase	1	2	3	4	5
Single earner households					
Saving \$p.a.	-	-1352	-780	-1924	1872
Number of children	-	1.96	2.75	1.73	-
Two earner households					
PT: Saving \$p.a.	-	2444	1768	3900	7540
Number of children	-	1.81	2.46	1.79	-
FT: Saving \$p.a.	4524	9024	9022	7228	9282
Number of children	-	1.68	2.22	1.75	-

Table 10 also reports the number of dependent children in each phase, by each household type, to show that demographic variation cannot provide a satisfactory explanation for the variation in the domestic/market work choices and saving decisions of the two household types. These results strongly suggest that an EITC program will have significant disincentive effects on both labour supply and household saving and, in the long term, on economic growth. Moreover, the labour supply disincentive effects can be expected to reinforce gender differences in labour supply behaviour which, in the Australian context, is an underlying cause of the high level of unemployment and poverty among female single parent families.

6 Concluding comment

The purported objective of an EITC program, to provide low skilled workers with an incentive to accept jobs rather than remain unemployed, may appear quite laudable, though the fact that this is viewed as a concomitant of reductions in market wage rates for these workers means that they are not expected to become better off as a result. This paper has presented an analysis of gains and losses across families ranked by household income and by primary earner income, based on the ALP's (1998) proposed FTC as a

case study. The results indicate that few families will be made better off, and that many will be made relatively worse off, under an EITC scheme. Using ABS unit record data, the study has identified the scheme as a strategy for extending targeting of welfare benefits further along the distribution of family income, as wages for unskilled workers fall. The results show that the overall effect of this strategy is to shift the rising welfare cost of labour market reforms to low and middle wage two earner families.

The paper has also presented an analysis of the impact of a reform combining an EITC program with a cut in the top marginal tax rate on income, as proposed by the Five Economists. From the distribution of gains and losses it is clear that both components of the reform are effectively financed by two earner families at the lower end and middle of the wage distribution. Only households at the very top of the wage distribution are found to gain. Drawing on the results of recent empirical work on behavioural responses to taxes, reforms of this kind are predicted to have strong disincentive effects on household labour supply and saving, and to lead ultimately to a reduction in aggregate output and economic growth. These findings suggest that an EITC program would be a costly mistake for Australia.

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