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The role of taxes and transfers in reducing income inequality

**INEQUALITY IN CANADA:
DRIVING FORCES, OUTCOMES AND POLICY
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Introduction

- Canadian families receive income from market sources and government transfers, and pay income taxes.
- The amount by which the government sector reduces income inequality through the tax and transfer system is called “Income Redistribution”
- There has been a longstanding interest in understanding the role of income redistribution as a mitigating or corrective factor against rising market inequality
- Beach and Slotsve (1996)
- Heisz (2007)
- Frenette, Green and Milligan (2009)
- Milligan (2013)
- Davies (2013)



Objectives

- Review the stylised facts on the effect of income redistribution on income inequality
- Add information on redistribution by tax and transfer program
- Emphasise the distinction between “redistribution” and “progressivity” in taxes and transfers



Redistribution vs. Progressivity (1)

- “Redistribution” is the amount by which a particular tax or transfer reduces income inequality
- “Progressivity” is a measure of how much a tax or transfer differs from proportionality
- e.g.
 - A transfer that is targeted at lower incomes such as the Canada Child Tax Benefit
 - A tax that rises with income, such as the Personal Income Tax



Redistribution vs. Progressivity (2)

- The amount of redistribution generated by a tax or transfer depends upon its progressivity and its average (tax or benefit) rate
 - Intuitively, for two equal sized taxes or transfers (in terms of the average tax or transfer rate), the more progressive tax or transfer would have a larger redistributive effect

- Separate indicators for redistribution and progressivity would provide analysts and policy makers additional tools indices by which to evaluate the effect of changes in the tax and transfer system on income inequality



Methods (1)

Kesselman and Cheung (2006)

Total redistribution (R) is the absolute difference in pre- and post- redistribution GINI coefficients (Musgrave and Thin (1948) and Reynolds and Smolensky (1977))

$$R = G_M - G_{AT} \quad (1)$$

Separate redistribution indices for taxes (subscript t) and transfers (subscript b) can be described as:

$$R_t = G_T - G_{AT} \quad (2) \text{ and}$$

$$R_b = G_M - G_T \quad (3).$$

Where:

G_M is the GINI of market income

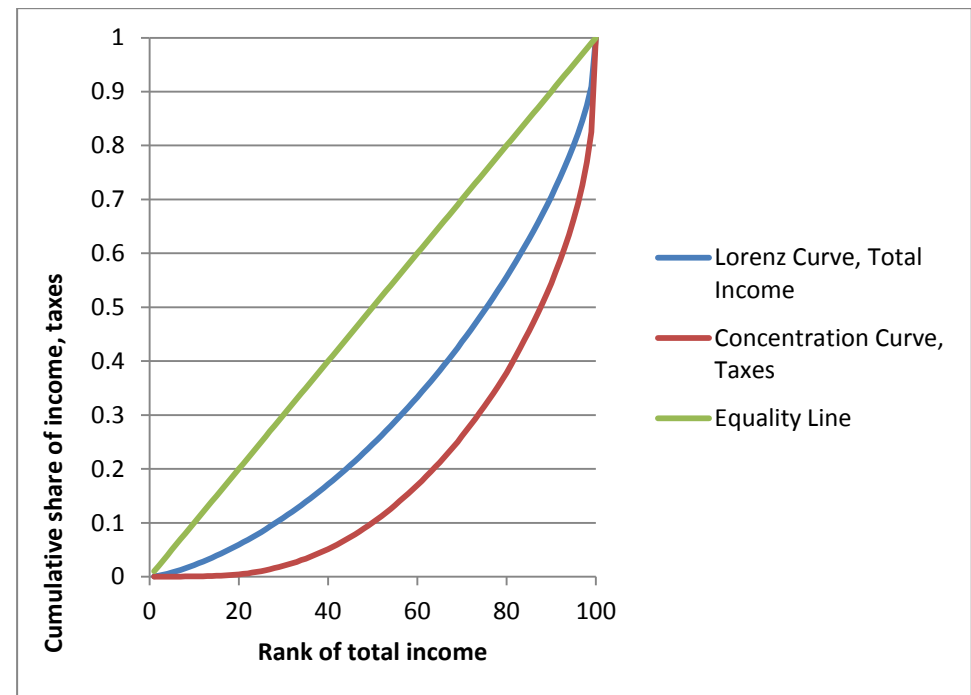
G_T is the GINI of total income

G_{AT} is the GINI of after-tax income

Methods (2)

- progressivity index: Kakwani (1977, 1984)
 - global index
 - related to the GINI index
- if a tax were proportional, the concentration curve of taxes (the cumulative share of taxes paid, by pre-tax income) would lie on top of the Lorenz curve of pre-tax income
- the concentration curve of a progressive tax would lie outside the Lorenz curve
- the area between the Lorenz curve and the tax concentration curve is the Kakwani index of tax progressivity

