Who Benefited from the Deduction-Inclusion Regime for Taxing Child Support?

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PRÉCIS
Avant le budget fédéral de 1996, les montants versés en pensions alimentaires étaient déduits du revenu du parent payeur pour fins d’impôt, et ajoutés au revenu du parent bénéficiaire, en vertu du régime de déduction/inclusion. Ce transfert de revenu pouvait augmenter le revenu après impôt des deux parties si le taux marginal d’imposition de la partie payante était supérieur au taux de la partie bénéficiaire. Ainsi, le traitement fiscal des pensions alimentaires donnait lieu à une forme de fractionnement du revenu. Le gouvernement accordait une subvention qui n’aurait pas été prévue dans un régime de non-déduction/non-inclusion des pensions alimentaires. Cet article présente une analyse théorique et expérimentale de l’incidence de cette subvention, c.-à-d. qu’il examine la distribution de la subvention entre les parents payeurs et les parents bénéficiaires de pensions alimentaires. L’article montre que pour déterminer la distribution de la subvention, la variable critique est le taux utilisé pour calculer le montant brut des pensions alimentaires afin de tenir compte de l’impôt. Ce taux détermine la majoration du montant exigé de pensions alimentaires qui tient compte de l’inclusion de ce montant dans le revenu imposable du parent bénéficiaire et de sa déduction du revenu du parent payeur pour fins d’impôt.

Si le taux de majoration se situe entre le taux marginal d’imposition du parent payeur et celui du parent bénéficiaire et que le taux marginal d’imposition du parent payeur est supérieur à celui du parent bénéficiaire, le payeur aussi bien que le bénéficiaire auront davantage d’argent après impôt aux termes d’un régime fiscal de déduction/inclusion qu’en l’absence d’un pareil régime. Un règlement élaboré en common law, et confirmé dans la décision *Thibaudeau*, stipule que le montant de

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pensions alimentaires peut être majoré du taux marginal d’imposition du parent bénéficiaire. Si ce règlement est observé et appliqué correctement, il laisserait au parent bénéficiaire le même montant après impôt que si le montant de pensions alimentaires n’était pas soumis à l’impôt payable par celui-ci. Selon les résultats de l’analyse théorique, ce règlement implique que tout l’avantage de la subvention fiscale résultant d’un régime de déduction/inclusion irait au parent payeur, sans que le parent bénéficiaire n’en retire aucun avantage.

L’article examine un échantillon de quelques causes jugées en cour entre 1986 et 1995 pour déterminer l’incidence du régime fiscal de déduction/inclusion. En général, les cours ordonnaient une majoration et essayaient de fonder la majoration sur le taux marginal d’imposition du parent bénéficiaire. Toutefois, en faisant ce calcul, elles sous-estimaient invariablement le taux marginal d’imposition et, par conséquent, la majoration était généralement inférieure aux impôts supplémentaires que le parent bénéficiaire devait payer sur le revenu provenant de la pension alimentaire ainsi majorée. Les parents bénéficiaires non seulement ne réussissaient pas à obtenir une part des économies fiscales, mais le plus souvent ils (elles) recevaient même moins d’argent après impôt que sous un régime de non-inclusion/non-deduction. En d’autres termes, les parents bénéficiaires de pensions alimentaires, qui sont en général des femmes, n’étaient pas avantagés par le régime de déduction/inclusion; en fait ils (elles) y perdaient dans la plupart des cas.

**ABSTRACT**
Before the 1996 federal budget, child support payments were deducted from the payer’s income and included in the recipient’s income. This shifting of income could increase the two parties’ aggregate after-tax income if the payer’s marginal tax rate was greater than the recipient’s rate—child support was, in effect, a form of income splitting. The government was providing a subsidy that would not have arisen under a system without inclusion and deduction of child support payments.

This article presents a theoretical and empirical analysis of the incidence of this subsidy; that is, it examines the distribution of the subsidy between payers and recipients of child support. It is shown that the critical variable in assessing the distribution of the benefit is the rate used to gross up the payments in order to take tax into account. This rate determines the increase in the child support amount to account for the income inclusion to the recipient and the income deduction to the payer.

If the gross-up rate falls between the payer’s marginal tax rate and the recipient’s rate, and the payer has a higher marginal tax rate than the recipient has, then both the payer and the recipient will have more money after tax under a system of inclusion and deduction than they would have in the absence of such a system. A rule developed at common law, and confirmed in the Thibaudeau decision, states that the child support amount should be grossed up by the recipient’s marginal tax rate. This rule, if followed and applied correctly, would leave the recipient with the
same after-tax amount as he or she would have if child support was not taxable to the recipient. From the theoretical results, this rule implies that the entire benefit of the tax subsidy provided by a deduction-inclusion system will be received by the payer—the recipient will receive no benefit.

The article examines a sample of court cases from the period 1986 through 1995 to determine the actual tax incidence of the deduction-inclusion system. The courts generally provided a gross-up, and they usually attempted to base the gross-up on the recipient’s marginal tax rate. In making this calculation, however, they routinely underestimated the recipient’s marginal tax rate. Hence the actual gross-up was usually less than the additional taxes that the recipient owed on the child support amount as a result of the gross-up. Recipients of child support not only failed to receive a share of the tax savings but usually had even less after-tax money than they would have had under a system without tax recognition for child support. In other words, recipients of child support, who are usually women, were not advantaged by the deduction-inclusion system and were in fact disadvantaged in most cases.

**INTRODUCTION**

The tax authorities in a number of western countries, including Denmark, Germany, Ireland, Norway, and Portugal, include child support amounts in the recipient’s income and deduct them from the payer’s income in determining the two parties’ respective tax liabilities. Canada followed this policy from 1942 to 1996. In reaction to the Supreme Court decision in *Thibaudeau*, and after intense debate and controversy, tax recognition for child support payments ended for orders imposed or agreements entered into after April 1997. In general, the deduction-inclusion regime continues to apply to orders imposed or agreements entered into before May 1997.

Who benefited from the deduction-inclusion regime? One conclusion is indisputable—the tax cost of the deduction to the federal government and the provinces was greater than the tax revenue from the income inclusion (by $410 million in fiscal year 1996-97). In general, therefore,

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1 In addition, the United Kingdom provides a tax deduction for the payer of child support but no taxable income inclusion for the recipient. See Catherine S. Bobbett, ed., *Taxation of Individuals in Europe* (Amsterdam: International Bureau of Fiscal Documentation) (looseleaf).

2 *Thibaudeau v. Canada*, [1995] 2 SCR 627. Although the government won the case, the decision raised the public profile of this issue and contributed to the pressure for change.

3 The 1996 budget also reduced judicial discretion through the creation of guideline payment amounts, but the effect of that change is outside the scope of this article. For more details on the new child support regime, see Canada, Department of Justice, *Federal Child Support Guidelines: Reference Manual* (Ottawa: the department) (looseleaf) or Glenn Feltham and Alan Macnaughton, “Child Support and the Non-Tax Costs of Tax-Planning Strategies” (1997), vol. 45, no. 3 Canadian Tax Journal 417-50.

the combined after-tax income of payers and recipients was greater under the deduction-inclusion regime than it is now. Thus the deduction-inclusion regime benefited some members of society at the expense of society at large. A more controversial issue is that of the division of the benefits between payers and recipients. Did both parties share in the benefits, or did one party lose under the deduction-inclusion regime and the other party win? 

