Designing a Basic Income Guarantee for Canada

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February, 2017

1. Introduction

There is renewed interest in the idea of a basic income guarantee for Canada. This is partly driven by the inability of current redistribution policies to address growing inequality (Fortin, Green, Lemieux, Milligan & Riddell 2012; Banting & Myles 2013). At the lowest income levels where much of the population relies on provincial welfare assistance, real incomes have fallen dramatically in the past three decades. Compounding this reduction in welfare incomes is the increase in earnings volatility resulting from the stagnation of full-time jobs and the precariousness of employment as technology displaces factory jobs and the forces of globalization result in a race to the bottom among both employers and governments. Moreover, there is increasing evidence of the self-reinforcing nature of poverty. Poverty leads to poor nutrition and health outcomes, impedes educational attainment, and prevents poor persons from improving opportunities for themselves and their families. Putting more money in the hands of the poor will increase their well-being and life chances, and make them less dependent.

The basic income guarantee (BIG) that we propose in this paper is motivated by these considerations. As well as being an altruistic impulse, it is an investment in the betterment of persons and their children who are unable to achieve their potential. However, a BIG is not in itself a panacea. The income security it provides is necessary but not sufficient for addressing the needs of the disadvantaged. It complements other public programs such as employment creation, housing, education and healthcare. Our focus is on reform of government transfer programs, leaving intact in-kind benefits, social services and regulations (e.g., minimum wage). The BIG we propose is a revenue-neutral reform in the composition of government transfers to persons that would significantly improve the relative position of those in the bottom of the net income distribution and reduce poverty. Our proposal would replace existing transfers delivered through

the tax system, including many non-refundable and refundable tax credits (NRTCs, RTCs), with a BIG. Social insurance programs such as employment insurance (EI), workers' compensation and Canada and Quebec Pension Plans (CPP/QPP) would remain. Our analysis combines adequacy and comprehensiveness of income support with dismantling the burdensome administrative costs and intrusive delivery of provincial social assistance programs. Social services would remain intact, and more wide-ranging reforms could address the administrative costs of delivering them.

Arguments for a BIG are not new to Canada. A form of BIG was proposed by the Special Senate Committee on Poverty (1971) and the Royal Commission on Canada's Economic Prospects (1985). A vocal proponent has been Segal (2008, 2009). Alternate BIG proposals have been studied empirically by Hum & Simpson (2005), Young & Mulvale (2009), Simpson & Stevens (2015) and Lammam & MacIntyre (2015). These studies differ in terms of the changes in the existing tax-transfer system they propose and the income guarantee level. For example, the Lammam-MacIntyre study treated BIG as a replacement for all programs aimed at serving the needs of low-income persons, including EI, CPP/QPP, and social services, to investigate the administrative cost savings associated with delivering all existing programs for the poor through a single transfer system without enhancing their benefits. This form of BIG resembles a negative income tax system along the lines originally proposed by Milton Friedman, and would not address the shortcomings of existing programs in alleviating poverty and income volatility. Recent summaries of the pros and cons of a BIG may be found in Himelfarb & Hennessy (2016) and Macdonald (2016), and suggestions for the design of a basic income pilot are found in Forget, Marando, Surman & Urban (2016) and Segal (2016).

In approaching the design of a BIG for Canada, two broad issues must be addressed. The first is whether the BIG should be a universal basic income paid to all persons regardless of means or a more targeted BIG meant to ensure that no one falls below the income guarantee. European proponents of basic income opt for the universal version both on philosophical grounds—basic income as a right to which all are entitled—and on grounds of political feasibility—the fostering of political support when all voters are entitled to basic income (Van Parijs 1995). Atkinson (2015) has instead argued that to buy political support, basic income recipients should be required to make some social contribution, such as employment, education, training or job search, care-giving or voluntary work. This idea, referred to as participation income, risks perpetuating the administrative costs and stigmatization of existing systems.

The argument against the universal approach is its cost. If all persons are given, say, $20,000 per year, it would cost $20,000 per person on average. Since many persons are not taxpayers, the cost per taxpayer would be correspondingly greater. This would be diminished considerably if basic income were taxable, but even then everyone would receive some amount. If the top marginal tax rate were 50%, the highest income earners would receive $10,000 after tax. This negative income system would reduce the cost of a universal basic income, but it would still be expensive and would entail considerable 'churning' of tax revenues (tax revenues being raised to make transfers to the persons who paid the taxes).

The alternative to a universal basic income is to emphasize the guarantee of a basic income as its defining feature. According to this view, the design of a BIG should be based on finding the most efficient way of ensuring that no one's income falls below the chosen basic income level, taking work incentives into account. An income-tested BIG is a suitable form and could be administered most simply through the income tax system, either as a refundable tax

credit like the Canada Child Benefit (CCB), the Working Income Tax Benefit (WITB) and the

GST/HST Credit, or as a standalone transfer like the Old Age Security and Guaranteed Income

Supplement (OAS/GIS) system. The income-tested transfer would be superimposed on the

progressive income tax structure, but could have tax-back rates that differ from the latter as is the

case with these refundable tax credits and standalone transfer programs. They have tax-back

rates that ensure that the transfer is phased out before high incomes are achieved. A BIG

program would ideally incorporate all such transfers into a single system with a given basic

income level and tax-back rates based on individual or family income as desired. For taxpayers

who receive BIG, the implicit marginal tax rate includes both the income tax rate and the BIG

tax-back rate.[1]

The second broad issue to confront is that the federal government, provinces, territories

and First Nations all assume some responsibility for transfers to low-income persons. The federal

government provides transfers to the elderly through OAS/GIS and to children through CCB,

while the provinces and territories make major transfers to the long-term unemployed and the

disabled through their welfare systems. Both levels of government implement income-based

RTCs and NRTCs. The federal government has fiduciary responsibility for First Nations, and

finances welfare systems that they deliver.   Transfers vary considerably among provinces and

First Nations, and some groups, such as low-income workers, receive relatively little support

from any level of government. The result of this patchwork system is uneven, where the elderly

and low-income families with children fare better than those relying on provincial transfers, and

low-income workers receive limited support.