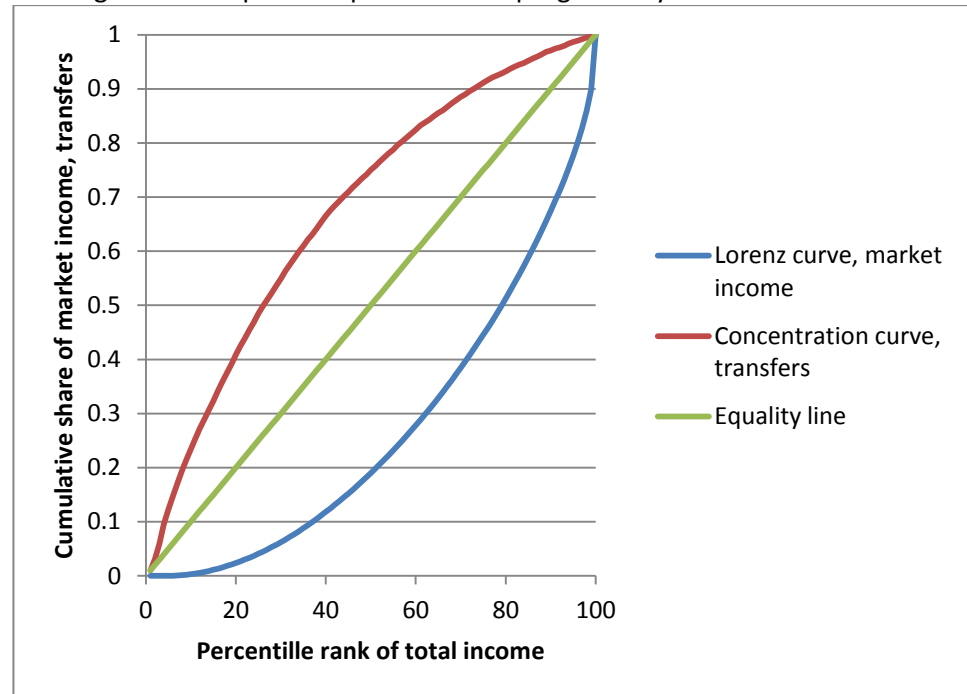
Figure 1a: Graphical depiction of the progressivity index for taxes



Methods (3)

- likewise the area between the Lorenz curve of pre-transfer income and the transfer concentration curve provides an index of transfer progressivity (Lambert 1985)

Figure 1b: Graphical depiction of the progressivity index for transfers



Methods (4)

taxes

$$R_t \cong \frac{t}{1-t} P_t \quad (5)$$

$$t = \frac{\sum \text{taxes}}{\sum \text{total income}} \quad (6)$$

transfers

$$R_b \cong \frac{b}{1+b} P_b \quad (8)$$

$$b = \frac{\sum \text{transfers}}{\sum \text{market income}} \quad (9)$$

- equations (5) and (8) are approximate
- the method can be used for total taxes or transfers, or individual taxes or transfers
- Speaks to the issue of “targeting” programs through raising progressivity and program size (through average tax/transfer rates)



Data

1976-to-1997 Survey of Consumer Finances (SCF) and the 1993-to-2010 Survey of Labour and Income Dynamics (SLID)

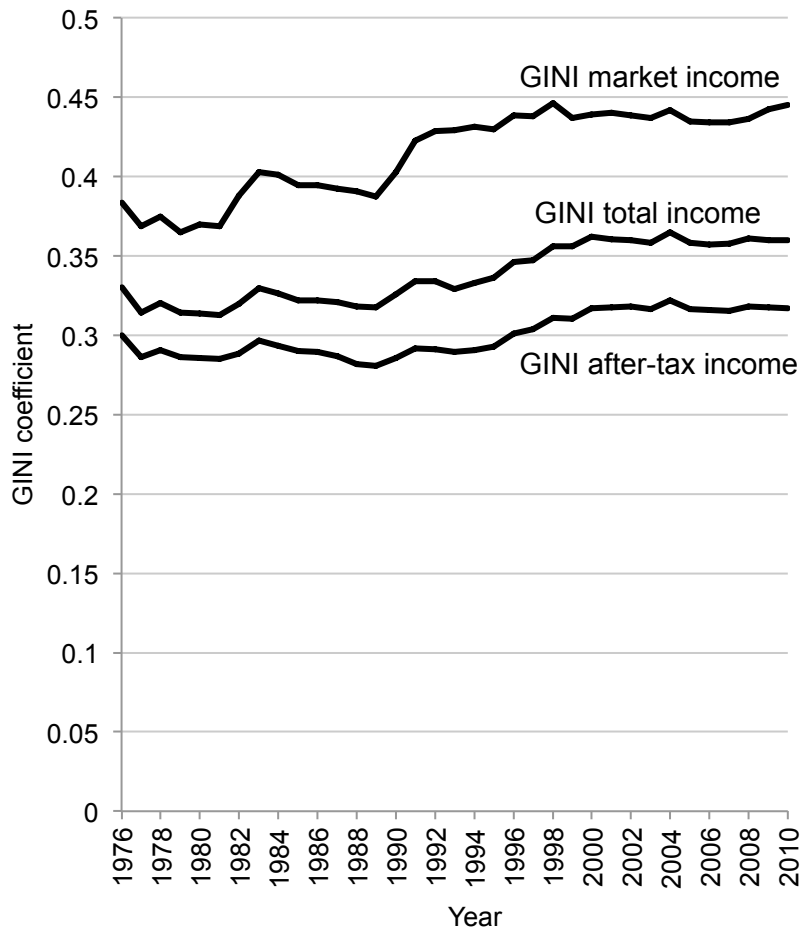
- Market income
 1. Earnings
 2. Net Self employment income
 3. Asset income
- Transfers:
 1. C/QPP,
 2. OAS/GIS,
 3. Child Benefits (FA, CTC, CTB, WIS, CCTB, NCBS, UCCB)
 4. Social Assistance (SA)
 5. Employment insurance (EI)
 6. Other transfers (Workers compensation, WITB, provincial tax credits, others)
- Taxes
 1. Provincial and federal personal income taxes
 - Does not include payroll taxes, consumption taxes, property taxes.

