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**Special Report—Tax Time: A Workshop
Discussion on Recent Research in
Applied Public Finance**

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Special Report: Tax Time—A Workshop on Recent Research in Applied Public Finance

Rapporteurs: Lindsay M. Tedds and Marit Rehavi*

ABSTRACT

In April 2011, a workshop on recent research in empirical public finance took place in Cambridge, Ontario. Seven papers on various topics were presented by prominent academic economists. Each research paper was discussed and critiqued by two peers, and additional comments were offered by other participants in the workshop. This article presents a summary of each paper, along with a summary of the main points raised in the ensuing discussion.

KEYWORDS: PUBLIC FINANCE ■ RESEARCH ■ EMPIRICAL ■ POLICY MAKING

CONTENTS

Introduction	784
Kevin Milligan—Incomes in the Transition to Retirement: Evidence from Canada	785
Comments	787
Sami Bibi, Jean-Yves Duclos, and Abdelkrim Araar—Mobility, Taxation, and Welfare	788
Comments	789
Thomas Lemieux—Wage Inequality: A Comparative Perspective	790
David Albouy—Evaluating the Efficiency of Equity and Federal Fiscal Equalization	792
Comments	796
Marit Rehavi—Partial Reporting: An Example from Charitable Giving	796
Comments	798
Jean-Francois Wen and Daniel V. Gordon—An Empirical Model of Tax Convexity and Self-Employment	798
Comments	800

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Ben Dachis, Gilles Duranton, and Matthew A. Turner—The Effects of Land Transfer Taxes on Real Estate Markets: Evidence from a Natural Experiment in Toronto	801
Comments	803
Conclusion	804
Appendix Workshop Presenters and Discussants	805

INTRODUCTION

Governments around the world continue to seek practical solutions to a variety of complex policy problems, including poverty, long-term stability of social programs, income redistribution, economic stimulus, and the appropriate mix and levels of taxes. One input to the search for improved policy design is high-quality applied research. Academics have long studied these issues in their research, but often in ways more abstract than policy makers find useful. This slows the translation of research insights into progress on the problems that our society needs to face.

Accordingly, there have been increasing calls for more “policy-relevant” academic research—research that attempts to bridge the gap between basic research and end users by being socially relevant and accessible, while remaining scientifically sound. We have seen a growing interest in the building of closer ties between the academic community and policy makers, as well as academia and the general public. Efforts in this direction have been aided by greater concentration of empirically focused researchers within the academic study of public finance in Canada. Moreover, the broader dissemination of microdata—for example, through Statistics Canada’s data liberation initiative and Research Data Centre program—has put higher-quality data within the reach of today’s empirical researchers.

Against this background, the University of Toronto’s School of Public Policy and Governance and the Canadian Tax Foundation co-sponsored the Tax Time workshop, held in Cambridge, Ontario in April 2011. The workshop provided an opportunity to showcase cutting-edge empirical research in public finance. The workshop also served to reinforce the connection between the academic community and the work of the Canadian Tax Foundation in promoting objective, policy-relevant research in Canadian public finance, and thus bridging the gap between the academic community and policy makers.

This article provides a summary of the seven papers presented at the workshop. Each of the six research papers was discussed by the workshop participants and critiqued by two academic peers, and a synopsis of the discussion is included. (The seventh paper, by Thomas Lemieux, was an invitational lecture.) The authors and the topics of the papers, listed in order of presentation, are as follows:

- Kevin Milligan asks whether individuals who retire before the age of eligibility for full social security benefits are able to avoid economic hardship by exploring their sources and levels of income in the transition period to retirement.
- Sami Bibi, Jean-Yves Duclos, and Abdelkrim Araar explore the implications of income mobility, both across time and across individuals, for progressive income tax systems, and consider whether the interactions are welfare enhancing.

- Thomas Lemieux investigates the validity of theories that explain wage inequality. He assesses these theories in light of the large differences in wage inequality growth across countries and across time, and the extraordinary growth in the concentration of income at the top end of the distribution.
- David Albouy studies fiscal equalization payments. He argues that efficiency could be improved by redistributing source-based revenues more intensely in favour of residence-based revenues.
- Marit ReHAVI reveals how partial reporting of charitable giving by US tax filers has led to inflated estimates of the tax price elasticity of charitable giving.
- Jean-Francois Wen and Daniel Gordon examine whether the tax and transfer system influences the choice between self-employment and employed labour.
- Ben Dachis, Gilles Duranton, and Matthew A. Turner use the introduction of the land transfer tax in the city of Toronto in 2008 to explore the effect of transfer taxes on real estate prices and transactions.

The 12 presenters and 12 discussants are listed with their respective affiliations in an appendix to this article.

KEVIN MILLIGAN—INCOMES IN THE TRANSITION TO RETIREMENT: EVIDENCE FROM CANADA

Increasing life expectancies and declining fertility rates are putting enormous pressure on public pension systems across Europe and North America. One policy response has been to raise the age at which retirees qualify for public pension benefits (“the retirement age”). The United States is phasing in an increase in the regular social security retirement age to 67, and Canada is phasing in larger incentives to encourage individuals to wait until at least age 65 before claiming Canada Pension Plan (CPP) benefits. The Canadian incentives include increases in both the penalty for claiming early retirement benefits and the rewards of delaying retirement beyond age 65. Penalizing individuals who choose to retire early has the potential to increase elderly poverty if those who are unable to continue working do not have sufficient outside funds. While some individuals choose to retire early, others are forced to leave the workforce as a result of illness, disability, layoff, prolonged unemployment, or mandatory retirement policies. The financial capacity of these individuals is a key consideration for policy makers, because past research has found that much of the decline in elderly poverty since the 1970s has been due to enrichment of the benefits available to low-income seniors.¹ However, with the rise in alternative private savings vehicles such as registered retirement savings plans (RRSPs), tax-free savings accounts, and employer-sponsored pensions, individuals who face involuntary early retirement may have the resources to compensate for reductions in the generosity of public pensions.

¹ Kevin Milligan, “The Evolution of Elderly Poverty in Canada” (2008) 34, supplement *Canadian Public Policy* S79-94.

Milligan explores this topic using the Survey of Labour and Income Dynamics (SLID), a Canadian panel survey currently available for the years 1993-2008.² Each panel covers six years, and a new panel is started every three years. The SLID is a valuable resource for researchers since it includes detailed information regarding the composition of income by source. Additionally, approximately 75-90 percent of SLID respondents give consent to the use of their T1 tax information as the source for their income data. This access to administrative tax and income data does not occur in other surveys. Milligan uses these rich data to “make a novel calculation—determining the contribution of various supplemental income sources to lifting those not working at older ages out of a position of hardship.”³ All analysis described below is limited to retired men between the ages of 55 and 67, where “retired” is defined as individuals with no labour market attachments.