A BIG that supplants the existing system of transfers must take account of the interest

that both levels of government have in redistribution, as well as the special responsibility that the

federal government has for First Nations. This complicates the form of an ideal BIG system, as well as the movement from the existing system to a BIG, especially given that the existing system falls far short of adequate levels of income support.

The challenge we address is how to design a BIG in Canada's federal setting that provides adequate levels of support with a minimum of stigmatization and conditionality, with a suitable balance between program cost and work incentives, and with a degree of differentiation across provinces that accommodates provincial preferences without detracting from national objectives. Our scheme involves a two-stage transition from the current system of transfers, with the federal government implementing a federal BIG in the first stage and the provinces having the opportunity to implement a harmonized provincial BIG in the second stage. The analogue that informs our proposed scheme is the federal-provincial tax harmonization system that exists in similar forms for personal and corporate income taxes and the GST/HST. These are bilateral agreements between the federal government and individual provinces, so unanimous agreement is not required. Like the tax collection agreements, the design of a two-stage program must make it inviting for the provinces to join in and must pay attention to the implications of a federal-provincial BIG system for intergovernmental fiscal arrangements, such as the division of tax room, Equalization and the Canada Social Transfer.

Our scheme focuses on a BIG delivered by the federal government and the provinces. We omit the territories for simplicity, since they raise no special issue of substance. Providing a BIG to First Nations members poses special challenges, especially if it is administered through the income tax system. An acceptable BIG would involve the participation of First Nation governments even if the financing comes largely from the federal government. This would entail institutional issues that call for a separate study.

Our proposal involves replacing all RTCs and NRTCs with an income-tested BIG consisting of federal and provincial components. For computational simplicity, OAS/GIS are also replaced, though that is not essential, while the CCB is retained as a BIG for children. Keeping OAS/GIS and some NRTCs could be accommodated without affecting the broad features of the reform. The system is virtually self-financing, or revenue-neutral, in the sense that the cost of the federal BIG roughly equals the value of federal RTCs and NRTCs, and the same for the provinces. No tax rate increases are required. We illustrate the feasibility of our proposal using a national BIG of $20,000 per adult adjusted for family size and with a claw-back rate of 30% based on family net income, though other variants could readily be chosen. The federal BIG is $14,322, while the average provincial BIG is $5,678 with allowable variations across provinces. Financial feasibility is confirmed by simulations using Statistics Canada's SPSD/M model, augmented by conjectures about labour supply responses.

Replacing federal and provincial tax credits with a harmonized national BIG delivers an impressive amount of redistribution of disposable income from those in the top half of the net family income distribution to those in the bottom half. The fall is roughly 10% and relatively uniform for the former, while those in the bottom two deciles gain by 167% and 74%, respectively. The gain for low-income single adults is almost 270%, albeit from a low pre-reform level. Disposable income inequality is significantly reduced with the Gini coefficient falling by almost 17% and the poverty rate falling by 73% to only 3.2%. Estimated labour supply responses are negative for the bottom six deciles and positive for the top four. Overall, earnings fall by about 2.2%, causing the cost of the BIG program to rise by less than 3%, not enough to compromise revenue-neutrality. (See Tables 2, 4 and 5 below for details.)

The details of how these outcomes are achieved by simply reallocating existing tax credits and transfers are recounted below. First, we provide a brief review of the arguments for an income-tested BIG and summarize the relevant features of the Canadian tax-transfer system.

2. The Case for an Income-Tested BIG

Why should society guarantee a basic income unconditionally to all individuals regardless of their behaviour? Two classes of arguments can be made. The first draws on normative welfare economics and social choice theory, especially as it has been applied in optimal redistribution analysis. These tend to be relatively technical arguments. The second class consists of several policy-based considerations.

In standard optimal redistribution theory, a benevolent government maximizes a social welfare function that aggregates the well-being or 'utility' of all persons. Assuming the social welfare function exhibits aversion to utility inequality, redistribution will be from the better-off to the worse-off. The less well-off groups will typically receive a transfer.

While the social welfare approach supports redistribution to the less well-off, it does not lead one directly to a BIG because income does not index individual utility. The latter includes, for example, leisure time. If the objective of the government were to maximize the income of the least well-off, that would not be the same as maximizing their welfare because the value of leisure would not be given any weight (Kanbur, Keen & Tuomala 1994).

Recent contributions to redistribution theory have questioned the relevance of the social-welfare-maximizing approach, and lend support to a BIG. An example is the equality of opportunity literature, which is motivated by individuals having different preferences. Individuals may make quite different choices in identical circumstances. Suppose, for example,

they differ in their preferences for leisure. Those who choose to work hard will have higher incomes and less leisure than others. Ranking persons by well-being is not clear-cut since incomes are not perfectly correlated with well-being. The equality of opportunity approach addresses this by supposing that persons are responsible for their preferences. Differences in outcomes due to differences in preferences should neither be penalized nor rewarded: the Principle of Responsibility. Redistribution should only compensate for differences over which persons have no control, such as their productivity: the Principle of Compensation. Giving persons of identical skills equal opportunities or resources preserves the Principle of Responsibility. Thus, in redistributing to the less productive, the transfer should not be contingent on how much recipients choose to work, which supports an unconditional BIG.

This argument has been formalized by Fleurbaey & Maniquet (2011). In addition to the Principles of Responsibility and Compensation, they suppose following the social choice literature (Arrow 1951) that utility can neither be measured nor compared across persons. Using technical analysis, they show that the social ordering takes the maxi-min form in an index of utility measured by the value of income based on a set of references prices required to get to each individual's well-being or indifference level. The government maximizes the value of reference income of the least well-off, where the reference income of all those better off is higher. This can be interpreted as a form of BIG.