Social Policy Simulation Database and Model (SPSD/M)

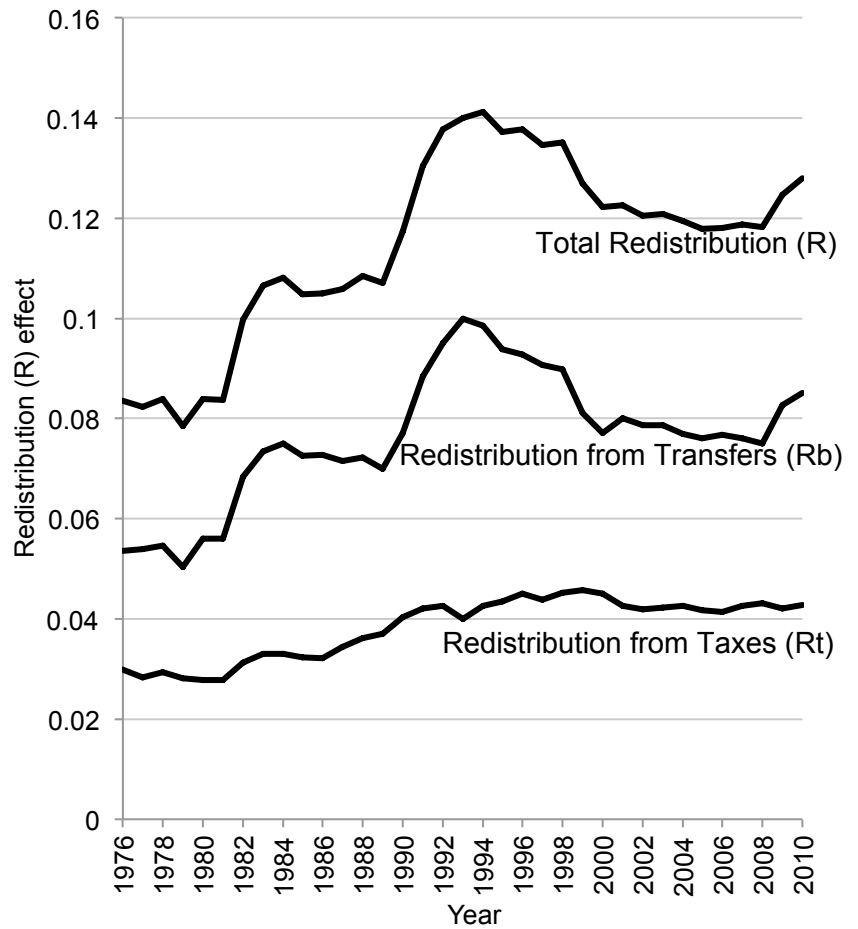


Redistributive effect of taxes and transfers

GINI coefficients, Market, Total and After-tax Income



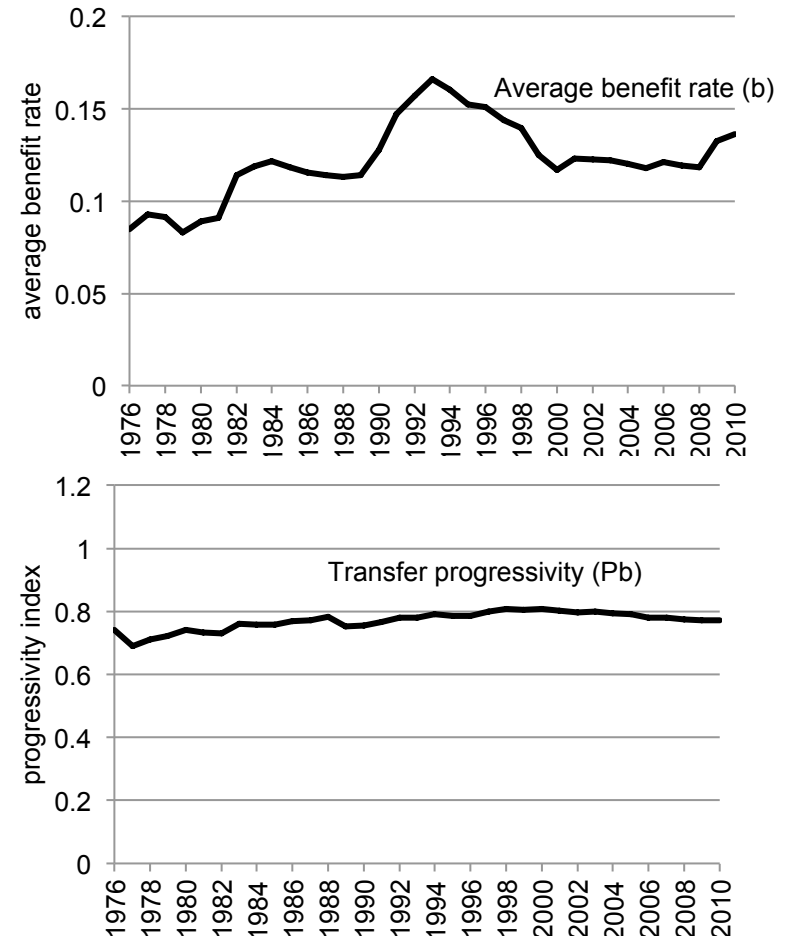
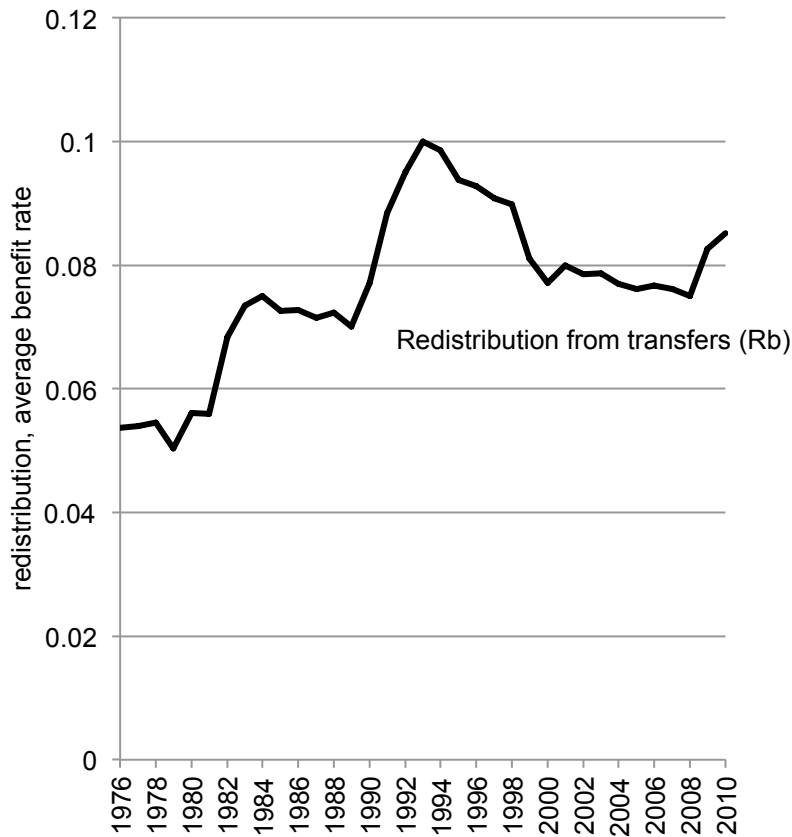