Surprisingly, Milligan finds few common characteristics among early retirees: “demographic, health, and job characteristics are not as predictive as one might expect in determining who will be an early retiree,”⁴ suggesting that unobserved factors appear to dominate the early retirement decision. As one might expect, “the age of public pension entitlement has a dramatic and large impact on individual incomes of those at the bottom of the income distribution.”⁵ While non-workers in the 90th percentile of the income distribution have fairly stable incomes well above the poverty line, those in the bottom 10th percentile have incomes under \$1,000 a year until the age of 61. Income increases noticeably at age 61 and then jumps again at age 65. Milligan finds that government transfers are still an important source of income for early retirees. Twenty percent of “retirees” under the age of 60 still receive CPP benefits, and a similar percentage of those aged 55 receive social assistance. In addition, many of the early retirees studied have private resources. Half of those with zero earnings at age 55 have non-labour private income, with most of this income coming from private pensions and investment income. This share rises steadily to almost 80 percent by age 67.

Even with all of these supplemental supports, approximately one-third of men retired at age 55 live in families falling below the low-income cutoff (LICO).⁶ As

2 Kevin Milligan, *Incomes in the Transition to Retirement: Evidence from Canada*, working paper sponsored by the US Social Security Administration through a grant to the National Bureau of Economic Research (Cambridge, MA: NBER, September 2010) (www.nber.org/programs/ag/rrc/NB10-09%20Milligan%20FINAL.pdf). While the cross-sectional SLID files can be accessed through the DLI initiative, the panel data can only be accessed through Statistics Canada Research Data Centres.

3 Milligan, *supra* note 2, at 3.

4 *Ibid.*

5 *Ibid.*, at 28.

6 Families are deemed to fall below the LICO when their share of income spent on food, shelter, and clothing is 20 percentage points or more above the average for Canadian families of similar size living in the same region of the country.

expected, the percentage of men in families falling below the LICO declines as the men age into public retirement benefits and bottoms out at 6 percent for men aged 64 (those eligible for full benefits).

It is important to note that assets that could support consumption while awaiting eligibility for full old-age benefits are not counted in these income measures. Therefore, those with seemingly low incomes may have sufficient wealth to support consumption. For example, individuals could spend down accumulated RRSP savings or home equity, or rely on loans and gifts from family members. To better understand the potential financial vulnerability of these families, Milligan estimates their likely incomes (net of family obligations) in the absence of government pension support. He finds that over 20 percent of non-working men aged 55-64 have sufficient incomes from sources other than public pensions to put them over the LICO threshold. Over 60 percent of the remaining men have spouses with positive income, and that income is sufficient to lift almost 40 percent of the remaining men out of poverty. In addition, over half have non-spouse family income, and 15 percent have income either from their own or a family member's RRSP withdrawals. In total, Milligan finds that three-quarters of men who appeared to be below the LICO threshold without public pension income had other sources of income sufficient to lift their families above the LICO. The actual number may even be higher since these figures do not include sources of income not available through the SLID, such as proceeds from the sale of financial or housing assets, gifts, equity loans, etc. Milligan concludes that

a majority of men who look as though they may suffer from very low incomes when looking only at their own income sources actually do much better when other alternative sources of funds are considered. However, this majority is slim, leaving a large minority of men who may suffer at ages leading up to full public pension entitlement.⁷

Comments

Ross Finnie and Michael R. Veall provided brief comments on Milligan's paper. Much of the discussion centred on how to define retirement and the implications of that definition for assessments of financial capacity. It was agreed that the absence of any paid labour is a conservative definition of retirement and risks confounding the effects of involuntary unemployment and early retirement. It was noted that retirement means different things to different people: some people work, some do not, and some rely on different income sources at different times in the retirement cycle. This complicates the attempt to infer retirement from administrative data on earnings. If unemployment, unlike retirement, is unplanned, then those who are unemployed may be in a more precarious financial position than voluntary early retirees. If this is the case, the understatement of financial resources that Milligan documents could be even larger than he finds.

⁷ Milligan, *supra* note 2, at 34.

The difficulties in measuring the nature of labour force attachment raise the issue of whether researchers should focus on retirement or, instead, on the financial circumstances of individuals between the ages of 55 and 64. However, with the current policy focus on the age of retirement, Milligan's work is central to understanding the implications of raising the threshold. His analysis shows that individuals have a complex patchwork of private income sources and access to government support that mitigates the effect of rising retirement ages. However, if individuals are simply replacing retirement benefits with other sources of government support, moves toward raising the age of benefit qualification may not save the government as much money as expected.

SAMI BIBI, JEAN-YVES DUCLOS, AND ABDELKRIM ARAAR—MOBILITY, TAXATION, AND WELFARE

Income mobility—the movement of individuals (or their offspring) across income groups through time—is often seen as a desirable feature of economies. The presence of income mobility suggests that poverty is not an end state and that distinctions between temporary and lifetime shocks are important. However, income mobility is not limited to upward movements in the income distribution. Some individuals will end up in a lower income group than the one in which they or their parents started. Thus, income mobility implies risk both within and between periods. If individuals are risk-averse, as is commonly assumed, mobility could have social welfare costs in addition to its more commonly highlighted benefits.

It is from this perspective that Bibi, Duclos, and Araar approach income mobility.⁸ They explore how mobility interacts with progressive income tax systems and ask whether such systems are welfare enhancing for risk-averse agents. Income mobility reduces inequality over time, while a progressive tax code reduces inequality across income groups at a given point in time. Whereas previous research focused solely on the dynamics across individuals, Bibi et al. examine the welfare impact of income dynamics across both individuals and time. Their approach follows the spirit of mobility as an equalizer of incomes where inequality in permanent incomes is compared with the average inequality of periodic income. In this framework, “[t]he lower the level of permanent income inequality, the higher is income mobility deemed to be.”⁹ Bibi et al. extend this traditional view of mobility to capture the cost of the variability in the distribution of periodic incomes (a cost of income mobility that is typically overlooked). This combined framework allows them to explore the tradeoffs between mobility as an equalizer and a disequalizer across time, and also

8 Sami Bibi, Jean-Yves Duclos, and Abdelkrim Araar, *Mobility, Taxation and Welfare*, IZA Discussion Paper no. 5757 (Bonn: Institute for the Study of Labor, June 2011) (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1867026).