These arguments for defining social orderings in terms of a measure of resources required to achieve existing levels of well-being is reminiscent of arguments for indexing individual well-being for tax purposes using comprehensive income—earnings plus transfers plus all sources of asset income. The Carter Report (1966) viewed comprehensive income as a measure of the ability to pay and recommended it as the income tax base. The case for a progressive rate

structure was based partly on the doctrine of equal utility sacrifice, and partly on the idea that some amount of income was needed for non-discretionary spending so should be tax-favoured relative to higher incomes. The Carter Report was preoccupied by income taxes so did not consider a BIG. However, the notion of minimum amount of spending being non-discretionary leads one to the presumption that all individuals should receive at least the minimum necessary amount.

Compelling arguments for a BIG can be based on human rights. Article 25(1) of the UN's Universal Declaration of Human Rights signed by Canada states "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control." This can be interpreted as the right to a basic income.

Normative arguments reinforce that right. Canada's enviable per capita output of goods and services is due in part to the skills, hard work and ingenuity of Canadians. It is contingent on the quality of Canadian institutions, the sanctity of the rule of law, the knowledge that current generations have inherited from the past, and natural endowments of resources and amenities, which are the common heritage of all citizens. Large incomes are partly due to personal effort, but partly due to luck of living in the right place at the right time. Providing less fortunate persons with a BIG recognizes their share of the bounty that Canadian prosperity allows.

A BIG is also an investment in human development. Higher incomes contribute to better nutrition, health outcomes and education for BIG recipients and their children. Evidence from the 1974–79 Mincome experiment in Manitoba confirms this (Forget 2011). A BIG gives

persons the capability of participating fully in society and the human dignity that entails (Sen 1985). Removing the anxiety about where the next meal or adequate clothing and housing will come from allows individuals to focus on longer-term decisions. And, removing the stigmatization of the existing system contributes to building social norms such that transfer recipients feel good about themselves and their potential to contribute to society, giving them more incentive to work provided there is some reward for doing so.

These arguments have already been accepted for the elderly and low-income families with children. We investigate below how they can be extended to the entire population.

3. Basic Elements of Canada's Tax-Transfer System

Our national BIG would include both federal and provincial components, and would replace various transfer programs now provided by the two levels of government. A national BIG with coordinated federal and provincial elements would rely on the income tax system, and is inspired by the Canadian tax harmonization system. We begin by summarizing the current federal and provincial transfer systems and then turn to tax harmonization.

3.1 Federal and Provincial Income Transfers

Virtually all low-income persons receive some support. However, levels of support are uneven and inadequate, and often poorly targeted. Some transfers are complex and intrusive, and discourage recipients from escaping poverty.

Federal government transfers to low-income persons take several forms. Persons aged 65 and over are eligible for OAS depending on their income. In addition, GIS is available to the lowest-income seniors and is non-taxable. The maximum OAS and GIS combined is $16,129. They operate outside the income tax system but are integrated with it. In addition, there are three

income-tested RTCs, which are integral to the tax system and administered by the CRA. The CCB is a tax-free payment to families based on the number and age of children, and is family-income tested. It can be supplemented by a child disability benefit as well as provincial or territorial benefits. The annual amount is $6,400 for each child up to age 5 and $5,400 per child aged 6 to 17. CCB is reduced when family net income exceeds $30,000 and the tax-back rate varies with the number of children. For families with one child, the CCB falls to zero only when family incomes reach over $120,000, and similarly for more than one child. The WITB is a modest RTC given to low-income adult workers aged 19 and above who earn a minimum income. It includes a disability supplement that varies by province. The maximum WITB is $1,015 for single adults and $1,844 for families, falling to zero at a modest income. The GST credit compensates low-income persons for GST paid on their consumption purchases and varies by family size and income. For provinces who have harmonized their sales taxes, an HST credit applies that varies by province. The GST and HST credits are modest in size. Since these RTCs are administered by CRA, individuals must file an income tax return to be eligible. Amounts are based on the previous year's income, and so cannot take account of changes in family income in the meantime.

Provincial transfers consist mainly of welfare payments to the long-term unemployed and transfers to the disabled. The amounts vary widely across provinces and have been trending downwards in real terms since the early 1990s (Tweddle, Battle & Torjman 2015). Unlike RTCs and OAS/GIS, provincial welfare and disability transfers are delivered by social assistance administrators. Eligibility involves application for support, screening for eligibility and some ongoing monitoring. Recipients are restricted in the value of assets they can own and in their ability to earn income, which is subject to typically high tax-back rates. Welfare recipients are

expected to be available to work and to accept job offers. Eligibility for welfare and disability also entails eligibility for various social services, such as housing assistance, pharmaceuticals, public transit subsidies and counselling. The consequence is a system that can be stigmatizing, and that discourages work and saving.

The federal and provincial government offer several NRTCs. These vary by taxpayer characteristics and are income-tested but are of limited value to low-income individuals since they are non-refundable.

Government transfers are typically not well targeted to those most in need. Some are stigmatizing and do not encourage labor market participation or work effort. Transfer recipients segment into categories of persons who rely mostly on federal support—the elderly, the working poor, the temporary unemployed and children—and those who rely on provincial support—the long-term unemployed and the disabled. The inadequacy of the level of support for low-income persons can be judged by comparison with poverty measures. The Low-Income Cut-Off (LICO) compiled by Statistics Canada (2016) is a useful benchmark. It measures the income level at which a family of a given size spends 20 percentage points more than the average family (of the same size) on food, clothing and shelter, and varies by population of place of residence. Only seniors receiving OAS/GIS come close to LICO amounts, and then only for small municipalities.

Moving to a national BIG involves replacing existing transfer programs with a uniform system, and coordinating federal and provincial programs so that a harmonized BIG is achieved with some provincial discretion. RTCs and the OAS/GIS system are proven models for delivering an income-tested transfer that could be exploited in a BIG program. Both take advantage of the income tax collection machinery administered by the CRA. The self-reporting feature combined with the anonymous administration minimizes onerous application,

conditionality and stigmatization associated with transfer systems like welfare and disability. Of course, replacing existing transfers with a national BIG would entail gainers and losers.