Redistribution (R) estimates, transfers, taxes and total redistribution





Decomposing transfers into average benefit rate and transfer progressivity

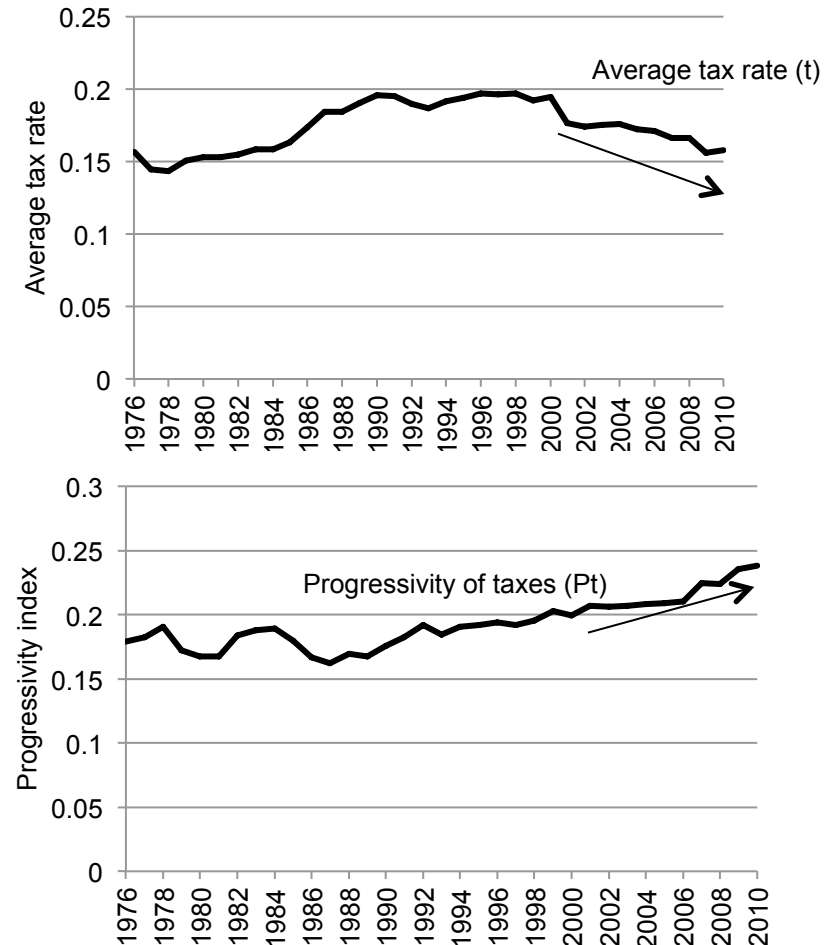
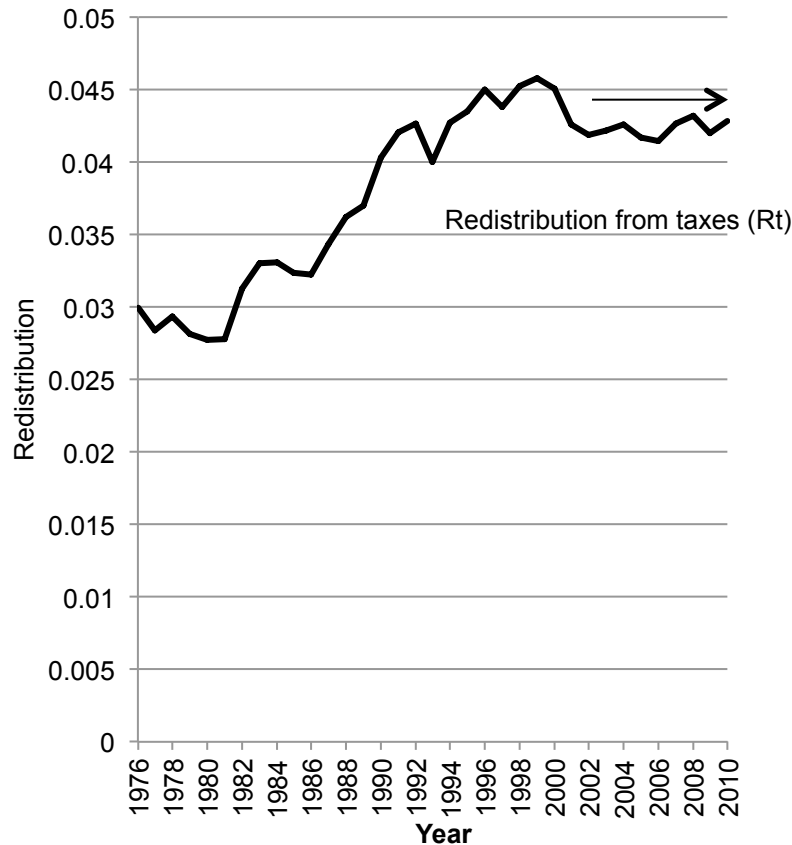
$$R_b \cong \frac{b}{1+b} P_b$$