9 *Ibid.*, at 3.

to “assess . . . the tax system’s impact on intertemporal social welfare”¹⁰ where tax progressivity improves both aspects of mobility.

Bibi et al. use the SLID to measure the social welfare effects of mobility and progressive taxation. They use six years of data, running from 1996 to 2001, to construct measures of income before and after taxes and transfers. They estimate that the overall cost of mobility in pre-tax income ranges from 2.09 to 10.84 percent of average pre-tax income. However, the tax system significantly reduces this risk, more than halving the variability cost of mobility. The decrease in variability also implies that mobility contributes much less to the equalization effect of permanent post-tax incomes than of pre-tax incomes. The impact of the benefits of mobility on the equalization of permanent pre-tax welfare ranges from 1.8 to 10.84 percent of mean pre-tax income and from 1.02 to 3.77 percent of mean post-tax income. That is, mobility increases equality in both distributions of income, but more so in the absence of taxes and transfers. Bibi et al. conclude that “the results . . . show that Canada’s tax and transfer system enhances considerably the redistributive effects of mobility while also lowering the cost of income variability.”¹¹ That is, the net effects of both mobility and taxation on social welfare are usually positive.

Comments

This paper was discussed by Jim Davies and Tammy Schirle. Both noted the important implications of the paper for policy and the innovation of allowing mobility to both positively and negatively affect welfare. The traditional view of mobility is that permanent income is a good measure of welfare. However, by reducing income to permanent income, one ignores the costly uncertainty generated by fluctuating income. The approach taken by Bibi et al. makes it clear that mobility has two effects on social welfare: the social welfare cost of income risk and the social welfare benefit attributable to inequality is less for permanent income than for periodic income. In this case, whether or not mobility is beneficial is theoretically ambiguous, as is the effect of tax progressivity.

One focus of the discussion of the paper was the authors’ decision to treat all income variability as costly uninsured risk. Some income fluctuations are predictable, and self-insurance (through precautionary savings), formal insurance markets, and capital markets enable individuals to partially smooth their consumption. As the proportion of risk covered by actuarially fair insurance increases, the welfare cost of income variability falls. In future work, one might want to decompose the income variability that people face. For example, it was noted that one might dislike income fluctuations, but be happy with an income that is steadily increasing over the life cycle. The workshop audience extended this train of thought to separating variability and permanent income shocks. That is, small year-to-year fluctuations

10 Ibid., at 4.

11 Ibid., at 22.

may be less of a concern than the risk of a permanent drop in income, such as that which may accompany a layoff and forced career change late in life. Incorporating temporary and permanent shocks into the analysis would require extending the data beyond the six-year panel available in this work and could be a rich area for future work.

THOMAS LEMIEUX—WAGE INEQUALITY: A COMPARATIVE PERSPECTIVE

Inequality was also the theme of the workshop's keynote address delivered by Thomas Lemieux. Lemieux presented an overview of his recent work on wage inequality and discussed past explanations of changes in inequality. Wage inequality has increased in most industrialized countries over the last two to three decades. There are, however, major differences across countries in both the timing and the magnitude of the growth in inequality. The explanations offered for these changes include technological progress and the computer revolution (skill-biased technical change, or SBTC), labour market institutions and social norms, and changes in the relative supply of highly educated workers. Tax policy may also explain some of the growth in inequality. Unfortunately, there remains little agreement on the relative contributions of these factors. Lemieux assessed the ability of each of these potential mechanisms to explain the large differences in inequality growth across countries and time, and the growing concentration of income at the top end of the distribution.

Lemieux began by reviewing the four "facts" about wage inequality established in Freeman and Katz's seminal study:¹²

1. Wage inequality increased dramatically at all points of the wage distribution for both men and women.
2. Large increases occurred in age and, especially, education wage differentials.
3. Wage dispersion increased within demographic and skill groups.
4. Real wages of less-skilled/lower-paid workers declined (average wages were stagnant, and inequality increased).

Freeman and Katz documented that the increase in wage inequality began in the 1980s, following on the coattails of large falls in wage inequality in the 1970s. They concluded that changes in labour *demand* were behind the growth in inequality and that these changes were mitigated by *supply* factors and *institutions*.

Freeman and Katz dubbed their theory the S-D-I explanation for changes in the pattern of wage inequality. The theory works as follows. Demand is the driving force behind wage inequality growth. Supply factors, particularly the slowdown in the relative growth of highly educated workers in the 1980s following the entry of

12 Richard B. Freeman and Lawrence F. Katz, eds., *Differences and Changes in Wage Structures* (Chicago: University of Chicago Press, 1995).

baby boomers into the workforce in the 1970s, partly mitigated the growth of inequality. Wage inequality rose more slowly in most countries other than the United States because supply factors increased faster as a result of educational catchup. Institutions further mitigated the growth of inequality, particularly in those countries where wages were set by factors other than just supply and demand, restricting the ability of the wage structure to shift in response to supply and demand shocks.¹³ For example, many of the countries that experienced no or low growth in wage inequality were highly unionized countries and countries with minimum wage laws and wage councils.

Lemieux asked what has happened to inequality in the 16 years since Freeman and Katz. Does the S-D-I explanation for wage inequality fit recent developments? What role do taxes play in explaining wage inequality? He noted that there have been two major developments since the formulation of the S-D-I explanation. First, since the 1990s, changes in wages have been U-shaped. That is, wages at the top and bottom have kept growing relative to the middle of the wage distribution. This pattern is often referred to in the literature as “wage polarization.”¹⁴ Second, this U-shape can also be seen in the increasing returns to education at the post-graduate level and the stable returns to education at lower levels. The effect is more pronounced for younger workers, suggesting that there is a strong demand for young post-secondary educated workers, despite the increasing supply of such workers.

How do the candidate explanations for these overall changes in wage inequality fit the recent developments in inequality? Even a more nuanced version of the SBTC theory has difficulty reconciling the fact that many of the jobs at the bottom end of the wage distribution are in personal services. As discussed in more depth below, executive pay has increased significantly since the 1990s, with at least some of this increase usually being attributed to performance pay. Finally, the process of globalization and the associated practice of outsourcing may explain some of the decline in wages in the middle of the income distribution. Overall, each of these phenomena sheds some light on recent changes in wage inequality, but they fail to provide any unifying explanation.