3.2 The Federal-Provincial Tax Harmonization System

Our national BIG proposal is inspired by tax harmonization arrangements that apply to personal and corporate income taxes and the sales tax. In each case, tax harmonization is based on bilateral federal-provincial agreements that follow a common template. For the personal income tax, agreeing provinces—all except Quebec—sign a Tax Collection Agreement (TCA) obliging them to accept the federal tax base while allowing discretion over their provincial rate structures and NRTCs. Taxes are administered by the CRA and are allocated to provinces according to the taxpayer's province of residence on December 31 of the taxation year.

The TCAs for the corporate tax—applying to all provinces except Alberta and Quebec—are similar. Provinces use the federal tax base but choose their own general and small business tax rates and have some discretion over provincial tax credits. Where corporations operate in more than one province, the tax base is allocated among provinces by an allocation formula that gives equal weight to shares of revenues and payrolls in each province.

Sales tax harmonization is more complicated because of the value-added nature of the GST. Provinces that harmonize their sales taxes with the GST—the Atlantic Provinces plus Ontario—replace their retail sales taxes with the harmonized sales tax (HST). The HST rate consists of the federal rate of 5% plus the rate chosen by each province. Registered sellers in each province apply the relevant HST rate where the sale takes place, and firms that purchase taxed goods can claim an input tax credit. The CRA administers the system, but does not keep track of the amount of tax owing to each province. Instead, the allocation of HST revenues across provinces is based on estimates of aggregate consumption in each province.

The TCAs illustrate how the federal government can pursue a harmonization initiative that the provincial governments can choose to join. Provinces do so if they obtain net benefits. These include the collection and compliance benefits of a harmonized system with a single tax-collecting authority combined with the discretion to set their own tax rates. Those who choose not to join perceive some benefit from retaining control over their tax bases despite having to collect their own taxes. Harmonization with the GST is a relatively substantial reform since it requires a significant change in the tax base, broadening it to include goods and services that are not taxed under provincial retail sales taxes.

The TCAs are not without problem. Some provinces have expressed concern over the accuracy of initial reimbursements to the provinces, given that final reconciliation of taxes collected on their behalf occurs more than a year after the end of the tax year. There are also concerns that corporations can manipulate the allocation formula through the use of affiliates in different provinces, since they do not have to report consolidated tax accounts. Provinces might worry that not enough attention is paid to ensuring compliance with the allocation formula since there is nothing at stake for the federal government. Despite these problems and limitations that the agreements have for provincial policy discretion, no province has left the TCAs and recently Ontario has signed a corporate TCA. Provinces have gradually adopted an HST, although in British Columbia that intention was overturned by a fractious referendum.

The tax harmonization agreements show how the federal government can achieve harmonization voluntarily with the provinces when both levels of government have legislative jurisdiction and interests in a policy issue. The attraction of a BIG harmonization agreement is natural to the extent that BIG transfers are administered through the income tax system. Implementation is an issue of political will. For BIG harmonization to work, the federal

government would be the initiator with the expectation that agreeing provinces would accept the federal structure of a BIG in return for having some discretion over a provincial component.

Federal-provincial tax harmonization is part of a broader system of fiscal arrangements that have a bearing on the fiscal reforms we propose. The relevant elements are federal-provincial transfers. One is Equalization which makes unconditional transfers to provinces with revenue capacity below the national average. This would remain intact with our reforms. The Canada Health Transfer (CHT) and Canada Social Transfer (CST) are equal per capita transfers nominally in support of provincial health, social assistance and services, and post-secondary education. They have mild conditions attached to them, but otherwise the provinces use them at their discretion. The CST is intended to assist the provinces in financing social assistance, and if a BIG replaces social assistance, the size of the CST would need to be revisited.

Given these considerations, we propose a feasible two-stage process for implementing a national BIG program that could potentially address the deficiencies of the existing transfer programs and harmonize federal and provincial transfers.

4. A Two-Stage Basic Income Guarantee Proposal

Our national BIG encompasses federal and provincial components, with each retaining some discretion over program size in a harmonized framework. The proposal involves two stages. Stage One involves federal reform of its transfers to a federal BIG, taking as given existing provincial policies. Stage Two explores individual provincial BIG choices analogous to negotiating tax harmonization agreements with the federal government. This latter stage could involve many alternative templates involving the nature of provincial discretion and the rebalancing of federal-provincial fiscal arrangements. Our proposal will be somewhat general,

leaving full details to be worked out later, although we mention many aspects that would need to be considered.

4.1   Stage One: A Federal BIG

The first stage is contingent on the preferred parameters of a national BIG, including a BIG level and a tax-back schedule. The BIG level could, like the LICO, vary by family composition and size of community, and by personal circumstances, such as disability. To keep matters simple, suppose that a common annual level is chosen, say, $20,000 per single adult, and $6,000 per child. The adult BIG is adjusted to take account of family size using standard family equivalence scales. Following OECD (2008) and Statistics Canada (2016), we adopt the square-root scale: a two-adult family receives $20,000 times $\sqrt{2}$, a three-adult family $20,000 times $\sqrt{3}$, and so on, in addition to what they receive on behalf of children. (As discussed below, the CCB serves as the BIG for children, with no family size adjustment.) These amounts represent the benchmark national BIG. In Stage One, the federal government chooses BIG levels less than the national benchmark, given that when provinces agree to join they will implement provincial supplements.

The tax-back schedule could be uniform or piecewise linear and could vary by income. For simplicity, we use a constant tax-back rate, 30% in our numerical example. The tax-back rate applies to family net income, comparable to many existing tax credits. The choice of a tax-back rate affects the income level at which the BIG disappears as well as labour market participation and work effort incentives. To promote labour force participation, the tax-back rate could be zero for some initial income range and positive thereafter, as in one option proposed by Simpson & Stevens (2015).

Stage One is based on the principle that all individuals are brought up to at least the federal BIG level taking into account provincial welfare and disability transfers. (Provincial

RTCs and NRTCs will be used to finance the provincial BIG component.) Welfare and disability recipients receive the federal BIG less an amount reflecting these provincial transfers, while the federal BIG applies to all others. There are four main issues with implementing this.