As to the benefit-sharing question, two views have been expressed. The first view is that the existence of the deduction-inclusion tax regime did not influence the size of child support payments. Consequently, payers benefited because they received a tax deduction and recipients lost because they paid tax on the income. This view, that the determination of child support payments was not affected by the payments’ tax treatment, is consistent with the original intent in introducing the deduction-inclusion system in 1942. If this view reflects how the courts determined child support awards, the deduction-inclusion system would have generally hurt recipients and helped payers. Given this view, the result of the abolition of this system in 1996 was that “middle and high-income custodial parents and their families were big winners.”

The second view is that child support amounts were influenced by the existence of the deduction-inclusion regime—that is, the courts responded to this tax treatment by increasing or “grossing up” child support payments. As we demonstrate below, the choice of one gross-up method rather than another would have had a significant effect on the results. A gross-up method that provided only a small increase in the payment would have made the recipient worse off than he or she would have been under a regime without inclusion and deduction. A large increase, however, might have made the recipient much better off. Similarly, the payer might have been either better off or worse off, depending on what gross-up was applied. We demonstrate below that if the payer’s marginal tax rate was greater than the recipient’s there was a gross-up range within which the deduction-inclusion system would have made both parties better off.

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5 One can extend proposition 1 below to show that it was possible for both parties to lose if there was a tax penalty and if the marginal tax rate used for gross-up purposes was less than the recipient’s marginal tax rate but greater than the payer’s marginal tax rate.

6 It is important to note, however, that at that time most recipients did not earn enough income to pay tax—the taxation of the recipient was therefore not a significant issue. See the McLachlin dissent in *Thibaudeau*, supra footnote 2.


8 This outcome can be seen as an application of the contractual perspective of Myron S. Scholes and Mark A. Wolfson, *Taxes and Business Strategy: A Planning Approach* (Englewood Cliffs, NJ: Prentice Hall, 1992). Any increase in payments that occurs as a result of the deduction-inclusion system can be thought of as an “implicit tax” on the payer and an “implicit subsidy” to the recipient. The contractual perspective takes into account these implicit effects as well as the explicit effects of a tax saving to the payer and a tax cost to the recipient.
Adherents of the view that the courts responded to the tax treatment of support payments by grossing up the payments tended to believe that the deduction-inclusion regime primarily benefited the recipient. For example, a court submission by the Department of Finance assumed that all of the tax cost of the deduction-inclusion system went toward increasing the after-tax income of the recipient. Thus an alternative view of the 1996 abolition of the deduction-inclusion regime is that it has left most recipients with less money to spend on the children than they would have had under a continuation of the old regime.

In academic terms, the benefit-sharing question is really a question of tax incidence: who received the $410 million government subsidy? The answers to most incidence questions are determined by market factors alone. For example, a standard survey of tax-incidence theory demonstrates that the change in a product’s price when it becomes subject to an excise tax is a function only of the product’s elasticities of demand and supply; legal rules, such as whether the tax is imposed on the buyer or the seller, are not relevant to incidence. In the present context, however, incidence is determined not by market factors, but rather by the law—that is, by the family law system. This is so because unlike most economic transactions the payment of child support is not primarily a free-will action. Typically, family law requires that child support is payable in all cases, even if the custodial parent has the higher income. Therefore the incidence of the taxation of child support depends on a non-market factor—how the family law system responds to the tax treatment of these

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9 Nathalie Martel, “Submission to the Tax Court of Canada re Irene Fisher v. Her Majesty the Queen,” Department of Finance, 1994. However, the submission makes this point through a numerical example rather than a direct statement that this was the general practice.

10 Margaret Wente, “The New Score on Child Support,” The Globe and Mail, March 9, 1996. Of course, whether the extra income would actually be spent on the children is a separate question, one that depends on the sharing of income with the custodial parent’s family. On income sharing, see Shelley A. Phipps and Peter S. Burton, “Sharing Within Families: Implications for the Measurement of Poverty Among Individuals in Canada” (February 1995), 28 Canadian Journal of Economics 177-204.

11 Laurence Kotlikoff and Lawrence Summers, “Tax Incidence” in Alan Auerbach and Martin Feldstein, eds., Handbook of Public Economics, vol. II (Amsterdam: North-Holland, 1987). On the other hand, some studies of tax incidence have pointed to the importance of non-market factors. Edgar K. Browning and William R. Johnson, in The Distribution of the Tax Burden (Washington, DC: American Enterprise Institute for Public Policy Research, 1979), dispute the traditional view that sales taxes are regressive by arguing that any increase in product prices caused by a sales tax is offset by the increase in government transfer payments that results from the transfers’ inflation-indexing provisions. Anwar Shah and John Whalley, in An Alternative View of Tax Incidence Analysis For Developing Countries, Working Paper no. 3375 (Cambridge, Mass.: National Bureau of Economic Research, June 1990), contend that personal income taxes in developing countries may not be progressive if lax enforcement of tax laws results in little tax being paid by high-income individuals. Ravi Batra and Hamid Beladi, in “Regulation and the Theory of Tax Incidence” (1993), vol. 48, no. 3 Public Finance 329-49, find that “fair rate of return” regulation in important sectors of the economy changes the incidence of the corporate income tax.
payments. Family law may require that payments be increased (grossed up) to take into account the tax consequences of the payments, and it may specify exactly how this gross-up is to be calculated. Thus the tax incidence of child support is primarily determined in a non-market setting.\textsuperscript{12}

The purpose of this article is to determine who benefited from the deduction-inclusion tax regime as it existed before the Thibaudeau decision, which occurred very shortly before the 1996 budget. Besides being of academic and social interest, this determination is also important in policy terms, for three reasons: (1) child support orders imposed and agreements entered into before May 1997, which affect at least half-a-million payers and recipients,\textsuperscript{13} continue in effect; (2) many people remain unconvinced of the merits of the new non-recognition regime; and (3) as are mentioned above, many countries either currently have a deduction-inclusion regime or may be considering one.

The organization of the article is as follows. The following section analyzes the distribution of the benefits of a deduction-inclusion regime under different assumptions about the tax gross-up procedure involved in determining the child-support award and the marginal tax rates of the payer and the recipient. We use algebra in this analysis in order to be precise about the assumptions involved and the consequences of those assumptions. This section exposes as a fallacy the common belief that the critical question about the adjustment of child support awards for taxation is whether or not taxes are taken into account; it is apparent that how they are taken into account is equally important.

The third section uses a sample of court cases from the period 1986 through 1995 to examine empirically the incidence of the taxation of child support in the period before the Thibaudeau decision and the 1996 budget. Child support awards were not grossed up in at least one-quarter of the cases in the 1986-1992 period; in the 1993-1995 period, however, we could identify no cases in which the courts failed to apply a gross-up. The view that child support awards were not affected by the tax system is not supported—gross-ups were applied. How did the courts gross up the awards? In the vast majority of cases, the courts attempted to leave the recipient spouse indifferent between a regime with income inclusion and a regime without inclusion. If the calculation of the tax gross-up was performed properly, recipients would receive no benefit from the deduction-inclusion system. Payers would receive the entire benefit. We find, however, that the situation for recipients was actually worse than this. In

\textsuperscript{12} Although there could be effects on labour supply and saving produced either directly by the tax provisions or indirectly by the induced change in child support payments, these effects are secondary to the non-market family law effect discussed in this article.