Lemieux argued that the “I” part of the S-D-I explanation is the most important for explaining the inequality phenomenon from a comparative perspective. For men, unionization was historically concentrated in the middle of the wage distribution; as a result, the decline in unionization has had a large impact on this part of the wage distribution, possibly contributing to the U-shaped pattern documented above. In addition, minimum wages were largely stable in the 1990s, after experiencing declines in the 1980s, and this also could contribute to some of the gains at the lower end of the wage scale.

13 Institutions can also contribute to some of the growth in wage inequality, as occurred in the United States and the United Kingdom.

14 David H. Autor, Lawrence F. Katz, and Melissa S. Kearney, “The Polarization of the U.S. Labor Market” (2006) 96:2 *American Economic Review* 189-94.

Institutional structures, broadly defined, may also be at play in the striking changes in relative income among the highest earners. In predominantly English-speaking countries, starting around 1990, the wage growth in the top part of the distribution has been driven by those in the very highest set of wage earners, notably the top 0.1 percent. A similar trend is not observed in continental European countries. The growing concentration of income at the very top end of the income distribution is, to many, staggering. The top 0.1 percent of the wage distribution is mostly made up of individuals who hold executive positions, such as chief executive officers, who command large remuneration packages. Four possible explanations have been suggested for the increase in executive pay:

1. increasing competition for managerial skills;¹⁵
2. increasing use of performance-based compensation such as stock options, which require executives to bear more risk;
3. executives' influence over their own pay packages through direct involvement in, or control of the composition of, their company's compensation committee; and
4. tax policy.

Top marginal tax rates have declined substantially since the 1970s in the affected countries. This decline may explain shifts toward labour income (from capital earnings and non-taxed benefits) for the top income group.

Lemieux wrapped up his discussion of wage inequality by focusing in particular on the implications of the concentration of income at the top of the distribution. First, this higher concentration of income at the top means an even higher concentration of taxes paid by top earners because of progressive taxes and third-party reporting of labour income (to the tax authority). It may be that the growing inequality was one of the reasons why government tax revenues increased so much over the 1990s and early 2000s. In particular, we observe that personal income tax revenues grew much faster than personal incomes because of the combination of higher inequality and progressivity. That said, it is hard to predict what will happen to incomes at the very top end, but this should be an important factor to consider in predictions of future tax revenues and budget deficits.

DAVID ALBOUY—EVALUATING THE EFFICIENCY OF EQUITY AND FEDERAL FISCAL EQUALIZATION

Section 36(2) of the Canadian constitution states that the government of Canada is “committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels

15 Xavier Gabaix and Augustin Landier, “Why Has CEO Pay Increased So Much?” (2008) 123:1 *Quarterly Journal of Economics* 49-100.

of public services at reasonably comparable levels of taxation.”¹⁶ This principle is embodied in Canada’s equalization program, a transfer program addressing fiscal disparities among the provinces. One of the main challenges in designing equalization programs is balancing reductions in inequality with a desire for efficient allocations of human and physical capital and local public goods. The greater the transfers to lower-performing regions, the greater is the worry that there will be inefficient migration incentives. Albouy begins his analysis by deriving a theoretical model of non-distortionary federal transfers. He then compares Canada’s current equalization payments with a benchmark level of efficiency¹⁷ and quantifies the effects of any deviations from non-distortionary transfer payments.

The fiscal capacities of subnational governments vary according to local tax bases. It is useful to break down taxes into two categories: those that are source-based (levied on fixed immobile attributes such as natural resources or land) and those that are residence-based (levied on the incomes of persons residing within the jurisdiction.). Categorizing taxes in this way emphasizes the mobility of the taxed item. For example, Alberta, a province that is naturally endowed with oil, has a potentially rich and relatively immobile tax base. The generally accepted principle is that equalization for source-based taxes is both economically efficient and equitable. With respect to residence-based taxes, migration can lead to “fiscal externalities”; that is, a tax-paying migrant imposes a cost on the region of origin, in the form of a higher tax price as the tax base contracts, and bestows a benefit on the region of destination, in the form of a lower tax price as the tax base expands. These external costs and benefits are not accounted for in the individual’s migration decision, resulting in inefficiencies. This reasoning is the basis for the belief, noted by Albouy, that “it is efficient for the federal government to equalize differences in residence-based tax capacities when tax payments increase with income.”¹⁸

Albouy, however, shows that the argument for equalizing residence-based tax capacities does not then extend to fiscal transfer differences across regions, since it ignores the reason for the existence of income disparities. In particular, he highlights the importance of distinguishing between income disparities across regions that arise because workers are more skilled and income disparities that are driven by cost-of-living and amenity values (such as mountain scenery or a temperate climate). In the latter case, “identical individuals pay more in federal taxes in high-wage areas than in low-wage areas, without receiving greater benefits.”¹⁹ The existing model based on fiscal externalities only equates nominal incomes. For example, residents of Ontario who work in Toronto receive a higher wage, *ceteris paribus*, than those

16 Constitution Act, 1982, being schedule B to the Canada Act 1982 (UK), 1982, c. 11.

17 David Albouy, *Evaluating the Efficiency and Equity of Federal Fiscal Equalization*, NBER Working Paper no. 16122 (Cambridge, MA: National Bureau of Economic Research, July 2010) (www.personal.umich.edu/~albouy/Equalization/equalization.pdf).

18 *Ibid.*, at 2.

19 *Ibid.*, at 2-3.

who work in Waterloo, owing to cost-of-living differentials. While nominal income levels in Toronto are higher, real income levels are not. In contrast, workers in Vancouver are paid a lower wage, *ceteris paribus*, relative to workers in Toronto, owing to the climate-related benefits of living in Vancouver. Albouy indicates that one needs to distinguish the Torontos from the Vancouvers—that there is a “need to disentangle how regional income differences are due to the composition of the labor force or from [sic] the region itself.”²⁰

To this end, Albouy develops a theoretical model of fiscal equalization payments that incorporates this income disparity complexity. Ideally, federal transfers go to regions where wages are low because of productive factors but, in the process, do not offset place-based wage differentials or location factors. That is, it is fine to transfer money to offset low incomes associated with low education levels, but not to encourage people to stay in an undesirable location. Efficiency arises when measurable net fiscal benefits (federal transfers less federal tax burden plus source-based tax revenue) internalize any net positive externalities that may differ across regions. Equity arises when transfers are targeted to low-income areas with less-skilled workers rather than areas with low incomes arising from amenities or the cost of living.