1. Provinces offer different levels of support. Simply topping up provincial welfare and disability transfers to the federal BIG level would give provinces an incentive to reduce their transfer rates, and, by undoing differences in provincial rates, nullify provincial preferences. To mitigate this problem, national average provincial transfer rates would be calculated for welfare and disability assistance. This could be done for the different categories of recipients by family type and would be weighted by the number of recipients in each province. The BIG transfer to persons in each category would be the basic federal BIG less the relevant national average provincial welfare or disability transfer. Welfare or disability recipients in any given category would receive the same federal BIG top-up but different overall amounts in different provinces. All other persons would receive the full federal BIG. The BIG transfer would be taxed-back based on net income as defined for tax purposes, which includes taxable transfers like EI and CPP/QPP. It would exclude provincial social assistance transfers, so would differ from the base used for the income tax schedule. The effective marginal tax rates would be the tax-back rate plus the marginal income tax rate. Provinces also apply varying tax-back rates to employment income earned by welfare and disability recipients. Since the BIG tax-back rate excludes provincial welfare and disability transfers, the BIG tax-back rate and the provincial welfare/disability tax back rates are not both applied to the same earnings.

2. How should the federal BIG be financed? This would be done by eliminating existing federal transfers, including OAS/GIS, RTCs like the CCB, the GST Credit and WITB, and most NRTCs, with the possible exception of those intended to achieve non-redistributive objectives like credits for charitable donations and political contributions. Only federal tax credits would be eliminated in Stage One since no unilateral changes are made to provincial fiscal programs. Eliminating OAS/GIS and the CCB when the federal BIG is introduced might be controversial and perhaps not necessary. Some elderly persons could be made worse off by the reform, although this might be managed during the transition. And, the CCB is roughly comparable to the proposed BIG for children. Leaving seniors and children out of a national BIG detracts from the comprehensiveness of the program, which may not be desirable in the long run. In our illustration below, we keep the CCB in place for simplicity, but replace OAS/GIS with our national BIG.

3. What should be the size of the federal BIG? Given that provincial RTCs and NRTCs remain in place in Stage One, they will be available to finance the provincial component of a national BIG in Stage Two. This means that the basic federal BIG can be correspondingly less than $20,000 per single adult and $6,000 per child. How much less depends upon the amount of revenue that is freed up for the provinces when they eliminate their tax credits. In our illustrative calculation below, we determine the federal BIG by first estimating the total tax expenditures of federal and provincial NRTCs and RTCs. The federal BIG is then $20,000 times the federal share of total NRTCs and RTCs. A further adjustment in the federal BIG is needed to take account of the fact that the federal government assumes primary responsibility for

transfers to seniors through OAS/GIS. To recognize this and to prevent seniors from suffering in Stage One, we assume the federal government offers the full national BIG to seniors in Stage One and continues to do so in Stage Two.

4. The provinces might undo the effect of the federal BIG by reducing their welfare and disability transfers. The federal government cannot require provinces to maintain the integrity of their transfer programs when a federal BIG is introduced. At best it can appeal to the provinces to keep their programs intact and only dismantle them in Stage Two. The force of this appeal is strengthened if the federal BIG does not tax-back provincial transfers, and if the generosity of the CST system is retained. But, the good will of the provinces must be relied on. There is precedent for this. When the CCB was introduced by the federal government in 2016, the provinces and territories voluntarily agreed that the CCB would not be clawed back from welfare or disability payments. One would hope for a similar reaction if a federal BIG is implemented.

The federal BIG would be administered by the CRA based on tax returns filed. Like existing RFCs, the entitlement to a BIG would be based on the previous year's tax return and recalculated each July. Since provincial tax and transfer programs would remain intact in Stage One, provincial finances would not be affected when the BIG is introduced, so there would be no need to adjust federal-provincial transfers. This becomes relevant in Stage Two considered next.

4.2   Stage Two: Provincial Harmonization

Once a federal BIG is in place, provinces would be invited to join. Those who chose to join would negotiate a bilateral national BIG (NBIG) agreement with the federal government. The basic structure of the NBIG would be based on the federal one, but provinces would have

discretion over the size of their component. A common tax-back rate would apply initially, although in the long run there might be some flexibility for province-specific tax-back rates.

Provinces participating in a NBIG would replace their social assistance and disability transfers with a provincial BIG, where the NBIG would be the sum of the federal BIG and the province's chosen BIG level. The provincial BIG would be financed by eliminating their RFCs and NRFCs.   Provincial social services would remain in place and would be conditioned on something other than social assistance or disability status. There would only be a single uniform provincial BIG with no distinction between welfare recipients and others. Provinces may choose to offer a higher provincial BIG rate to the disabled, in which case eligibility criteria for that would still apply.

The NBIG would be administered through the income tax system by the CRA rather than by individual provinces. Some mechanism would be required to recover from the provinces their shares of the NBIG. One option would be to do that through a revised CST, the currently equal per capita federal transfer in support of provincial social assistance, social services and post-secondary education. The CST could be reduced for participating provinces by the size of the provincial component of the NBIG, since the latter would be paid for by the federal government through the CRA.

5. An Illustrative Calculation

To illustrate the feasibility of implementing our proposed national BIG, we use Statistics Canada's Social Policy Simulation Database and Model (SPSD/M Version 22.1). The SPSD/M is a vast repository of detailed information regarding the federal and provincial tax and transfer systems. It combines individual data from personal income tax returns, the Survey of Labour and

Income Dynamics, unemployment and claimant histories and the Survey of Household

Spending, excluding residents of the Yukon, Nunavut, the Northwest Territories and First Nation

reservations, and armed forces personnel residing in barracks. The SPSD/M is static, so cannot

simulate behavioural responses to policy alterations without further assumptions. Despite this,

the SPSD/M is particularly well-suited for this paper given its highly detailed depiction of the

Canadian tax-transfer system.