\textsuperscript{13} Feltham and Macnaughton, supra footnote 3, at 432 estimate that in 1997 there were 388,000 payers and an equal number of recipients. Owing to expiry and variation of orders and agreements, one would expect the number of people subject to the deduction-inclusion regime to decrease over time.
almost all cases, the gross-up was not sufficient to pay the additional taxes owing on the grossed-up child support amount. Recipients of child support not only failed to receive a share of the tax savings but usually had even less after-tax money than they would have had under a system without inclusion and deduction. In other words, they received a negative share of the $410 million government subsidy.

The final section of the article quantitatively analyzes the tax-incidence issue through simulations that use a Department of Justice database of child support awards. We find that the repeal of the deduction-inclusion regime in the 1996 budget lowered the after-tax income of the 49 percent of payers whose marginal tax rates exceeded those of the recipients by an average of $544, or slightly less than 2 percent of after-tax income. In contrast, payers whose relative marginal tax rates were lower than the recipients’ rates experienced an average gain of $426.

An appendix to the article examines from a normative perspective the splitting of the tax benefits that arise from a deduction-inclusion system for child support. It shows that commonly accepted principles of fairness in both family law and tax law lead to a splitting of these benefits between the two parties that is very different from the splitting generally imposed by family court judges.

THEORY

The Basic Model

Assume that a child support “award” of $A$ per period would be determined by the courts, or agreed upon by the two parties, if the tax system did not recognize child support—that is, $A$ would be the amount awarded if there were neither an income inclusion to the recipient nor a deduction to the payer. Alternatively, one can interpret this amount as the child support award before inclusion and deduction are taken into account (the amount before any gross-up is applied).\textsuperscript{14} If child support is deductible to the payer and taxable to the recipient, this award will be revised to an amount $AT$ (for “award including tax”) to take tax into account—this is the final child support payment amount. The after-tax cost of the award to the payer is therefore the final award $AT$ less the tax saving from the deduction. Similarly, the after-tax amount received by the recipient is the final award $AT$ less the tax cost of the income inclusion.

Computing the tax saving to the payer and the tax cost to the recipient requires a concept of a marginal tax rate. The most common concept is that of a point (or first-dollar) marginal tax rate, which can be defined as the increase in tax payable that results from a $1$ increase in income or the decrease in tax payable that results from a $1$ increase in deductions. This concept, however, is not appropriate here, since child support awards can be sizable and point marginal tax rates are often not constant over an

\textsuperscript{14} See the analysis of family law rules in the empirical section below for justification of this two-step determination of the child support award.
income interval; the taxpayer may, for example, move between tax brackets, or enter or leave the phaseout range of an income-tested tax credit. A more appropriate concept is that of the interval marginal tax rate, which is the marginal tax rate computed for a discrete increase in income or deductions.\textsuperscript{15} Let us therefore define the recipient's interval marginal tax rate, \( t_R \), as the increase in total personal income tax payable divided by the amount of the award. Similarly, let us define the payer’s interval marginal tax rate, \( t_P \), as the decrease in total personal income tax payable divided by the amount of the award.

Given these definitions, let us consider the change in the payer’s disposable income that results from the introduction of a deduction-inclusion system. This is the amount of the original award \( A \) less the after-tax cost of the final award. The after-tax cost is the amount of the final award less the value of the tax saving from the child support deduction, or \( A^T - t_P A^T = A^T (1 - t_P) \). Similarly, the change in the recipient’s disposable income is the after-tax amount of the final award, \( A^T (1 - t_R) \), less the amount of the original award \( A \). Hence the movement from a non-recognition system to a deduction-inclusion system results in changes in the disposable incomes of payer and recipient (denoted as \( \Delta P \) and \( \Delta R \) respectively) of

\[
\Delta P \equiv A - A^T (1 - t_P), \quad \Delta R \equiv A^T (1 - t_R) - A. \tag{1}
\]

Without loss of generality, let us assume that the child support award in the deduction-inclusion world is determined by calculating the child support award that would apply in a non-recognition world and then dividing it by \( 1 - \hat{t} \), where \( \hat{t} \) is a parameter that can be specific to the particular couple involved.\textsuperscript{16} In other words, the final award is determined by applying the gross-up procedure:

\[
A^T = \frac{A}{1 - \hat{t}}. \tag{2}
\]

Since the marginal tax rate \( \hat{t} \) is always less than one, the final award \( A^T \) will be larger than the original award \( A \).

Solving equation 2 for \( A \) and substituting into equation 1 yields new expressions for the changes in the disposable incomes of the two individuals:

\[
\Delta P = A^T (t_P - \hat{t}), \tag{3}
\]

and

\[
\Delta R = A^T (\hat{t} - t_R). \tag{4}
\]

\textsuperscript{15}On the point-interval distinction, see Gregg A. Esenwein and Donald W. Kiefer, “CRS Report for Congress: Marginal Tax Rates: What Are They? How Significant Are They?” Tax Notes Today [database online], September 3, 1993.

\textsuperscript{16}For example, if the initial award is $1,000 per month and the marginal tax rate used for gross-up purposes, \( \hat{t} \), is 25 percent, the final award will be $1,333 per month ($1,000 \times 1/(1 - 0.25)).
In other words, the payer’s disposable-income change is the final award multiplied by the difference between the payer’s marginal tax rate and the marginal tax rate used in the gross-up procedure. Similarly, the recipient’s disposable-income change is the final award multiplied by the difference between the marginal tax rate used in the gross-up procedure and the recipient’s marginal tax rate.

The sum of the disposable-income changes in equations 3 and 4 above is the government’s contribution (in the form of forgone revenues) to child support, which may be written as $G$. This is the amount of the final award less the difference between the marginal tax rate of the payer and the marginal tax rate of the recipient:

$$G = (t_P - t_R)A_T.$$  \(5\)

If the payer’s marginal tax rate is greater than the recipient’s rate, the value of the deduction to the payer is larger than the tax cost of the income inclusion to the recipient. From equation 5, this outcome implies that $G$ is greater than zero and thus that there is a tax subsidy from the government. Conversely, if the recipient’s marginal tax rate is greater than the payer’s rate, $G$ is less than zero and there is a tax penalty.

**Better Off or Worse Off?**

It is commonly thought that if $G$ is positive both parties are better off under the deduction-inclusion system than they would be in its absence. In fact, although a positive value for $G$ is a necessary condition if both parties are to be made better off, it is not a sufficient condition. Equations 3 and 4 lead to the following proposition, which demonstrates that the changes in the two parties’ disposable incomes also depend on the gross-up rate, $\hat{t}$:17

**Proposition 1**: The introduction of a deduction-inclusion system

(a) makes both parties better off only if there is a tax subsidy and the marginal tax rate used for gross-up purposes is between the recipient’s marginal tax rate and the payer’s marginal tax rate;

(b) makes at least one party worse off if there is a tax penalty;

(c) makes the payer indifferent if the marginal tax rate used for gross-up purposes is the payer’s marginal tax rate;

(d) makes the recipient indifferent if the marginal tax rate used for gross-up purposes is the recipient’s marginal tax rate; and

17 An alternative way to present this result is in terms of a Pareto improvement, which is defined as a change that makes both parties no worse off than before and at least one party better off. The proposition is then that the introduction of a deduction-inclusion system is a Pareto improvement (that is, $\Delta P \geq 0$, $\Delta R \geq 0$ and at least one inequality is strict) if and only if $t_R < t_P$ and $t_R \leq \hat{t} \leq t_P$, a Pareto improvement that makes both parties better off (that is, $\Delta P > 0$ and $\Delta R > 0$) if and only if $t_R < \hat{t} < t_P$, a change that makes at least one party worse off (that is, $\Delta P < 0$ or $\Delta R < 0$) if $t_R > t_P$, and a change that leaves both parties indifferent (that is, $\Delta P = \Delta R = 0$) if and only if $t_R = t_P = \hat{t}$.
(e) makes the recipient worse off if the marginal tax rate used for
gross-up purposes is less than the recipient’s marginal tax rate.

