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**Cities and inequality: New evidence from Canadian micro-data**

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Session 11, Workshop 11.2: „Industrial Legacy: Asset or Burden in Global Competition?“

Our Common Future, Essen, November 6th, 2010

Our Common Future, Hannover/Essen, 2-6 November 2010 ([www.ourcommonfuture.de](http://www.ourcommonfuture.de))



# Cities and inequality: New evidence from Canadian micro-data

**Sébastien Breau**

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**Our Common Future**

Session 11: Metropolis

Hannover - Essen, Germany (2 - 6 November 2010)

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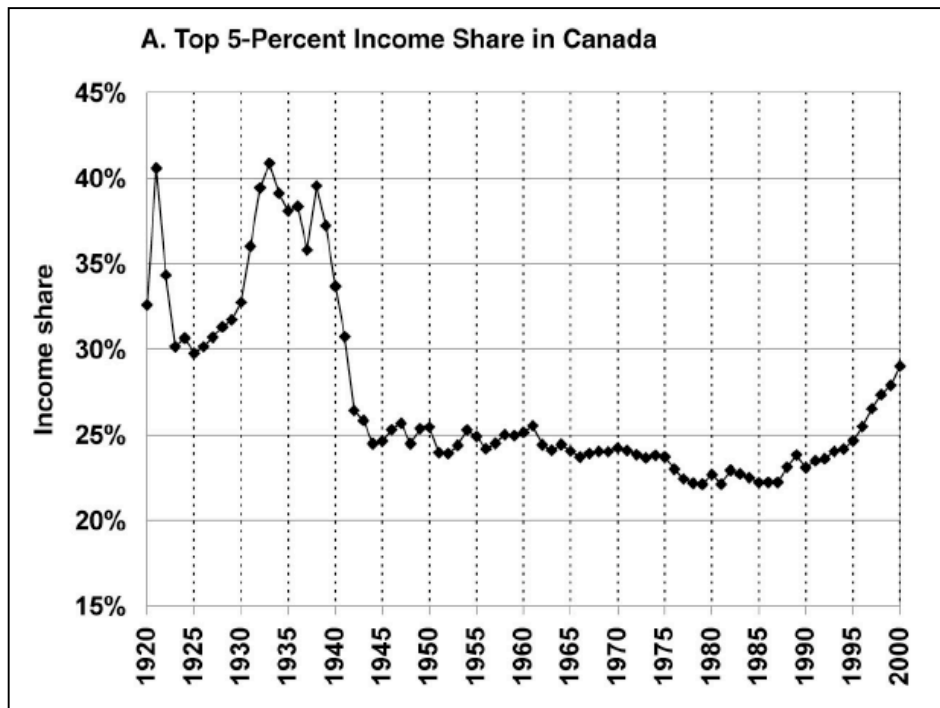


# Outline

- Motivation and research questions
- Survey of the literature
- Data and methods
- Model specifications
- Results and discussion
- Conclusion, future research

# Motivation and research questions (1)

- Long- and medium-term trends in inequality!



Source: Saez & Veall (2005)

**Table 1: Median earnings, Canada (\$2005)**

Quintile	1980	2005	% change
Bottom 20%	19,367	15,375	-20.6
Middle 20%	41,348	41,401	0.1
Top 20%	74,084	86,224	16.4

Source: Statistics Canada (2008), Cat. No. 97 -563-X

## The curious absence of class struggle

**PETER J. NICHOLSON**

From Saturday's Globe and Mail

Gap between rich and poor won't be closing any time soon

**BARRIE MCKENNA** | [Columnist profile](#) | [E-mail](#)


OTTAWA— Globe and Mail Update

Published Sunday, Oct. 03, 2010 3:12PM EDT

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## La crise pourrait rétablir la justice redistributive

Analyse de l'évolution de l'impôt et de ses impacts sur les inégalités de revenus



# Motivation and research questions (2)

- Research questions:

- 1. How are earnings distributed across metropolitan areas in Canada and how have these patterns changed over the 1996 to 2006 period?
- 2. How can differences observed in the distribution of earnings across metropolitan areas be explained?