Using this model, Albouy evaluates Canada’s equalization program. He begins by calculating the net fiscal benefit from equalization. He first combines data on federal transfers to the provinces in 2001 (including payments under the equalization program [\$14.2 billion], the Canadian health and social transfer [\$34.9 billion], and other federal transfers [\$3.5 billion] with data on the provinces’ source-based tax revenues. He then determines differences in federal taxes accounting for differences in labour force characteristics. To this end, he uses data on wage earners in the 2001 Canadian census to estimate interprovincial wage differences controlling for observed characteristics.

As noted previously, Albouy is interested in disentangling differences attributable to the composition of the labour force from differences attributable to the region itself. To estimate the composition effects, he estimates the effects of regional differences in education rates, experience, industry, occupation, immigration, language, and ethnicity. He finds that location effects vary considerably; the territories offer a 12.7 percent wage premium, while Ontario and British Columbia offer premiums of 6 percent and 5.3 percent, respectively. Alberta and Quebec provide a small wage penalty, whereas the remaining provinces have significant wage penalties ranging from 11.2 percent in Manitoba to 20.9 percent in Prince Edward Island. In contrast, Albouy finds that composition effects are extremely small in all provinces. This suggests that workers are not sorting across provinces by skill level. For example, in Alberta and British Columbia, workers are better educated, but this effect is offset by other factors such as industry, occupation, and the ethnic makeup of the workforce in the province. Exactly the opposite effect is observed in the Atlantic and prairie provinces. In sum, Albouy concludes that wage differences across provinces

20 *Ibid.*, at 3.

are driven entirely by location effects and not composition effects, yielding support for his concern about the current structure of fiscal transfers. He also finds that these results are not driven by selective migration.

Using the above calculations, Albouy is able to construct measures of the average location benefits of each province between 1999 and 2003. During this period, Ontario, Alberta, and British Columbia were net contributors to federal transfers, Quebec was nearly neutral, and the remaining provinces were net recipients, with the territories receiving the highest transfers. Unsurprisingly, residents in the three provinces that are net contributors to equalization also pay more in federal taxes relative to the Canadian average. Albouy also finds that resource-rich provinces consistently collect over \$2,000 more per capita in source-based revenue than the national average. Combining the aforementioned figures to generate the net fiscal benefit to each province, one finds that Atlantic Canada, the prairie provinces, and the territories benefit from the equalization process. British Columbia, Ontario, and Quebec (the relatively high-wage provinces) are clearly disadvantaged through the process. This implies that individuals moving to a province with a higher wage level are met with a drop in net fiscal benefits. As Albouy notes, “[t]his apparent inefficiency may be justified if fiscal benefit differences redistribute resources more equitably or correct for externalities.”²¹

Under principles of equity, one would expect that transfers would favour jurisdictions with populations of low earning potential. In examining the Canadian system, Albouy finds that there is no relationship between average predicted income and net fiscal benefits. This implies that federal transfers actually appear regressive, and accounting for cost-of-living differences only exacerbates this effect. In terms of externalities, these arise from the spillover effects that a migrant’s additional spending on local goods has on the existing population. As noted by Albouy, “[e]fficient government transfers are supposed to subsidize location in provinces where this externality is strongest.”²² Instead, he finds the exact opposite in Canada, suggesting that federal transfers may induce individuals to move to areas where the externality is lower than average. Albouy also considers whether or not transfers stabilize differences over the long term, thereby creating a positive externality, or whether externalities are derived from populating remote areas; however, he finds no supporting evidence. He concludes that “there is no compelling evidence of externalities from migration strong enough to merit the large fiscal benefit differences.”²³

In light of the foregoing results, Albouy concludes that Canada’s federal transfers are inefficient, since they subsidize individuals residing in less productive provinces and provinces with less desirable amenities. The transfers are also inequitable in terms of equalizing differences in labour market endowments. While he does not

21 Ibid., at 18.

22 Ibid., at 20.

23 Ibid., at 22.

present an alternative design that would better target these federal transfers, he does suggest that efficiency could be improved by increased redistribution of source-based revenues.

Comments

Christine Neill and John Burbidge each provided brief comments on Albouy's paper. Much of the discussion centred on the degree to which Canada fits the underlying assumptions of the model (for example, whether Canada's migration rates come close enough to perfect mobility, and the importance of migration costs) and whether alternate unmodelled desires may rationalize the current transfer system. Equalization was offered in the constitution to entice jurisdictions into a federation. What was efficient in 1867 and 1982 may not still be efficient in 2011. Participants wondered whether the transfers would have been "optimal" under Albouy's criteria when they were first designed. Political economy considerations (particularly unequal representation in Parliament) were also noted as a potential explanation for the current pattern of transfers.

MARIT REHAVI—PARTIAL REPORTING: AN EXAMPLE FROM CHARITABLE GIVING

Individual charitable contributions form a significant portion of many households' expenditures. In Canada, 85 percent of Canadian families donate money to charities, amounting to a total of \$8.9 billion in 2004.²⁴ Most tax systems recognize charitable contributions through either a tax deduction or a tax credit, in part as a way to encourage and reward generosity. There is a great deal of interest in measuring the tax price elasticity of charitable giving—the responsiveness of giving to changes in the tax price—in order to determine the efficacy of this special tax treatment. Much of the existing knowledge regarding the tax price elasticity of charitable giving is from the United States, where a tax deduction is available for those who choose to itemize their deductions. Almost all US elasticity estimates are based on administrative tax return data for these itemizers.

While several of the papers presented at the workshop highlighted the benefits of augmenting survey data with administrative tax and income data (for example using the SLID), Rehavi shows that the use of such data is not potentially without costs.²⁵ She observes that tax returns are strategic documents, filled out to minimize

24 Michael Hall, David Lasby, Glenn Gumulka, and Catherine Tryon, *Caring Canadians, Involved Canadians: Highlights from the 2004 Canada Survey of Giving, Volunteering and Participating*, Statistics Canada catalogue no. 71-542-XIE (Ottawa: Statistics Canada, 2006) (<http://www.statcan.gc.ca/pub/71-542-x/71-542-x2006001-eng.pdf>).