Part a of the proposition demonstrates that use of a deduction-inclusion
system will not necessarily make both parties better off. To be precise, it
will make both parties better off only in the presence of a particular
pattern of marginal tax rates (the recipient’s rate must be less than the
payer’s rate) and a particular set of family law rules (the rate \( \hat{t} \) chosen for
the gross-up must be greater than the recipient’s marginal tax rate and
less than the payer’s marginal tax rate).

Figure 1 illustrates this point. The vertical axis is dollars and the hori-
zontal axis is the gross-up rate. This diagram depicts the government
subsidy situation, in which the subsidy \( G \) is always positive (that is, in
which the marginal tax rate of the recipient is less than that of the payer).
As the gross-up rate increases (that is, as it moves toward the right), the child
support payment increases (see equation 2 above) and hence the disposable
income of the recipient (\( \Delta R \)) increases, the disposable income of the payer
(\( \Delta P \)) decreases, and the government subsidy increases.\(^\text{18}\) Note that there
is a range of the gross-up rate \( \hat{t} \) in which both the \( \Delta P \) and \( \Delta R \) curves are
above the horizontal axis; in other words, both parties will be made better
off if the gross-up rate is in the appropriate range (that is, if it is greater
than \( t_R \) and less than \( t_P \)).

Part b of proposition 1 states that the payer, the recipient, or both must
be made worse off if there is a tax penalty (that is, if the recipient’s
marginal tax rate exceeds the payer’s). Figure 2 illustrates this point. The
curves for the disposable income of the recipient (\( \Delta R \)) and the disposable
income of the payer (\( \Delta P \)) are shifted down, with the result that there is no
range of the gross-up rate in which the outcomes for both parties are
positive. Since the government subsidy \( G \) is negative, at least one party
must be made worse off by a deduction-inclusion system.

Part c of the proposition shows that a gross-up rate equal to the payer’s
marginal tax rate will leave the payer indifferent about the introduction of
a deduction-inclusion system (see \( \hat{t} = t_P \) in figure 1). In other words, the
payment will increase by just enough to absorb the tax saving. Similarly,
part d shows that a gross-up rate equal to the recipient’s marginal tax rate
will leave the recipient indifferent (see \( \hat{t} = t_R \) in figure 1). In this case, the
payment will increase by just enough to give the recipient the amount \( A \)
(the original award, before the adjustment for taxes) after paying tax on
the award.

Parts c and d of the proposition together imply that if both parties have
the same marginal tax rate the deduction-inclusion system has no effect
on either party. Thus the family law problem of choosing a marginal tax
rate for the gross-up disappears under a “flat tax” in which everyone has
the same marginal tax rate. Of course, there would then be little point in

\(^{18}\) This is true because \( dG/d\hat{t} = A(t_P - t_R)/(1 - \hat{t})^2 > 0. \)
having a deduction-inclusion system—it would add complexity without achieving any ultimate policy purpose.

Part e shows that the recipient is made worse off if there is no gross-up or if the gross-up is inadequate. Any gross-up rate that is less than the recipient’s marginal tax rate will make the recipient worse off.

Sharing the Subsidy
We can extend our examination of the disposable-income implications of a deduction-inclusion system by considering the implications of different gross-up rates. Suppose that for a particular pair of parents there is a subsidy \( G > 0 \) that is split between the payer and the recipient in the shares

\[
t_p = \hat{t},
\]

\[
t_R = \hat{t}.
\]
The payer’s share of the subsidy is the amount by which the gross-up increases the payer’s after-tax income, divided by the amount of the subsidy. Similarly, the recipient’s share of the subsidy is the amount by which the gross-up increases the recipient’s after-tax income, divided by the amount of the subsidy. These shares sum to one ($\alpha_P + \alpha_R = 1$), since as we noted above the government subsidy is exactly the sum of the changes in the disposable income of the two individuals: $G = \Delta P + \Delta R$.

The following proposition, which is derived from equations 3 and 4, demonstrates for different gross-up rules which parties benefit and their respective shares of this benefit:

**Proposition 2:** If a subsidy exists, then

(a) all of the subsidy will be received by the payer, $\alpha_P = 1$, and none by the recipient, $\alpha_R = 0$, if the final award is determined by using a gross-up rate that is the recipient’s marginal tax rate; and

(b) all of the subsidy will be received by the recipient, $\alpha_R = 1$, and none by the payer, $\alpha_P = 0$, if the final award is determined by using a gross-up rate that is the payer’s marginal tax rate.

The appendix to this article provides the proof of this proposition and extends it to other gross-up rules.

These two gross-up rules have some appeal to policy makers because under a deduction-inclusion system neither rule makes either party worse off. The first rule increases the award by an amount that exactly equals the recipient’s tax liability on the award, and hence the after-tax amount received is the same as it would be in the absence of the deduction-inclusion system. Hence the recipient receives no benefit from the system: all of the subsidy goes to the payer and none to the recipient. 19

The second rule grosses up the award by the payer’s marginal tax rate rather than the recipient’s marginal tax rate. Under this rule, it is the payer who is indifferent to the tax change—the increase in the award exactly offsets the tax saving from the deduction for child support awards paid. In this case, all of the subsidy goes to the recipient and none to the payer.20

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19 Ross Finnie and Daniel Stripinis, in “The Economics of Child Support Guidelines,” Cahier 9306 (Quebec: GREPE, Departement d’Economique, Université Laval, April 1993), also arrive at this conclusion.

20 The same analysis applies if the two parties have marginal tax rates that result in a tax penalty rather than a tax subsidy—with the difference that what the parties share in this case is a penalty instead of a subsidy. For example, if the final award is determined by...
EMPIRICAL ANALYSIS

A child support award can be sought under either the federal Divorce Act or provincial family law legislation. Before May 1997, these laws did not provide significant guidance for the determination of child support awards. Awards were therefore determined at common law (that is, through the development of case law). An examination of this common law provides empirical evidence on the existence and the size of the gross-up rate \( \hat{r} \) and hence on the incidence of the taxation of child support.

Common Law Principles

According to standard legal texts, the landmark case for determining the quantum of child support before the changes introduced in the 1996 budget was a 1971 Ontario Court of Appeal decision, Paras v. Paras.\(^{21}\) This decision established the income-shares approach to the determination of a child support award, a two-step process.\(^{22}\) The first step was to split the estimated cost of caring for, supporting, and educating the children between the two parents in proportion to their respective incomes.\(^{23}\) Thus the parent who did not have physical custody of the child was assigned a proportion of the estimated child cost equal to his or her proportion of the total income of the two parties. This was the child support award before taxes were taken into account—that is, the amount \( A \) in the theoretical discussion above.