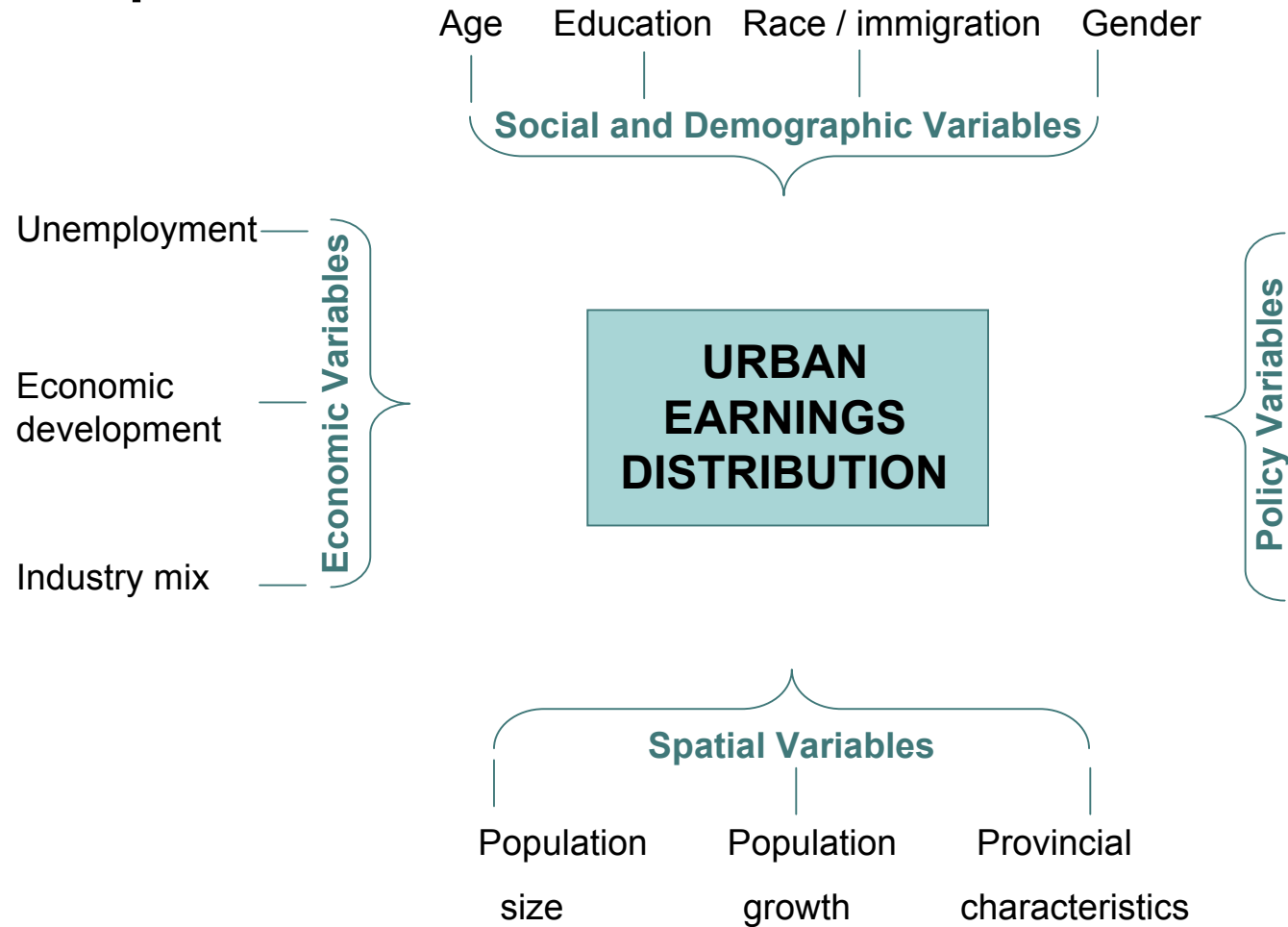


# Literature review

- National-level studies: extensive literature
  - Green and Kesselman (2006); Heisz (2007); Yalnizyan (2007); Osberg (2008); Frenette et al. (2009); Brzozowski et al. (2010)
- Sub-national studies:
  - Provincial-level: Finnie (2001); Gray et al. (2004); Breau (2007)
  - City-level: Bourne (1993); Mitchel and Soroka (1993); MacLachlan and Sawada (1997)
- What's missing?
  - Up-to-date and comprehensive analysis of the determinants of earnings inequality across Canadian cities



# Analytical framework



Source: Adapted from Bourne (1993) and Chakravorty (1996)



# Data (1)

- Census of Population (20% sample)

- 1996, 2001, 2006
- benefits: high response rate, large sample, stable and reliable over time, wage data not top-coded and detailed information on individuals workers (including place of residence/work)

- Establish correspondence in geographical boundaries across censuses

- ArcGIS intersect tool used to aggregate 1996 and 2001 CSDs according to 2006 CMA/CA boundaries