Decomposing taxes into average tax rate and tax progressivity

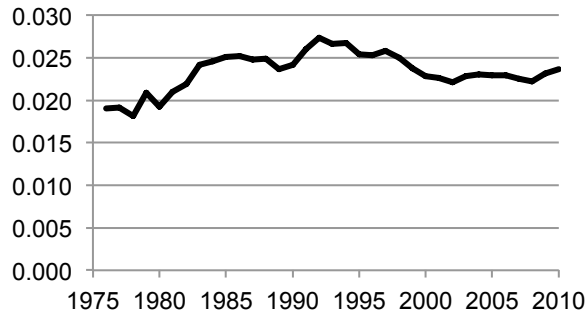
$$R_t \cong \frac{t}{1-t} P_t$$



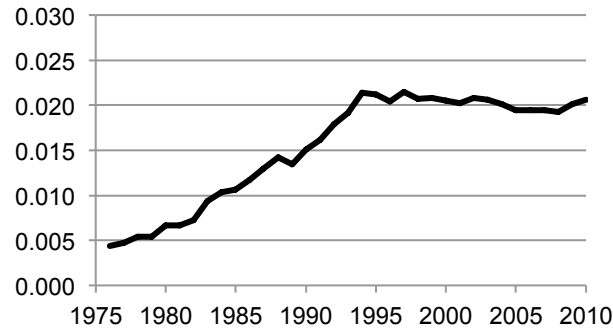


Redistribution from transfers

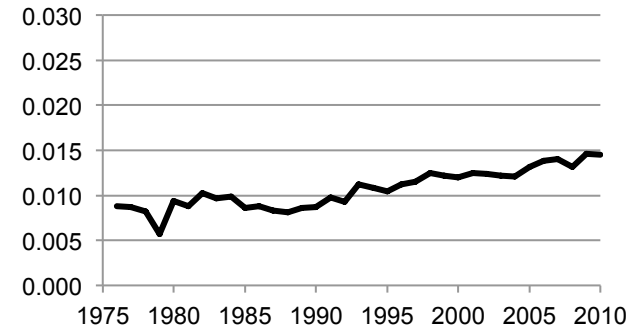
OAS/GIS



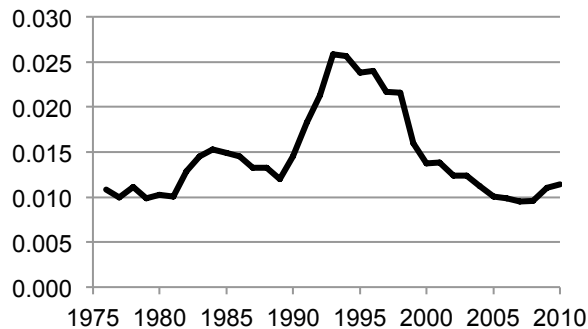
C/QPP



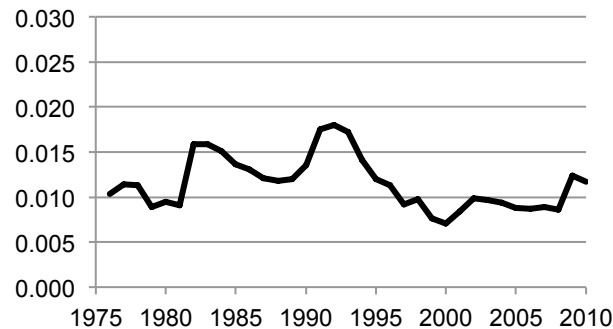
Child Benefits



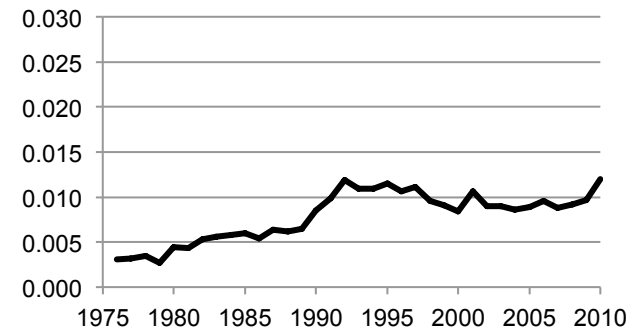
Social Assistance



EI



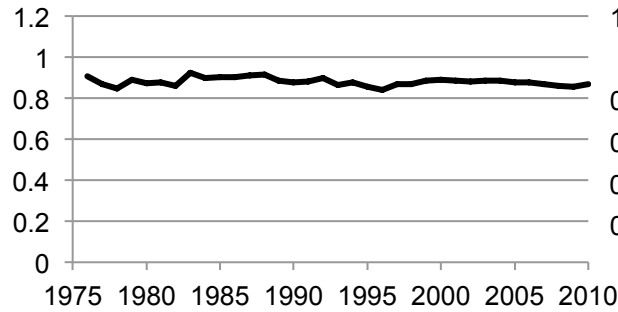
Other transfers



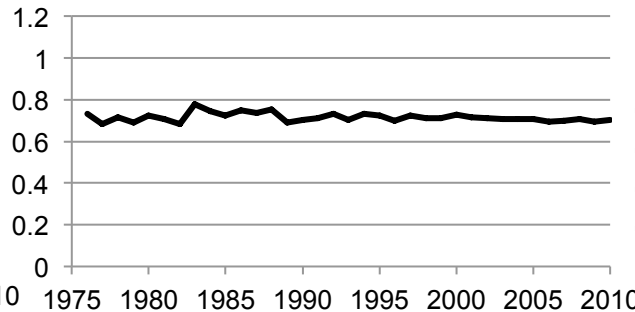


Progressivity indices of transfers (Pb)