The second step was to gross up the award by an amount exactly equal to the amount of tax that the recipient was obliged to pay on the final child support award. This procedure was equivalent to choosing the recipient’s marginal tax rate as the gross-up rate. As we discussed above, the implication of using this gross-up procedure was that the entire amount of the subsidy went to the payer and none to the recipient. The recipient would be indifferent between income inclusion with this gross-up and a system without income inclusion.\(^{24}\)

\(^{20}\)Continued . . .

using a gross-up rate that is the recipient’s marginal tax rate, all of the penalty goes to the payer; the recipient’s after-tax income is unaffected by the gross-up procedure, and the payer is worse off.

\(^{21}\)Paras v. Paras (1971), 2 RFL 328 (Ont. CA).

\(^{22}\)See Terry W. Hainsworth, Divorce Act Manual (Aurora, Ont.: Canada Law Book) (looseleaf) and James C. MacDonald and Ann Wilton, Law and Practice Under the Family Law Act of Ontario (Scarborough, Ont.: Carswell) (looseleaf).

\(^{23}\)Much effort has been devoted to determining the cost of children for different income levels, family sizes, and so forth. For a discussion of alternative economic models, see Federal/Provincial/Territorial Family Law Committee, The Financial Implications of Child Support Guidelines Research Report (Ottawa: the committee, May 1992) and Ross Finnie, Child Support: The Guideline Options (Ottawa: The Institute for Research on Public Policy, 1994).

\(^{24}\)If the payer and the recipient have marginal tax rates that result in a tax penalty, a minor variation of proposition 2 above shows that the payer receives all of the penalty. In some cases, therefore, a proper application of this gross-up rule would work to the advantage of the recipient.
Some recipients of child support have questioned whether actual child support payments were grossed up in the manner described. For example, in *Thibaudeau*, which the Supreme Court of Canada heard in 1995, the gross-up was less than one-half of the amount required to achieve the stated goal. Again, given an inadequate gross-up, the recipient would be strictly worse off under a deduction-inclusion regime than under a regime without inclusion and deduction. Many commentators support the criticism that awards were not grossed up adequately and attribute the problem to lawyers’ and judges’ either not including a tax gross-up in the award or making systematic calculation errors such as failing to consider that the gross-up was itself taxable. 25

One way to determine if and how gross-ups were applied in practice would be to conduct a survey of payers and recipients of child support (or their lawyers). 26 Unfortunately, since amounts were often determined by negotiation and by the past pattern of awards in the same geographical area, it would be difficult for payers and recipients to identify the part of the award that related to the tax gross-up or to indicate how that amount was determined. 27 Judges, on the other hand, typically provide a detailed account of the reasoning behind their award amounts, including a discussion of the tax gross-up. Also, past court decisions create precedents that determine current awards. Judges in lower courts are bound by the principle of stare decisis to follow the principles laid down by decisions of higher courts. Though the vast majority of child support awards are determined by private agreement, past court decisions constrain these agreements; this is so because either party can cause the matter to be adjudicated in court, where the precedents created by past court decisions will usually be applied. To cite the classic phrase, the determination of awards through private agreement is an example of “bargaining in the shadow of the law.” For these reasons, we shall attempt to determine the gross-up rules applied in Canada by analyzing past court decisions.

**Case Analysis**

A primary source of court decisions related to child support is the Canadian family law reporting service, *Reports on Family Law*. The cases reported by this service are not a random sample of family law cases; the editor

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26 A survey of judges is not feasible, since in Canada judges generally do not respond to surveys unless they are conducted by other judges.

27 We confirmed this point in conversations with a number of lawyers specializing in family law.
chooses the cases that are likely to be of greatest interest to the readers of the service (primarily family law practitioners and judges). The reported cases, which are from jurisdictions all across Canada, tend to be those that best articulate the law, or that have a significant effect on the direction of the law. Because these cases are readily accessible to judges and lawyers and because the reporting service often analyzes them as well as reports them, they are frequently cited in subsequent court decisions. Since we are attempting to determine gross-up practice before the Thibaudeau decision, we have examined the cases in Reports on Family Law for the years 1986 through 1995.

Trial courts or courts of original jurisdiction, in establishing a child support award, will generally explain in detail how that amount, including any gross-up, is determined. Note, however, that the central issue in these cases is rarely the calculation of the tax gross-up. Decisions of courts of appeal, and of courts of original jurisdiction hearing variations of previous awards (owing to changes in the parties’ circumstances, for example), do not tend to provide detailed accounts of the child support calculation; we have therefore removed these cases from the sample. One might expect that the determination of the payment amount would form part of a variation judgment, but in practice judges usually discuss only whether the change in circumstances is large enough to merit a variation and do not discuss payment calculations in detail. We also exclude certain other classes of cases in which the results are either not relevant or very difficult to interpret. 28

Seventy-five cases met the criteria. The key incidence question in each case is whether the award was grossed up, and the answer varies somewhat over the period. Tables 1 and 2 divide the period into two subperiods, 1986-1992 and 1993-1995. In the 1986-1992 period, the court failed to provide a gross-up in 10 of the 40 cases. In a further 11 cases, there was no indication of how the child support amount was determined, so we could not tell if there was a gross-up. Thus no gross-up was applied in at least one-quarter and possibly one-half of the 40 earlier cases. In the 1993-1995 period, we could not identify with certainty any case in which the court failed to apply a gross-up. At most, about one-third of the cases (11 of 35) did not include a gross-up, and the proportion may have been much smaller. It appears, therefore, that the courts applied gross-ups more frequently in the later period than in the earlier one. It would seem that over time the grossing up of payments to account for tax on the recipient became an established legal principle.

28 We performed both a manual search based on case headnotes and an electronic full-word search (using Carswell’s “Family Law Partner”). The search was first restricted to the reported series, Reports of Family Law, and the following subjects: “child support” and “quantum or amount.” All relevant cases were fully read and coded. We excluded appeal cases, variation cases, joint- or split-custody cases, cases involving adult children, cases with second-family obligations, zero award cases, and cases in which the award was not eligible for inclusion/deduction (for example, cases in which the award was not periodic).
Table 1  Child Support Cases, 1986 Through 1992

<table>
<thead>
<tr>
<th>Income shares were used</th>
<th>Cannot tell if income shares were used</th>
<th>Income shares were not used</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-tax</td>
<td>Post-tax</td>
<td></td>
</tr>
<tr>
<td>Gross-up was used</td>
<td>(19 cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interval marginal tax rate . . .</td>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Point marginal tax rate . . .</td>
<td>9&lt;sup&gt;d&lt;/sup&gt;</td>
<td>1&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Cannot tell which marginal tax rate</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cannot tell purpose of gross-up (6 cases)</td>
<td>Interval marginal tax rate . . .</td>
<td>1&lt;sup&gt;f&lt;/sup&gt;</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Point marginal tax rate . . .</td>
<td>1&lt;sup&gt;g&lt;/sup&gt;</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Cannot tell which marginal tax rate</td>
<td>4&lt;sup&gt;h&lt;/sup&gt;</td>
<td>0</td>
</tr>
<tr>
<td>Cannot tell if gross-up was used</td>
<td>1&lt;sup&gt;i&lt;/sup&gt;</td>
<td>0</td>
<td>10&lt;sup&gt;j&lt;/sup&gt;</td>
</tr>
<tr>
<td>Gross-up was not used</td>
<td>10&lt;sup&gt;k&lt;/sup&gt;</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>27</td>
<td>2</td>
<td>11</td>
</tr>
</tbody>
</table>

<sup>a</sup> Brooks v. Brooks (1990), 28 RFL (3d) 340 (Ont. Unified Family Ct.).  
<sup>b</sup> DiMarco v. DiMarco (1992), 41 RFL (3d) 235 (Ont. Ct. Gen. Div.).  
<sup>c</sup> King v. King (1990), 25 RFL (3d) 338 (NS SC).  