Simpson & Stevens (2015) use the SPSD/M to examine the impact of converting all

federal NRTCs into RTCs, which are then subject to a common clawback rate. While we follow

their methodology, the scope of their proposed reform is quite different from ours since the level

of income guarantee it is not substantial enough to represent a reasonable BIG. Also, they

consider only federal tax credit reforms and not provincial ones. In this section, we extend the

Simpson & Stevens (2015) approach to a BIG setting in a federal context.[2]

We first describe the effects of the two-stage implementation of BIG ignoring labour

supply responses. Subsequently, we introduce the latter. Our calculations are meant to illustrate

the feasibility of a revenue-neutral move to a BIG. Other program parameters could be chosen.

5.1   Implementing Federal and Provincial BIGs

Stage One involves eliminating the following federal NRTCs and RTCs: basic personal amount,

age, married, married equivalent, employment, public transit, fitness, pension income, dependent

caregiver, disability, all education credits, the family tax cut, family caregiver and infirm

dependents, GST credit and WITB. Those credits that are contributory and not redistributive in

nature (CPP, EI, political and charitable tax credits) are kept; OAS and GIS are also removed.

The elimination of all tax credits as well as OAS/GIS is for simplicity. Similar results would be

obtained if only the basic personal amount were eliminated and all other credits remained intact.

The basic personal amount represents over three-quarters of all NRTCs, while OAS/GIS serves as a basic income for seniors. BIG is delivered to adults based on an adult-only family equivalence scale. Our proposal retains the CCB, which functions as a BIG for individuals under 18 years of age.

The federal BIG is calculated as $20,000 times the share of federal transfers relative to provincial ones. The total value of federal NRTCs, RTCs and OAS/GIS is $106.74 billion, while the value of provincial NRTCs and RTCs is $42.31 billion. Therefore, the federal share of transfers eliminated is 71.6%, so that the federal BIG is $14,322 (0.7161 times $20,000). This applies to non-senior adults in all provinces who are in one-adult families and do not receive social assistance or disability benefits. For the latter, the amount of the federal BIG is $14,322 less the average value of those benefits for various categories of persons. Table 1 indicates these amounts. For families with two adults, the total federal BIG for all adults is $\sqrt{2}$ times $14,322, or $20,251, while for three-adult families, it is $24,806. For seniors, the federal BIG is $20,000 adjusted by adult-equivalence scales.

TABLE 1 ABOUT HERE

The tax-back rate is chosen such that the reform is roughly self-financing. The values of federal transfers eliminated are more than sufficient to ensure that the federal BIG is self-financing at a 30% tax-back rate. The tax-back rate applies to family net income (excluding welfare and disability transfers) until the guarantee reaches zero. The excess of financing (around $8.09B) is prudent given the labour supply responses that we estimate below. As Table 1 indicates, with a tax-back rate of 30%, the federal BIG is phased out for single non-senior adult non-welfare recipients at a net income of $47,740, which is lower than the income at which existing refundable tax credits and the OAS/GIS disappear.

In Stage Two, provinces would be invited to harmonize their transfer systems with the federal BIG. Those choosing to harmonize would take two steps. First, they would eliminate their welfare and disability transfers, and previous social assistance recipients would receive the standard federal BIG. Second, they would eliminate their NRTCs and RTCs to harmonize their income tax systems with the federal government's, and would choose their own provincial BIGs to supplement the federal BIG. The provinces could choose their own BIG levels, but the 30% tax-back rate would apply.

In the absence of behavioural responses, substituting a federal BIG for most federal RTCs and NRTCs and substituting a provincial BIG for provincial RTCs, NRTCs and social assistance amounts to pure income redistribution. Tables 2 and 3 illustrate the redistributive effects of these two stages. In Table 2, the average change in family disposable income for persons in each decile of the net income distribution are shown in absolute and percentage terms. Here, deciles are based on family-types according to family net income, and do not change when the federal BIG is introduced.

TABLES 2 AND 3 ABOUT HERE

Not surprisingly, gains decrease as one goes up the decile groups, except for the top two deciles. Those in the bottom decile reap an average gain of 167% in disposable income over the two stages, while the top group loses 5.39% on average. The changes follow the same pattern in Stage One, but are proportionately less. The losses at the top are all due to eliminating the benefits of tax credits, and these are relatively uniform in absolute terms in the top five deciles. Only the bottom half of the population in terms of net income obtain some BIG transfer, and that diminishes as income increases. Note that the average change in disposable incomes is negligible overall, reflecting the fact the revenues raised roughly cover the cost of providing the BIG.

Table 3 focuses on families in the bottom decile of the net income distribution of all persons, and shows how the gains from the federal and national BIGs vary by family type within this decile. On average, each of the different family groups appear to benefit quite a bit from the basic income. Of particular note is the fact that elderly single persons and single parents gain the least. This is because they fare relatively well under existing programs, especially the elderly. Indeed, some elderly OAS/GIS recipients may be worse off as a result of the federal BIG reform since their initial disposable income exceeds the federal BIG. To the extent that this is a concern, program design would have to address it in a further refinement.

Table 4 shows how poverty and income distribution measures are affected by the BIG reform. The poverty level is taken to be the after-tax LICO amount for various family types. The rate of poverty is the proportion of the relevant population below that level. The rate of poverty falls significantly for all groups except senior couples, and the average poverty rate falls by 73%. The rate of poverty rises to 6.1% for senior couples who had the lowest poverty rate before the Stage One reform, which is a cause for concern to be addressed. A similar picture emerges for changes in the Gini Coefficients, which are based on disposable income. As the last row indicates, the Gini Coefficient falls by almost 10% in Stage One and over 17% in both stages. This indicates that inequality has been reduced significantly.

TABLE 4 ABOUT HERE

The implementation of the national BIG would be roughly revenue-neutral. The overall cost of BIG would be $162.84 billion, of which $98.65 billion is in Stage One. Revenues from eliminating federal and provincial transfers would be $162.25 billion, of which $106.74 billion is federal, leaving a budget deficit of only $0.59 billion.

5.2 Labour Supply Responses

The above redistributive effects include only the impact effects of the policy change and ignore behavioural responses. The replacement of RTCs, NRTCs and social assistance with the national BIG will change both income levels and effective marginal tax rates (EMTR) on income. These will affect labour supply through standard income and substitution effects. Higher income groups will face a reduction in income and this will encourage an increase in labour supply. By the same token, those in the lower part of the income distribution will obtain higher incomes and this will discourage work.