25 M. Marit Rehavi, *Partial Reporting: An Example from Charitable Giving*, Working Paper (Vancouver and Ann Arbor, MI: University of British Columbia, Department of Economics and University of Michigan, Ross School of Business, 2010) (www.bus.umich.edu/ConferenceFiles/MTAXI/rehavi_partial_reporting.pdf).

tax liability within the confines of the law. The strategic component of reporting could bias tax price elasticities calculated from tax return data. In the United States, a tax filer can either choose the standard deduction or selectively declare itemized deductions. The choice is based on which route will result in the greatest tax savings. In addition—and the point of interest for Rehavi—once the decision to itemize is made, the tax filer then needs to choose which deductions to claim. This second choice is subject to the compliance costs of itemizing, which include the costs of compiling the documentation and determining which items are eligible. These compliance costs will be weighed against the tax benefits of reporting the donation, implying that the reporting of charitable contributions will be dependent on the tax filer's marginal tax rate. If the latter phenomenon exists, then any tax price elasticities estimated from tax return data will be a composite of the responsiveness of charitable donations to the marginal tax rate and the responsiveness of reporting to the marginal tax rate. The key empirical question is whether such a reporting effect is a large part of tax price elasticities in practice.

In order to answer this question, Rehavi turns to the Panel Study of Income Dynamics (PSID) for the years 2000–2006. Beginning in 2000, the PSID contains information on the amount of giving that families claimed on their tax returns as well as responses to a detailed survey about their charitable donations. This makes it possible to directly estimate how donation reporting varies with marginal tax rates (both across families and within families over time) and the effect on tax price elasticity estimates.

Rehavi shows that charitable contributions are indeed underreported by tax filers who itemize on their tax returns: a full 60 percent of these individuals reported no charitable giving on their tax returns but reported positive charitable donations in the PSID survey. On average, \$330 of donations per itemizing family are not reported to the Internal Revenue Service (IRS). In addition, Rehavi demonstrates that the gap between the survey and tax return measures of charitable contributions systematically varies with the tax rate. These differences suggest that as much as a third of the tax price elasticity of charitable giving estimated from administrative tax data may be endogenous reporting.

The policy implications of this work are twofold. First, changes in the tax price of charitable giving will influence not only the number and amount of charitable contributions but also the amount of charitable contributions reported on tax returns. Second, the influence of the tax price of charitable giving on actual donations is not as strong as initially thought, since many tax filers give to charity without directly benefiting from the preferential tax treatment. As Rehavi notes, some of these unreported gifts may be ineligible for favourable tax treatment by the IRS. However, even if all of the reporting effect were the shifting of charitable donations to charities eligible for preferential tax treatment, the result would be to reallocate the same amount of funds among charities rather than generate extra charitable dollars. The social welfare implications of such shifting depend on one's beliefs about the relative social benefit of donations to charities that are registered with the IRS.

Comments

The discussants for this paper were Alan Macnaughton and Dwayne Benjamin. The paper confirms a well-known fact, that incentives matter with respect to reporting behaviour, and it demonstrates how costs specifically influence the reporting of charitable donations on tax returns. While Canada's tax preferences for charitable giving differ in structure from those in the United States, the ability to carry donations forward and thus maximize the tax benefit of donations at a higher marginal tax rate makes strategic filing decisions a concern here as well.

Most of the discussants' concerns revolved around the quality and reliability of the PSID survey data. First, the limited number of questions on the PSID survey regarding donation behaviour may be of concern, since it has been shown that fewer questions regarding spending decisions result in an underestimation of actual consumption²⁶ (although it is not clear that the underreporting induced by this survey design would co-vary with families' marginal tax rates). Second, there was extensive discussion about the potential inclusion of donations ineligible for tax deductions in the PSID measures of charitable donations. Third, the PSID survey is a recall survey and relies on the ability of respondents to accurately remember how they have reported their donations, well after the fact and without consulting their records. To the extent that these biases co-vary with families' marginal tax rates over time, they could bias estimates of the share of the tax price elasticity that is attributable to partial reporting.

JEAN-FRANCOIS WEN AND DANIEL V. GORDON — AN EMPIRICAL MODEL OF TAX CONVEXITY AND SELF-EMPLOYMENT

Governments across Canada promote entrepreneurship as a key to job creation, innovation, and economic growth. Reductions in personal income tax rates are often presented as a policy lever that encourages entrepreneurship. High personal income taxes, it is argued, distort the risk-to-reward ratio. However, it is not high income tax rates themselves that distort the risk-to-reward ratio, but rather the rising progressivity of the tax rate schedule. Since the reward from successful entrepreneurial activities is high income returns, the more progressive a tax system, the greater is the penalty for entrepreneurial success. More importantly, a progressive tax system that excludes the ability to average incomes across years penalizes individuals with highly volatile annual incomes, including many entrepreneurs. For example, an individual earning \$60,000 in year one and \$0 in year two will pay \$12,193 in total income taxes (using tax information from 2011), while an individual earning \$30,000 in both years will pay only \$7,956. Wen and Gordon call this phenomenon tax convexity (also known as the "success tax").²⁷

26 Martin Browning, Thomas F. Crossley, and Guglielmo Weber, "Asking Consumption Questions in General Purpose Surveys" (2003) 113:491 *Economic Journal* F540-67.

27 Jean-Francois Wen and Daniel V. Gordon, *An Empirical Model of Tax Convexity and Self-Employment*, Working Paper (Calgary: University of Calgary, Department of Economics, 2010) (http://econ.ucalgary.ca/sites/econ.ucalgary.ca/files/publications/JFSelfemployment_model6.pdf).

Using self-employment as a proxy for entrepreneurship, Wen and Gordon test empirically whether the tax and transfer system influences the choice between self-employment and employed labour. Their objective is to measure tax convexity, defined as “the expected value of the tax liability of an entrepreneur facing a distribution of possible returns,” and “to compare this burden with the same individual’s predicted tax liability.”²⁸ An individual will be deterred from self-employment if the expected tax liability exceeds the predicted liability. This occurs if the tax system penalizes success more than it offsets failure. Wen and Gordon go beyond just examining marginal income tax rates and thresholds, and also include payroll taxes, tax credits and their clawbacks, loss offset provisions, and other tax and transfer considerations in their analysis.