Source: Child support cases reported in Reports of Family Law (3d), volumes 1-41, excluding variation, joint custody, and appeal cases.
Table 2  Child Support Cases, 1993 Through 1995

<table>
<thead>
<tr>
<th>Gross-up was used (24 cases)</th>
<th>number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of gross-up was to leave award to custodial spouse unchanged (19 cases)</td>
<td></td>
</tr>
<tr>
<td>Interval marginal tax rate . . . .</td>
<td></td>
</tr>
<tr>
<td>Point marginal tax rate . . . . .</td>
<td></td>
</tr>
<tr>
<td>Cannot tell which marginal tax rate . . . . .</td>
<td></td>
</tr>
<tr>
<td><strong>Cannot tell purpose of gross-up (5 cases)</strong></td>
<td></td>
</tr>
<tr>
<td>Interval marginal tax rate . . . .</td>
<td></td>
</tr>
<tr>
<td>Point marginal tax rate . . . . .</td>
<td></td>
</tr>
<tr>
<td>Cannot tell which marginal tax rate . . . . .</td>
<td></td>
</tr>
<tr>
<td><strong>Cannot tell if gross-up was used</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Gross-up was not used</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>18</strong> <strong>4</strong> <strong>12</strong> <strong>1</strong> <strong>35</strong></td>
</tr>
</tbody>
</table>


Source: Child support cases reported in Reports of Family Law (3d), volumes 42-50, and (4th) volumes 1-15, excluding variation, joint custody, and appeal cases.
Where a gross-up was applied, the issue is the basis for its determination. In the 1986-1992 period, the courts applied a gross-up in 19 cases; in 13 of these cases, or 68 percent, it was stated or it can be inferred that the court intended that the gross-up cover the total amount of tax paid on the child support award by its recipient. The figure increased to 79 percent (19 of 24 cases) in the 1993-1995 period. In all cases in both periods, either the stated goal implied a gross-up by the recipient’s marginal tax rate or no goal was stated. This finding provides assurance that when the courts provided gross-ups they were attempting to gross up by the recipient’s marginal tax rate.

Even where the objective was to gross up by the recipient’s marginal tax rate, however, it appears that because of errors in the calculation of the recipient’s marginal tax rate this objective was seldom achieved. Three types of calculation errors occurred, all of which had the effect of reducing the gross-up. The first error was the use of point rather than interval marginal tax rates. Where a court used a point marginal tax rate rather than an interval rate, the general progressivity of the tax rate structure caused the gross-up to be less than the amount of the tax on the payment. We were able to identify the rate measure in 15 of the 1986-1992 cases; the courts used a point measure in 11 of these cases and an interval measure in only 4. 29 Of the 9 cases in 1993-1995 for which we were able to ascertain the rate measure, 5 clearly used a point marginal tax rate and only 4 used an interval marginal tax rate. Even where the courts used interval marginal tax rates, a second type of error frequently arose—the court performed the gross-up by adding the tax that would be paid to the amount A. As we shall discuss in the appendix, this arrangement left the recipient worse off than he or she would have been in the absence of a deduction-inclusion system, since the additional amount was itself taxable. This outcome occurred in about one-third of the cases for which we were able to make a determination. Finally, in very few of the cases for which actual calculations were provided did the calculations include all of the elements of marginal tax rates—in several cases, in fact, the calculation used statutory marginal rates. Credit reductions, including those associated with the child tax benefit, the goods and services tax (GST) credit, and certain provincial credits significantly increase marginal tax rates in the income ranges of many custodial parents. 30

On the basis of this sample of cases, one can conclude that a significant majority of child support awards include a gross-up, and that the gross-up is intended to offset the tax paid by the recipient on the child support payment. The gross-up provided, however, was usually inadequate—that

29 We defined point and interval tax rates in the text that precedes footnote 15 above.

is, the gross-up usually would not offset the tax liability. As a consequence, custodial parents were typically worse off under the deduction-inclusion regime than they would have been in its absence. As we noted above, however, even if the gross-up had invariably been perfect according to established family law principles, the entire benefit of any tax subsidy provided by the deduction-inclusion system would have been received by the payer.

**QUANTITATIVE ANALYSIS**

The 1996 federal budget both eliminated the deduction-inclusion system for child support and implemented guidelines for the determination of child support amounts. Since the question of tax incidence relates only to the first measure, this section simulates only that measure—that is, the effect of eliminating the deduction-inclusion system while maintaining the previous system of splitting the estimated cost of caring for, supporting, and educating the children in proportion to their parents’ respective incomes (the “income shares” method).\(^{31}\) Our purpose here is to provide quantitative evidence of the size of the subsidy or penalty associated with the deduction-inclusion system and hence of the gains and losses associated with the replacement of that system by a system with no tax recognition for child support.

The simulation is based on a child support award database created by the Department of Justice.\(^{32}\) This database is superior to the T1 personal income tax model used by the Department of Finance in that it links the payers of child support to the recipients. The database uses a relatively large sample of 708 separated or divorced couples and contains complete information on the amount of child support, the incomes of both parents, and the number and age of the children. The data were collected from court orders issued between September 1991 and May 1992.

From the empirical results presented in tables 1 and 2 above, it is apparent that the primary method of determining child support awards in Canada before the 1996 budget was the income-shares approach with a gross-up based on the recipient’s marginal tax rate (51 of the 52 cases for which sufficient detail is given). The income shares were usually based on before-tax incomes (45 of 51 cases), and the gross-up was intended to leave the custodial spouse as well off as he or she would have been in the absence of tax (32 of 43 cases). Given these results as assumptions, we calculated the child support amount for each of the 708 couples in the sample that would have occurred in a world with no tax recognition of

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\(^{31}\) For simulations of the combined impact of both measures, see Glenn Feltham and Alan Macnaughton, “The New Child Support Rules and Existing Awards: Choosing the Best Tax and Family Law Regime” (1996), vol. 44, no. 5 *Canadian Tax Journal* 1265-95. The simulations compare two fully phased-in tax regimes. In practice, transitional rules exempt most child support awards made before May 1, 1997 from the new regime.

\(^{32}\) This database is described more fully in Feltham and Macnaughton, supra footnote 3, at 430-32.
child support. A comparison of this amount with the after-tax amount under the deduction-inclusion system provides the tax incidence of abolishing the deduction-inclusion system.

The results are as follows. Under the deduction-inclusion regime, 353 (49 percent) of the 708 couples in the sample received a subsidy, 311 (44 percent) incurred a tax penalty, and the remaining 44 (6 percent) neither received a subsidy nor incurred a penalty. The impact of the tax change on the subsidy group is different from its impact on the penalty group. The subsidy averaged $554, or 13 percent of the subsidized couples’ average child support award of $4,330. Taking this subsidy away from the payers increases their after-tax cost of the child support award by an average of 23.6 percent, or 1.91 percent of pre-tax, pre-award income. The impact generally increases with the number of children and both parties’ incomes, since these factors increase the amount of the child support award.