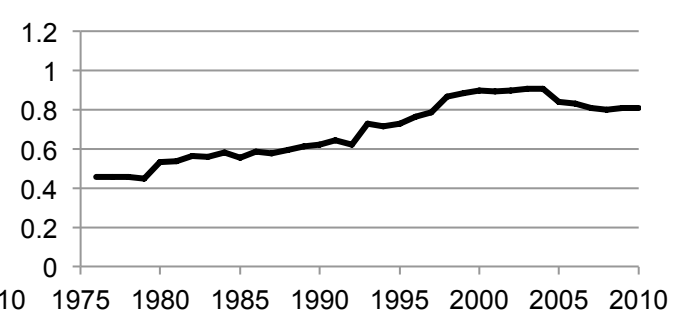
OAS/GIS



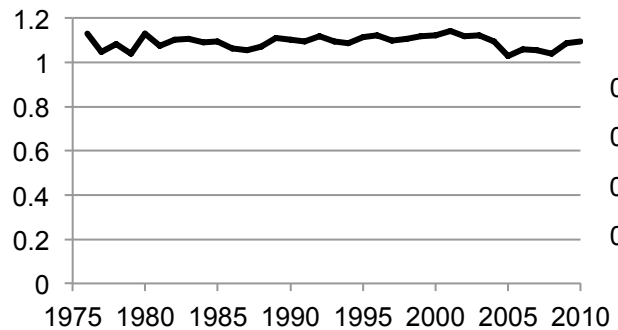
C/QPP



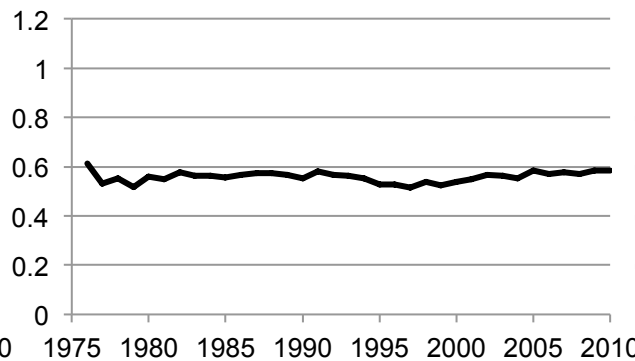
Child Benefits



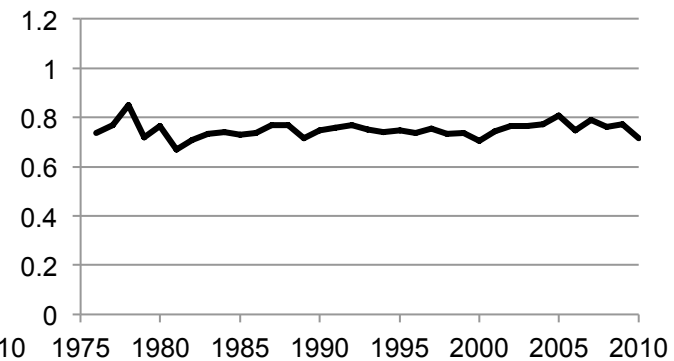
Social Assistance



EI