To calculate the effect of tax convexity on self-employment, Wen and Gordon use SLID data, discussed previously, from 1999 to 2005. Conducting this analysis using Canadian data as opposed to US data is informative for several reasons. First, in Canada a personal dividend tax credit exists that partially offsets corporate taxes, meaning that “[t]he personal and corporate income tax systems are integrated for incorporated businesses earning up to \$500,000 (in 2009).”²⁹ Second, tax rates are applied to the individual and are not based on household income. Third, the proceeds from the sale of small business shares are subject to a lifetime capital gains exemption, provided that specific criteria are met. Fourth, statutory personal income tax rates began to be fully indexed in 2000, whereas previously indexation was limited to inflation increases above 3 percent. These differences suggest that results from Canada may differ from those obtained using US data. In addition, the Canadian data cover a period of major tax reform. In 2001, the rates for the first two statutory tax brackets were reduced, the surtax was eliminated, the capital gains inclusion rate was dropped to 50 percent, and the corporate tax rate was cut from 28 percent to 21 percent for small business income between \$200,000 and \$300,000. These combined reforms were designed in part to promote entrepreneurship and may do so by decreasing tax convexity. On average, the self-employed have both lower earnings and greater variance in their earnings, an observation that is consistent with the higher risk associated with self-employment. The self-employed also have higher levels of investment and capital income, and are older, more likely to be married, and less likely to work in white-collar jobs.

Wen and Gordon categorize convexity into two types: upside convexity and downside convexity. Upside tax convexity occurs when tax rates increase as income increases, as discussed above. Downside convexity occurs when tax rates decrease as income decreases. Decomposing convexity in this manner allows for asymmetric responses, with the overall effect of tax progressivity on self-employment being the sum of these two effects. Using an expected earnings equation, Wen and Gordon predict earnings and total income for individuals in circumstances of self-employment

28 Ibid., at 3.

29 Ibid., at 4.

and paid employment. The residuals from the earnings equation are used to calculate the variance of earnings in self-employment for both the self-employed and the employed. This earnings variance is used to establish the predicted high income state and the predicted low income state. Wen and Gordon then calculate the expected tax liabilities in these two income states to obtain measures of the upside and downside tax convexity of the tax regime.

Wen and Gordon examine how these factors (upside tax convexity, downside tax convexity, and net-of-tax income differences) influence the probability that an individual will be self-employed, *ceteris paribus*. They find that upside tax convexity is negatively related to the self-employment rate, while downside tax convexity is positively related to that rate. They also find that upside tax convexity has a much larger influence on the self-employment rate than downside convexity, suggesting that tax progressivity does influence the decision to become self-employed. This result calls into question the hypothesis that high taxes encourage self-employment owing to the opportunity to evade taxes that results from the lack of third-party reporting. Net-of-tax income differences are also important, with the probability of becoming self-employed increasing in the difference between net-of-tax income in the self-employed and employed state.

Wen and Gordon conclude by examining the effects of the 2001 tax policy changes on the self-employment rate. Overall, they find that the 2001 tax reforms would have increased the self-employment rate by 1.1 percent for white-collar workers and 0.6 percent for blue-collar workers. Which of these tax reforms, however, drive this result? Wen and Gordon decompose the major changes in personal income tax rates to examine the likely effect of each on the self-employment rate. They find that most of the change in entrepreneurship is driven by the reduction of the middle tax bracket.

Wen and Gordon acknowledge that the effects of these tax changes on the self-employment rate are very modest, likely owing to the fact that seemingly large cuts to the rates translate into small increases in take-home income. However, they note that another reason is the offsetting effect of these tax reforms on upside tax convexity, downside tax convexity, and net-of-tax income differences. For example, cuts to the second tax bracket reduce upside tax convexity (increasing self-employment), but reduce self-employment through net-of-tax income changes. This occurs because the income from employment is higher and therefore the rate cuts favour employment.

Comments

The policy consequences of these findings are significant and provide fresh insights into how the design of tax policy influences self-employment. The main message is that designing tax reforms to increase self-employment is extremely difficult, owing to the counteracting effects. The most successful policy is likely to be one that cuts tax rates on self-employment income but not wage income. Participants noted that this could be effected by returning to an income-averaging system, similar to that which was in place in Canada between 1971 and 1987. (Income averaging currently

exists only for self-employment income from farming.) It was noted that, from an administrative viewpoint, income averaging is less difficult than it was in the past because of advances in computing technology and tax software. Moreover, RRSP deductions provide a weak substitution for income averaging, mostly through contribution limits, which could be raised for the self-employed to better mimic the effects of strict income averaging.

Herb Schuetze and Gustavo Bobonis provided further commentary on Wen and Gordon's paper. Their comments reinforced the importance of the paper—that is, examining policies that target self-employment is important because labour market policies, such as tax reform, are usually developed with wage employees in mind. That focus is unfortunate, since those policies can and often do have perverse effects on the self-employed, a point made clear when one examines the income tax system. Tax policy affecting the self-employed therefore needs to be considered beyond the traditional focus on encouraging entrepreneurship. Participants also reinforced the importance of conducting empirical work in this area in Canada. Most of the existing research uses US data, and that country, as we have noted, has a very different system of taxes and transfers. Examining Canada can help us, in particular, to understand the effect of the social safety net on the self-employment rate. This is an important factor since most individuals who venture into self-employment will fail at their endeavours in the first five years. Wen and Gordon's paper also makes an important contribution by developing a much-improved measure of tax convexity.

The discussants also made several suggestions for enriching the research results. First, they raised the issue of tax evasion (either through tax non-compliance or income splitting) and the role that it may play in both the decision to be self-employed and the empirical results. Second, they encouraged the authors to exploit the panel nature of the SLID to examine transitions into and out of self-employment. In addition, there is room to further exploit the 2001 tax changes. The discussants suggested that it would be beneficial to examine directly the detailed response of self-employment rates to the 2001 policy changes and to compare them with the specific countervailing effects predicted by the empirical exercise. Finally, they suggested that capital requirements, capital constraints, and entrepreneurial ability are important complements to entrepreneurial activities, and that it would therefore be beneficial to incorporate these factors into the analysis.

**BEN DACHIS, GILLES DURANTON, AND
MATTHEW A. TURNER—THE EFFECTS OF
LAND TRANSFER TAXES ON REAL ESTATE
MARKETS: EVIDENCE FROM A NATURAL
EXPERIMENT IN TORONTO**

Most jurisdictions impose a tax on real estate transactions as a revenue-generating device. These taxes, known as either land, property, deed, or real estate transfer taxes (collectively, transfer taxes), are generally imposed on real estate transactions and must be paid upon the registration of a transfer of property title. The amount of

taxes owing at the time of transfer is usually based on a flat or sliding percentage of the amount that the buyer paid for the property. Because these taxes increase the cost of real estate transactions, it is generally acknowledged that they act as a disincentive to buying real estate and may be passed through to sellers in the form of lower prices. However, little is actually known about the magnitude of these effects. Obtaining this information is important because many jurisdictions offer some form of relief to buyers who meet certain criteria, such as first-time home buyers. For example, the 2009 US Housing Stimulus Bill provided partial relief to all home buyers, albeit temporarily, on the assumption that these forms of tax relief reduce the disincentive to buy.