The tax-penalty couples were subject to an average penalty of $426, or 9 percent of their average child support award of $4,828. Relieving payers of this penalty reduces their after-tax cost of the award by an average of 11.4 percent, or 1.87 percent of their pre-tax, pre-award income. Of course, the 6 percent of couples who neither received a tax subsidy nor incurred a tax penalty under the deduction-inclusion regime (because they had the same interval marginal tax rate) experienced no impact from the tax change.

In all of these simulations, the recipients are unaffected by the tax change. This outcome occurs by construction—the calculations assume that the gross-up for each couple is perfect according to established family law principles and does not have any of the three types of errors described above. The calculations also underestimate the tax incidence of the deduction-inclusion system on payers, since the errors generally made the gross-up smaller. As a rough guess, the errors may cause the tax incidence impacts on both payers and recipients to be understated by about 25 percent.

Formally, we determined the child cost amount to be shared, which may be called $C$, for each of the 708 couples in the sample by solving the following Paras-type equation for $C$: $AT = SPC/(1 - tR)$. (This equation is simply a mathematical statement of the two-step process described above in the section on common law principles.) We then determined the award under the no-recognition system by using the income-shares equation $A = SPC$ (that is, the payer pays the amount of the child cost multiplied by his or her income share) described in the appendix to this article.

The terms “subsidy” and “penalty” were described formally in the discussion that followed equation 5 above. Note also that Martel, supra footnote 9, finds a subsidy rate of 67 percent rather than 49 percent using the same database. The difference is due to Martel’s use of 1991 tax rules (versus 1997 here) and her scaling up of payers’ incomes to match the distribution in Finance’s T1 database.

The only way to address the question of errors would be to perform calculations for the actual court cases in tables 1 and 2. The disclosure of financial information in court cases is often quite limited, however, and it varies widely from case to case. In addition, the income characteristics of the payer-recipient pairs may not be representative of the population.
CONCLUSIONS

This article has presented a theoretical and empirical analysis of one aspect of the incidence of the taxation of child support under a tax system that provides a deduction to the payer and an income inclusion to the recipient: how the subsidy can be divided (theoretical incidence) and how it has been divided (actual incidence) between payers and recipients of child support. We have shown that the critical variable in this determination is the rate used to gross up the payments in order to account for inclusion and deduction. If the payer’s marginal tax rate is higher than the recipient’s rate and the gross-up rate chosen is between these two rates, then both the payer and the recipient will have more money after tax in the presence of a system of inclusion and deduction than they will have in its absence.

Following this theoretical analysis, we examined the actual incidence of child support in the period before the Thibaudeau decision and the 1996 budget. A rule developed at common law, and confirmed in Thibaudeau, states that the child support amount should be grossed up by the recipient’s marginal tax rate. This rule, if followed and applied correctly, would leave the recipient with the same after-tax amount as he or she would receive if child support were not taxable to the recipient. From the theoretical results, the gross-up rule implies that the entire benefit of the tax subsidy provided by the deduction-inclusion system was being received by the payer.

We used a sample of court cases from the period 1986 through 1995 to determine empirically the tax incidence of the deduction-inclusion system in this period. Although in the majority of cases the courts attempted to gross up by the recipient’s marginal tax rate, we found that the actual gross-up used was usually insufficient to cover the additional taxes owing on the child support amount. Indeed, recipients of child support not only failed to receive a share of the tax savings but usually had even less after-tax money than they would have received under a system without inclusion and deduction. In other words, the empirical results demonstrate that Canadian gross-up rules used at least 100 percent, and usually more, of the tax subsidy to reduce the after-tax cost of the payer. Thus repeal of the deduction-inclusion system did not hurt recipients of child support and may in fact have helped them. For payers of child support, however, the effect of repeal was negative. Simulations that use a Department of Justice database of child support awards show that the repeal of the deduction-inclusion regime in 1996 lowered the after-tax income of payers who had been receiving a tax subsidy by an average of $544, or slightly less than 2 percent of after-tax income.

The splitting of the tax subsidy or penalty between payers and recipients that is documented in this article for the 1986-1995 period should not be regarded as impossible to change; in the 1996 budget, the government could have chosen to leave the deduction-inclusion system in place and reform family law statutes to achieve a more suitable division of the subsidy or penalty. However, this would have compromised another goal of
the budget, which was to replace the arbitrariness of existing child support awards with a simplified and uniform system of guideline amounts based only on the income and province of residence of the payer. Without also taking into account the income of the recipient, guidelines could not achieve any particular goal regarding the splitting of the tax subsidy or penalty.

A country that wishes to maintain a deduction-inclusion system must develop some defensible method of splitting any tax subsidy or penalty between the two parties. The appendix to this article examines the tax incidence associated with child support with a view to defining a gross-up method that is consistent with the basic principles of the income-shares method of determining child support. As the appendix shows, there is one gross-up method that is consistent with the income-shares approach, and it has the additional potentially desirable characteristic of dividing any tax subsidy between the two parties so that both parties are better off.

Although a defensible method of splitting the tax subsidy or penalty is important for a deduction-inclusion regime, the fact remains that any such regime will benefit some individuals and hurt others—that is, some individuals will receive a subsidy and others will incur a penalty. This fact could be overlooked in an earlier period when payers’ marginal tax rates were almost always higher than were recipients’ rates. Now, however, the combination of rising recipients’ (mostly women’s) incomes and the increasing prevalence of phaseouts and other “stealth tax rates” at lower income levels has produced a world in which the proportion of couples in the subsidy situation and the proportion in the penalty situation are roughly equal (49 percent and 44 percent, respectively). It is difficult to justify benefiting some couples and disadvantaging others on the arbitrary basis of the relationship between the payer’s marginal tax rate and the recipient’s.

APPENDIX: ANALYSIS OF ALTERNATIVE GROSS-UP RULES
The following is a more detailed and formal version of proposition 2 in the text:

Proposition 2 (extended): Assume that a subsidy exists ($G > 0$) and that both marginal tax rates are strictly positive ($t_P > 0$ and $t_R > 0$). Given these assumptions, we show below the effects on payers and recipients of six different gross-up rules. A Pareto improvement is defined as a rule whose introduction makes both parties no worse off than they were before and at least one party better off, and a strict Pareto improvement is defined as a rule whose introduction makes both parties better off.

Rules that are not Pareto improvements

(i) If $A^T = A$, then

\[ \hat{t} = 0, \]

\[ \alpha_P = t_P/(t_P - t_R) > 1, \]

\[ \alpha_P = -t_R/(t_P - t_R) < 0. \]
(ii) If $A^T = A + t_R A$, then
\[
\hat{t} = t_R/(1 + t_R), \\
\alpha_P = (t_P(1 + t_R) - t_R)/(t_P - t_R)(1 + t_R)) > 1, \text{ and} \\
\alpha_R = -t_R^2/(t_P - t_R)(1 + t_R) < 0.
\]

Rules that are Pareto improvements but not strict Pareto improvements

(iii) If $A^T = A/(1 - t_R)$, then
\[
\hat{t} = t_R, \\
\alpha_P = 1, \text{ and} \\
\alpha_R = 0.
\]
(iv) If $A^T = A/(1 - t_P)$, then
\[
\hat{t} = t_P, \\
\alpha_P = 0, \text{ and} \\
\alpha_R = 1.
\]

Rules that are strict Pareto improvements

(v) If $A^T = A/(1 - \hat{t})$ where $\hat{t} = (t_P + t_R)/2$, then
\[
\alpha_P = 0.5 \text{ and} \\
\alpha_R = 0.5.
\]
(vi) If $A^T = A/(1 - \hat{t})$ where $\hat{t} = t_R S_P + t_P S_R$ and the shares of the payer and the recipient in the two parties’ total income are denoted $S_P > 0$ and $S_R > 0$, then $\alpha_P = S_P$ and $\alpha_R = S_R$.