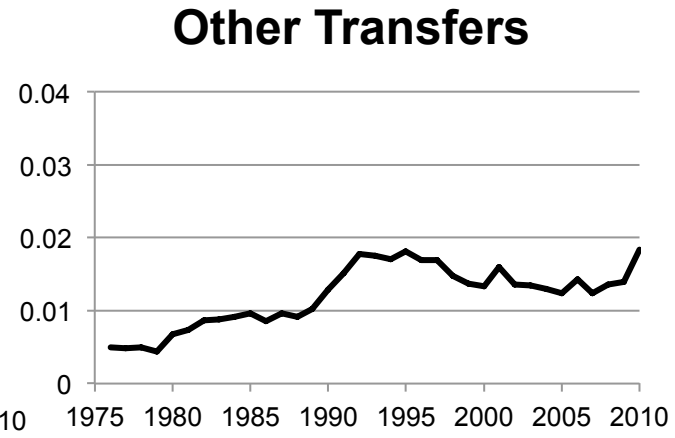
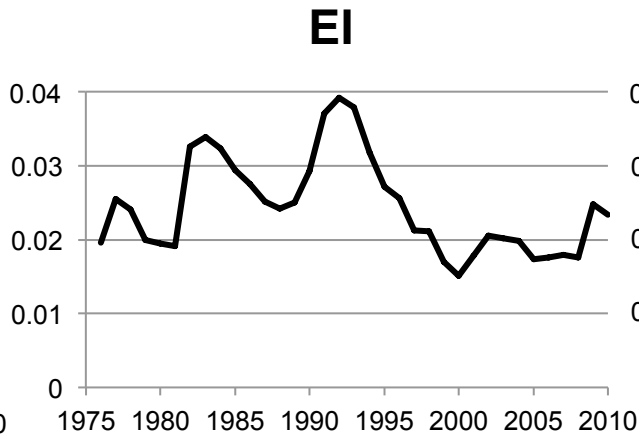
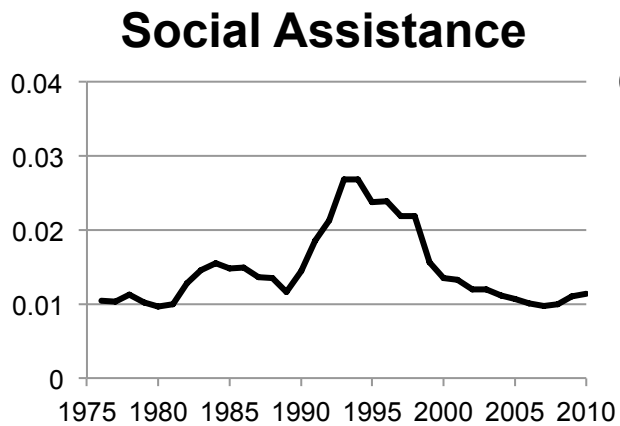
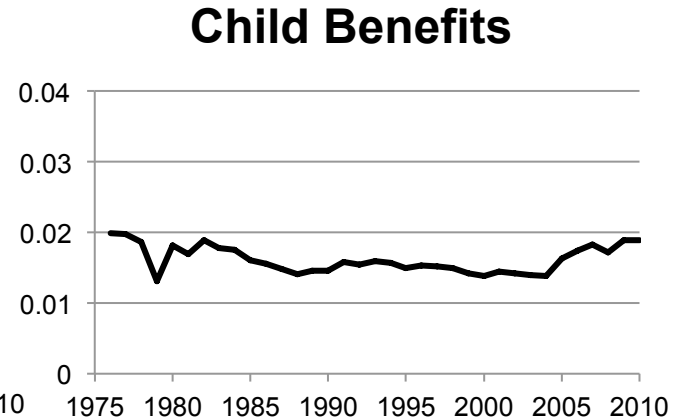
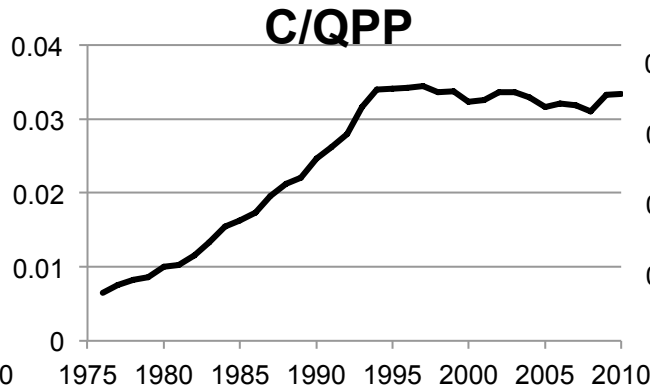
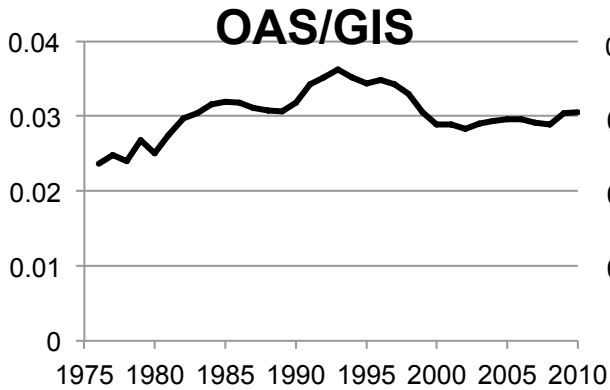