The substitution effect is more complex. In 2015, the first $45,282 of taxable income was subject to a federal tax rate of 15% and provincial tax rates of approximately 5%. The introduction of BIG will increase the EMTR in this bracket to 50%. This is relatively large and has the potential to significantly distort labour decisions. Because the exit level of BIG is roughly $48,000, mainly individuals in this bracket will face the higher EMTR. For those who do not receive any BIG, their EMTR will be unaffected. In addition, since most of the RTCs and NRTCs as well as OAS/GIS being eliminated are also clawed back, the EMTR before the BIG is introduced will be higher than the statutory marginal tax rate for many taxpayers. However, given the variability of NRTCs and RTCs, an illustrative calculation capturing the change in EMTRs after their removal is too difficult to estimate so we ignore it. In estimating substitution effects from introducing the BIG, we therefore assume that the EMTR rises from 15% to 50% for BIG recipients, but remains unchanged for non-recipients. This will induce lower-income persons to reduce their labour supply, thus reinforcing the income effect. For higher income persons, there is no substitution effect so their labour supply should unambiguously increase. To estimate the behavioural impacts of the BIG, we follow the methodology of Simpson & Stevens (2015). Changes in labour supply will depend on substitution and income elasticities.

Based on a recent survey of academic work by McClelland & Mok (2012), Simpson and Stevens assume that income elasticities for both men and women are 0.05, while substitution elasticities are 0.2 for men and single women, and 0.3 for married women. The percentage change in earnings from the income effect is the income elasticity times the percentage change in disposable income. That due to the substitution effect is the substitution elasticity by the percentage change in the after-EMTR wage rate.[3]

Table 5 shows that the combination of Stages One and Two causes labour supply, and therefore earnings, to fall in the bottom seven deciles, especially in the lower deciles. Earnings rise moderately in the top three deciles, so overall earnings fall by only $492, or 1.5%. This is entirely due to the substitution effect since the income effect is zero on average. The change in labour supply induces changes in BIG expenditures as well as changes in income tax revenues. Overall, the reduction in labour supply causes the cost of the national BIG reform to rise to from $162.84 billion to $167.69 billion, resulting in an overall budget deficit of $5.44 billion. This is the additional amount of revenues that would have to be raised to finance the national BIG, and is relatively modest. If only a federal BIG is implemented and the provinces choose not to harmonize, the changes in BIG entitlements and tax liabilities as a result of labour supply changes will reduce the total cost of the program by $3.25 billion ($98.65 billion to $95.40 billion). Recall earlier that in the absence of behavioural responses, implementing the federal BIG would result in a leaving a surplus after Stage One of about $11.34 billion.

TABLE 5 ABOUT HERE

The labour supply effects summarized in Table 5 are based on estimates of changes in labour supply along the intensive surplus of $8.09 billion. This excess will increase as a result of behavioural responses, margin, that is, variations in hours of work. For many workers, the

relevant labour supply decision is an extensive-margin one including whether to participate in the labour market, what type of job to seek, and what activities to pursue if one chooses not to participate. For example, non-participation can be socially productive if it is used to improve one's skills or to spend time raising children. The relevant tax rate from this perspective is the participation tax rate measuring the net additional tax payment incurred or transfer lost by an individual when moving from unemployment to employment. Such calculations are beyond the scope of this paper but deserve further attention.

A broader issue that we also set aside is whether and how a BIG would affect wage rates of low-income workers. To the extent that wages are determined competitively, a BIG should induce wages to rise. If labour supply falls, firms would have to pay more to encourage workers to accept employment (contrary to the effect of WITB). Those who worry that a BIG will depress wages presumably have in mind alternative wage setting procedures. Of course, minimum wage rules would ameliorate this.

6. Concluding Comments

Despite the fact that our calculations are intended only to be illustrative, some general lessons that can be taken away from our analysis. First, it is feasible to implement a national BIG scheme in a federal setting where the federal government and the provinces have both a common interest in redistributive goals and the policy instruments to achieve them. We have suggested adopting a system analogous to existing federal-provincial tax harmonization to deliver joint federal and provincial BIG programs through the income tax system. Second, we have argued that it is feasible to finance a national BIG by eliminating existing refundable and non-refundable tax credits and using the proceeds as a sole source of funding.

As a final lesson, however, our simulations show that even if we insist on a revenue-neutral policy reform to a national BIG, the tax-back rate need not be excessive. In our example with a single tax-back rate of 30%, the combined effective marginal tax rate for those at the bottom of the income distribution is of the order of 50% when federal and provincial tax rates are taken into account. This is not out of line with what one finds in the optimal income tax literature (e.g., Tuomala, 2016). Reducing the tax-back rate further, while maintaining the size of the basic guarantee, would be feasible if increases in general tax revenues are used to finance it. More generally, adopting more complex tax-back rate structures can mitigate incentive effects at the bottom of the income distribution, particularly those that affect labour market participation.

There are some additional issues worth exploring in future research. First, the labour supply estimates we use do not include family labour supply decisions. That is, they fail to capture joint decision-making that may occur in the household. Second, we do not perform a sensitivity analysis over different tax back rates or labour supply elasticities. For example, we could evaluate a basic income that is not taxed back until after some specified level of income. Such a design would reduce employment participation disincentives. Alternatively, we could examine a BIG that is similar in design to the WITB, which has both phase-in and phase-out rates. Third, we could consider many other behavioural responses, such as the effect of BIG on savings and participation decisions. Finally, this paper does not consider how a basic income would be administered to First Nation members on reserves, which have their own unique political systems.

Table 1: Parameters of the Proposed Basic Income Guarantee - Stage One

	Basic Income Guarantee	Reduction Rate	Exit Level
Single Non-Senior Adults	$14,322	30%	$47,740
Single Seniors	$20,000	30%	$66,667
Provincial Welfare or Disability Recipients			
Single Employable	$6,801	30%	$22,670
Disabled Persons	$2,558	30%	$8,527
Single Parent, One Child	$3,325	30%	$11,083
Two Parents, Two Children	$10,513	30%	$35,042

Note: Adult equivalence scales are applied. The exit level refers to the family net income at which BIG entitlement becomes zero.