Proof: Substitute the above expressions for $A^T$ into equation 2 in the text to solve for $\hat{t}$. Substitute the resulting expression for $\hat{t}$ into equations 6 and 7 in the text to solve for $\alpha_P$ and $\alpha_R$.

Rules i and ii above are not Pareto improvements because the recipient receives a negative share of the subsidy (and hence the payer receives a share that is greater than 100 percent). Under rule i, the award is not grossed up. Thus, if tax is ignored in setting child support awards, the introduction of a deduction-inclusion system makes the recipient worse off. The recipient will also be made worse off if the gross-up is inadequate, as it is under rule ii. Under this rule, the gross-up is calculated by simply adding the tax on the initially computed award without accounting for tax on the gross-up itself.\textsuperscript{36}

We discussed rules iii and iv in the text, and it is not necessary to discuss them further here. Rules v and vi reflect the statement in part a of proposition 1 in the text that it is possible to achieve a strict Pareto

\textsuperscript{36}This flawed gross-up method was recommended by the Federal/Provincial/Territorial Committee, supra footnote 23. Zweibel and Shillington, supra footnote 25, also noted the problem with this gross-up rule.
improvement only if the gross-up rate $\hat{t}$ lies strictly between the recipient’s marginal tax rate and the payer’s marginal tax rate. Many possible rules would satisfy this requirement. Rule v grosses up by using a rate that is a simple average of the two parties’ marginal tax rates. The main advantage of this rule is that it achieves a straight 50/50 split of the subsidy. It is effectively the rule used in the United Kingdom, where there is no inclusion for the recipient of child support but there is a deduction for the payer. In the UK case, the 50/50 split is accomplished by adding 50 percent of the payer’s tax saving from the deduction to the amount of the award. In figure 1, rule v is the value of $\hat{t}$ at which the curves $\Delta P$ and $\Delta R$ intersect.

Like rule v, rule vi uses as a gross-up rate a weighted average of the two parties’ marginal tax rates, but in this case the weights are the two parties’ income shares. These weights are used in a criss-cross fashion—the recipient’s income share weights the payer’s marginal tax rate and vice versa. Although this scheme is initially unintuitive, it has valuable properties from a family law perspective. We discuss these properties below.

A Gross-Up Rule That Is Consistent with Income Shares

As we have shown above, different family law gross-up rules can produce widely different incidence results for a deduction-inclusion system of child support taxation. One way in which to address the normative incidence issue of how the subsidy should be divided is to examine the principles underlying the determination of child support awards before tax considerations are taken into account. The best known and most widely accepted method of determining the amount of child support before gross-up is the income-shares approach.

Since the income-shares approach was developed in the United States, a country that provides no tax recognition for child support, its development did not take tax considerations into account. Later work has grafted on the ad hoc adjustment of grossing up by the recipient’s marginal tax rate. As we show below, however, this ad hoc gross-up is inconsistent with the basic principles of the income-shares approach.

To express the assumptions or axioms behind the income-shares approach mathematically, let $S_P$ represent the share of the payer in the combined income of the two parties, let $P$ represent the cost of the award to the payer, let $W$ represent the amount of the child cost borne by the recipient, and let $C$ represent the child cost amount that is to be shared. Thus the income-shares approach provides a solution for the award $A$ implied by

\[ A = \frac{W}{C} \]


This may be a share of either pre-tax incomes or post-tax incomes.
the following three equations: \( A + W = C \) (the assumption that the recipient bears all residual costs not covered by the payment) \( P/(P + W) = S_P \) (the sharing of the child cost in proportion to income shares),\(^{39}\) and \( A = P \) (the amount of the award is the cost to the payer). The solution is \( A = S_PC \)—that is, the payer pays the amount of the child cost multiplied by his or her income share.

The introduction of a deduction-inclusion system for the taxation of child support changes the three equations above to the following, where the “\( T \)” superscripts indicate the introduction of tax recognition for child support:

\[
AT(1 - t_R) + WT = C, \tag{8}
\]

\[
\frac{p_T}{p_T + WT} = S_P, \tag{9}
\]

and

\[
AT(1 - t_P) = p_T. \tag{10}
\]

Note that in equation 8 the amount of the child cost covered by the payment changes from \( A \) to \( AT(1 - t_R) \), since the recipient must now pay tax on the child support amount. In equation 10, the cost to the payer changes from \( A \) to \( AT(1 - t_P) \), since the introduction of a child support deduction creates tax savings.

The solution to these three equations is \( AT = SP_C/(1 - \tilde{t}) \), where \( \tilde{t} = t_RSP + tPS_R \). The incidence effect of introducing a deduction-inclusion system and this gross-up rule is to allocate the proportion \( S_P \) of the subsidy to the payer and \( S_R \) of the subsidy to the recipient. To prove this, solve equation 8 for \( WT \) and substitute in equation 9, then solve equation 9 for \( AT \) and substitute in equation 10 to get the award amount shown. For the incidence result, note that \( A = SP_C \) and \( AT = SP_C/(1 - \tilde{t}) \) imply that \( AT = A/(1 - \tilde{t}) \), where \( \tilde{t} = \bar{t} \), and hence part vi of the extended proposition 2 applies.

This new method of determining a gross-up for child support payments has several advantages. First, it has the intuitive fairness of the original income-shares approach, since it too apportions child costs according to income shares. Second, the new method’s way of splitting costs satisfies the well-known public finance principle of equal proportionate sacrifice.\(^{40}\) In other words, if we denote \( I_P \) and \( I_R \) as the incomes of the payer and the recipient respectively, \( P_T/I_P = W_T/I_R \). This is a property of the income-shares approach that carries over to this method. Third, part vi of proposition 2 demonstrates that introducing a deduction-inclusion system

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\(^{39}\) Since \( S_P + S_R = 1 \), this is equivalent to \( W/(P + W) = S_R \), where \( S_R \) is the recipient’s income share.

with this method of determining child support payments makes both the recipient and the payer strictly better off if the payer’s marginal tax rate is greater than the recipient’s. Finally, the new method of splitting the subsidy is defensible on the ground that under the income-shares approach any exogenous reduction of child costs would be split in the same manner.

A disadvantage of the new method is cost. As the theoretical results above show, the government subsidy \( G \) is an increasing function of the gross-up rate. The aggregate government subsidy would therefore increase significantly under this rule. Further, the new method is more difficult to calculate and understand than is grossing up by the recipient’s marginal tax rate. In particular, the presence of the two marginal tax rates in the equation \( AT = SP/(1 - \tilde{t}) \), where \( \tilde{t} = tRSP + tPSR \), causes a problem in that the marginal tax rates are non-linear functions of the award \( AT \). Iteration is required to find a solution. Finally, some may find it disturbing that the higher-income spouse would receive more than one-half of the subsidy.\(^\text{41}\)

\(^{41}\)People who have problems with the new method on this basis are in effect rejecting the principle of equal proportionate sacrifice.