Other transfers





Average transfer rate (b)



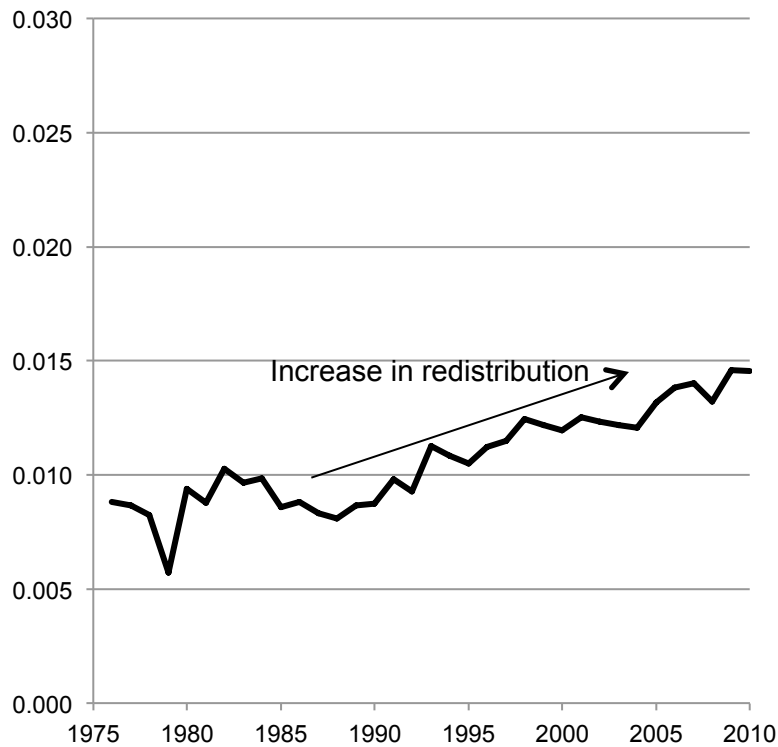
b= total benefits / total market income



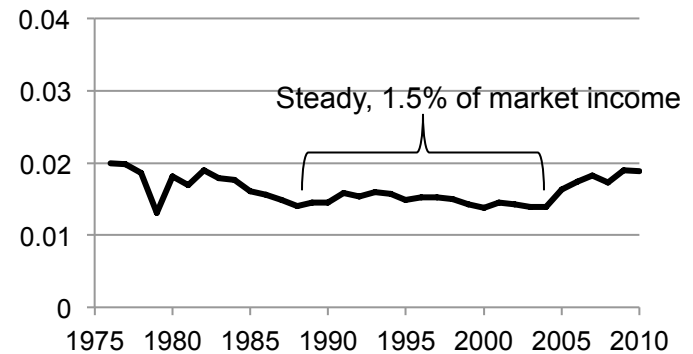
Child Benefits: Over Time

$$R_b \cong \frac{b}{1+b} P_b$$

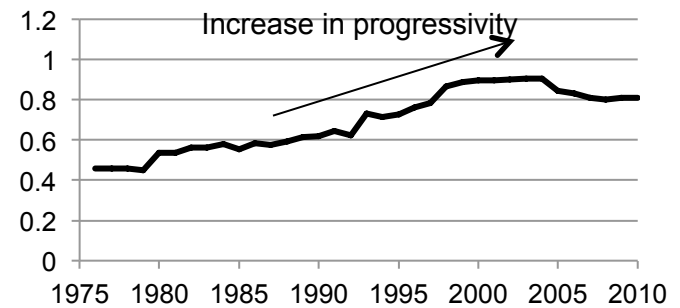
Redistribution (Rb)



Average transfer rate (b)



Progressivity (Pb)





Child Benefits: Across Programs

Redistribution from child benefits, 2010

	Average benefit rate (b)	Progressivity (Pb)	Redistribution (Rb)
Canada child tax benefit	0.016	0.810	0.013
National child benefit supplement	0.009	1.166	0.010
Universal child care benefit	0.008	0.502	0.004
families with children only			

- while the UCCB and NCBS were of similar size in 2010, the NCBS was more progressively distributed, yielding a greater reduction in inequality



Results – In the paper, but not the presentation

- Redistribution and progressivity by tax program
- A look at the WITB
- Analyses holding market distributions constant using the SPSDM
- Sensitivity analysis

Conclusion

1. Reviewed results on income redistribution

- increases in market income inequality that occurred during the 1980s and 1990s recessions were completely offset by a tax and transfer system which became more redistributive, such that there was no increase in after-tax income inequality up to 1995
- during the second half of the 1990s, the tax and transfer system became somewhat less redistributive, and after-tax income inequality increased
- A recent rise in market income inequality (2009-2010) was offset by rising transfer redistribution

2. Presented statistics on redistribution by transfer program

- 1980s and early 1990s rise in redistribution associated with a growth in redistribution across several transfer programs
- late 1990s decline mainly associated with declines in SA and EI redistribution

3. Presented indicators for describing redistribution and progressivity that would have applications in policy development and evaluation

- how redistribution through taxes has remained high despite falling tax rates
- where a given sized intervention through the tax and transfer system would yield the greatest redistributive effect