Table 2: Impact of BIG on Family Disposable Income by Family Net Income Decile, 2015

Decile	Average BIG	Average Family Disposable Income			% Change in Disposable Income	
		Pre-BIG	Stage 1	Stage 2	Stage 1	Stage 2
Bottom	$20,353	$8,868	$19,422	$23,690	119.01%	167.14%
Second	$18,054	$14,709	$21,334	$25,578	45.04%	73.89%
Third	$15,504	$21,308	$25,263	$28,623	18.56%	34.33%
Fourth	$12,540	$28,253	$29,370	$32,581	3.95%	15.32%
Middle	$8,420	$36,123	$33,792	$36,151	-6.45%	0.08%
Sixth	$3,569	$45,254	$40,628	$41,085	-10.22%	-9.21%
Seventh	$712	$55,474	$50,151	$48,486	-9.60%	-12.60%
Eighth	$0	$71,013	$65,604	$63,125	-7.62%	-11.11%
Ninth	$0	$92,725	$87,427	$84,764	-5.71%	-8.59%
Top	$0	$175,961	$171,009	$166,479	-2.81%	-5.39%
Aggregate	$7,912	$54,982	$54,411	$55,066	-1.04%	0.15%

Source: Statistics Canada, Social Policy Simulation Database and Model (SPSD/M). Version 22.1. Tabulations by authors.

Table 3: Average Impact of BIG on Family Disposable Income by Families Types in the Bottom Decile, 2015

	N (000s)	Average BIG	Average Family Disposable Income			% Change in Disposable Income	
			Pre-BIG	Stage 1	Stage 2	Stage 1	Stage 2
Single Parent	150	$19,871	$24,869	$29,680	$35,169	19.35%	41.42%
Two Parent	59	$27,515	$28,188	$43,384	$45,675	53.91%	62.04%
Non-Senior Single	1,661	$19,772	$5,830	$16,855	$21,505	189.11%	268.87%
Non-Senior Couple	65	$27,874	$14,011	$30,359	$33,135	116.68%	136.49%
Senior Single	90	$19,453	$17,700	$20,731	$21,297	17.12%	20.32%
Senior Couple	30	$27,029	$20,457	$34,623	$30,130	69.25%	47.28%
Disabled Persons	907	$20,654	$12,843	$21,532	$24,635	67.66%	91.82%
Aggregate	2,962	$20,353	$8,868	$19,422	$23,690	119.01%	167.14%

Source: Statistics Canada, Social Policy Simulation Database and Model (SPSD/M). Version 22.1. Tabulations by authors.

Table 4: BIG Impact on Rate of Poverty and Gini Coefficient by Family Types, 2015

	Rate of Poverty				Gini Coefficient			
	Pre-BIG	Stage 1	Stage 2	Impact	Pre-BIG	Stage 1	Stage 2	Impact (%)
Single Parent	15.9%	0.1%	0.1%	-99.37%	0.3076	0.2782	0.2339	-23.96%
Two Parent	4.9%	1.1%	0.6%	-87.76%	0.3059	0.3066	0.2992	-2.19%
Non-Senior Single	26.0%	12.9%	4.9%	-81.15%	0.4714	0.3233	0.2630	-44.21%
Non-Senior Couple	4.3%	1.9%	0.4%	-90.70%	0.3570	0.3573	0.3497	-2.04%
Senior Single	10.3%	7.9%	5.5%	-46.60%	0.2919	0.2744	0.2505	-14.18%
Senior Couple	2.3%	5.1%	6.1%	165.22%	0.3364	0.3876	0.3872	15.10%
Disabled Persons	16.4%	9.9%	5.2%	-68.29%	0.4221	0.3855	0.3554	-15.80%
Aggregate	11.9%	6.2%	3.2%	-73.11%	0.4603	0.4144	0.3801	-17.42%

Source: Statistics Canada, Social Policy Simulation Database and Model (SPSD/M). Version 22.1. Tabulations by authors.

Table 5: Substitution and Income Effects of Individual Tax-Filers by Family Net Income Decile (Measured by Percent of Employment Earnings), 2015

Decile	Average Earnings	Stage 1			Stage 2		
		SE	IE	Total	SE	IE	Total
Bottom	$594	-7.9%	-16.6%	-24.5%	-8.5%	-24.0%	-32.5%
Second	$4,575	-6.1%	-4.3%	-10.4%	-7.2%	-6.7%	-13.9%
Third	$7,868	-6.0%	-1.5%	-7.5%	-7.3%	-2.7%	-10.0%
Fourth	$12,015	-5.9%	-0.5%	-6.4%	-7.3%	-1.2%	-8.5%
Middle	$16,598	-4.9%	0.1%	-4.8%	-7.4%	-0.4%	-7.8%
Sixth	$23,355	-1.8%	0.3%	-1.5%	-5.6%	0.1%	-5.5%
Seventh	$29,959	-0.1%	0.2%	0.1%	-2.7%	0.3%	-2.4%
Eighth	$38,898	0.0%	0.2%	0.2%	0.0%	0.3%	0.3%
Ninth	$51,375	0.0%	0.2%	0.2%	0.0%	0.3%	0.3%
Top	$99,774	0.0%	0.1%	0.1%	0.0%	0.2%	0.2%
Aggregate	$33,638	-0.7%	0.0%	-0.7%	-1.5%	0.0%	-1.5%

Source: Statistics Canada, Social Policy Simulation Database and Model (SPSD/M). Version 22.1. Tabulations by authors.

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[1] A more ambitious program would harmonize BIG with the income tax system so a single tax rate schedule applies to the BIG and all other income combined as in the optimal income tax literature. In this unified tax-transfer system, marginal tax rates would be relatively high at lower incomes to target transfers to the least well-off.

[2] A preliminary version of our simulations was undertaken in Koebel (2016).

[3] See appendix in Simpson & Stevens (2015) for more details.