Municipalities in Canada are not permitted to impose their own transfer taxes unless they have been explicitly granted the authority to do so by the provincial government. Currently, the only municipal jurisdictions that do impose such taxes are municipalities in Nova Scotia, which have the authority to enact deed transfer taxes (Nova Scotia does not have a provincial transfer tax), and the city of Toronto, which in 2007 was granted special authority to impose municipal transfer taxes.

The city of Toronto's transfer tax came into effect on January 1, 2008. The tax follows a progressive tax regime based on the purchase price of the property: the first \$55,000 in value is taxed at a rate of 0.5 percent, the value between \$55,000 and \$400,000 is taxed at a rate of 1.0 percent, and the remainder is taxed at a rate of 2.0 percent. As in most jurisdictions, first-time home buyers are eligible for tax relief through a maximum rebate of \$3,725. The city of Toronto land transfer tax (LTT) is in addition to the provincial transfer tax.

Dachis, Duranton, and Turner use the introduction of the Toronto LTT to explore the effect of transfer taxes on real estate prices and transactions in the city of Toronto.³⁰ They obtain data from the Multiple Listing Service (MLS) for single-family homes sold in the Greater Toronto Area between January 2006 and August 2008. The MLS data include information on the sale price, sale date, closing date, various house characteristics, and the property's postal code. Dachis et al. use the property's postal code and geographic information systems software to determine the municipality in which the property is located and thus identify properties subject to the Toronto LTT.

Using data for sales in the city of Toronto as well as surrounding jurisdictions (Mississauga, Brampton, Vaughan, Richmond Hill, Markham, and Pickering), Dachis et al. compare transactions before and after the imposition of the LTT in the city of Toronto with transactions in nearby jurisdictions that are not subject to the tax. This quasi-experimental design treats sales in the city of Toronto as the treatment group and sales in neighbouring jurisdictions as the control group, allowing Dachis

30 Ben Dachis, Gilles Duranton, and Matthew A. Turner, *The Effects of Land Transfer Taxes on Real Estate Markets: Evidence from a Natural Experiment in Toronto*, Working Paper (Toronto: University of Toronto, Department of Economics, February 2011) (<http://individual.utoronto.ca/gilles/Papers/TREB.pdf>).

et al. to isolate the effect of the policy change in January 2008 from other factors, such as economic climate and sales seasonality, which should affect both treatment and control jurisdictions equally. In order to ensure that they do not confound differential trends with treatment effects, Dachis et al. further restrict their analysis to sales within three kilometres of the city of Toronto border. That is, their approach “boils down to a differences-in-differences estimation for observations on a narrow band on both sides of the Toronto border.”³¹

Using their modified quasi-experimental design, Dachis et al. find that the imposition of the LTT in the city of Toronto led to a 15 percent decline in the number of houses sold, a result that they find to be robust to various specifications. They also explore the effect of the policy change on the sale price of homes and find that the new transfer tax led to a decline in housing prices that was approximately equal to the magnitude of the tax. That is, the new transfer tax was almost perfectly offset through a corresponding decrease in the purchase price, meaning that the tax was “fully capitalized into land prices.”³² Translating these figures into welfare, Dachis et al. find that the total welfare losses of the tax, which are effectively the cost of forgone mobility, were equivalent to over 12 percent of the revenue raised, or about \$19 million per year for Toronto. They conclude by suggesting that “welfare would be improved by shifting the burden of public finance from land transfer taxes to ordinary property taxes.”³³

Comments

The paper was discussed by Abigail Payne and Daniel Parent. Much of the discussion focused on the underlying assumptions of the estimation strategy. A necessary assumption is that the “real estate market did not anticipate the tax,”³⁴ but given that the special authority to impose the tax was granted a full year before the tax was implemented, and that discussions leading up to the imposition of the tax suggested that its imposition in the city of Toronto was an acute possibility, it is not clear that this assumption strictly holds. If the assumption does not hold, this poses problems for identifying the true policy date. If the tax was anticipated, the behavioural changes as a result of the policy become blurred, and it is not clear what is the true pre-policy period and what is the true post-policy period. Given the relatively narrow window of time studied, it is also not clear whether these effects are limited to the short run or will persist in the long run. A followup study on how these effects evolve and how the market adjusts would be beneficial in this regard.

The discussion also focused on the definition of the alternative for the welfare analysis. The city of Toronto needed to increase its budgetary revenues. Therefore,

31 Ibid., at 10.

32 Ibid., at 25.

33 Ibid.

34 Ibid., at 6.

one would want to compare the welfare effects of the LTT with the welfare effects of the alternatives for generating the needed revenue. Finally, as noted above, it is not clear whether the observed effects are temporary or long-lived, and these are equally important considerations in understanding the adjustment factors. Again, a followup study would be useful.

CONCLUSION

The Tax Time workshop provided an opportunity to showcase current research tackling public policy issues in the field of empirical public finance. An underlying theme of many of the papers was inequality. Income constraints differ enormously across individuals, time, and countries. A substantial public policy problem is when, how, and to what extent governments should intervene to create income equity. The answers to these types of questions are difficult and rely on many considerations outside the purview of economic research. However, to even attempt to design policy responses, we need to know how much inequality and poverty there is in Canada, the sources of inequality and poverty, and the costs and benefits of specific policies. The work by Milligan, Bibi et al., Lemieux, and Albouy exemplifies public finance research that is tackling these complexities of income inequality.

Taxes are one of the primary tools that governments use both to redistribute wealth and to encourage desired choices. It is therefore fitting that the research presented also focused on their role. The papers by Rehavi, Wen and Gordon, and Dachis et al. consider how various tax measures contribute to the loss of social welfare, by either contributing to compliance and reporting costs, curtailing entrepreneurial behaviour, or influencing mobility decisions. This research emphasizes the importance of understanding the consequences (both intended and unintended) of the design, delivery, and implementation of taxes.

Evidence from academic research can be an important input to policy decisions. The availability of clear policy evidence clarifies the choices facing public officials and enables them to maximize the return on the resources at their disposal. It is to be hoped that the papers presented at the Tax Time workshop help to fulfill that role.

APPENDIX WORKSHOP PRESENTERS AND DISCUSSANTS

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