## Data (2)

### ○ Focus on active labour force

- ages of 25 to 65 who report > \$1,000 in annual employment earnings
- individual earnings (i.e. total wages and salaries) → better reflect labour market processes and outcomes

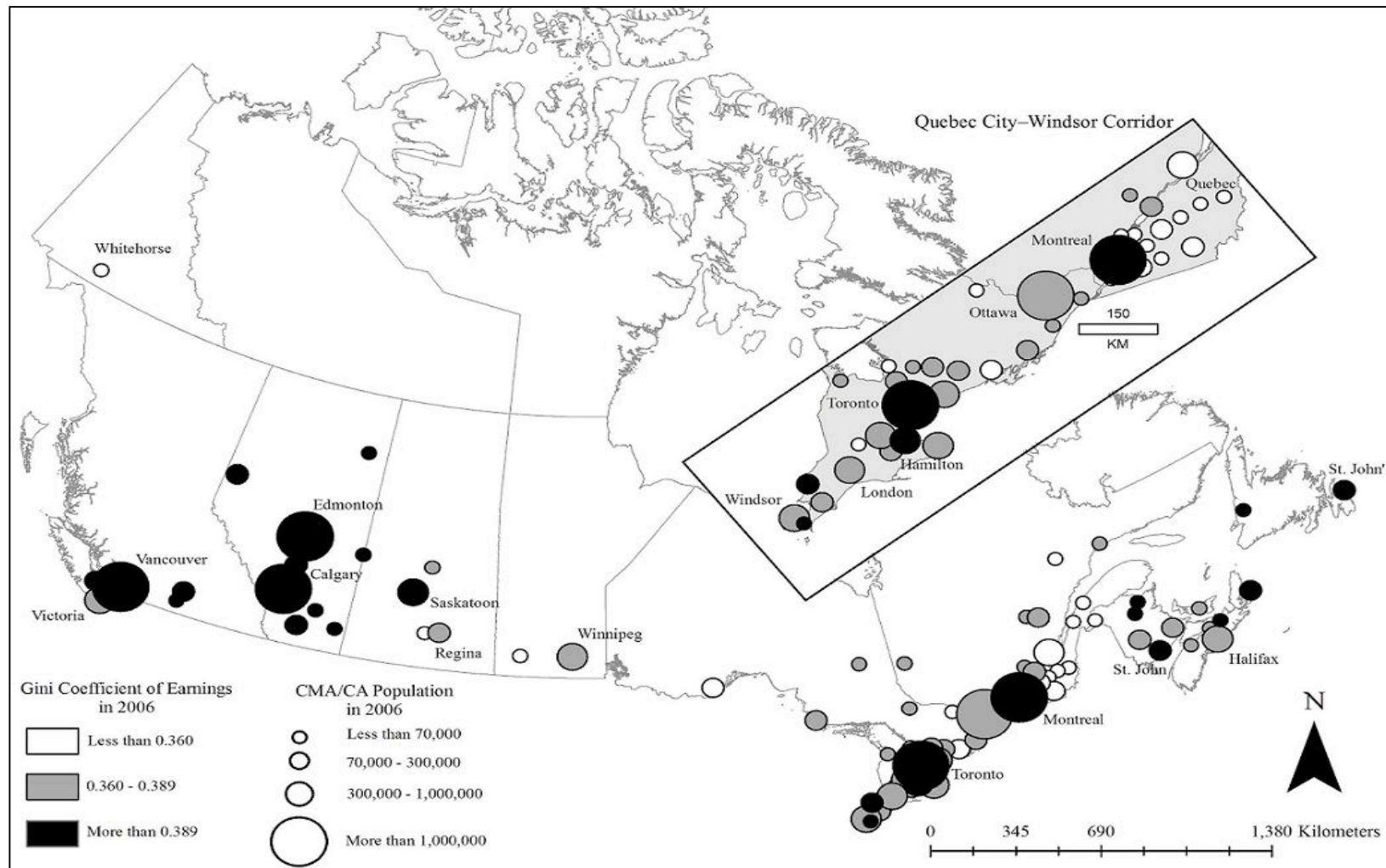
### ○ Measure of inequality

- Gini coefficient (derived from the Lorenz curve)

$$G = \frac{1}{2n^2 \bar{y}} \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j|$$

- Gini = 0: represents 'perfect equality'
- Gini = 1: represents 'complete inequality'

# Earnings inequality across Canadian metropolitan areas, 2006

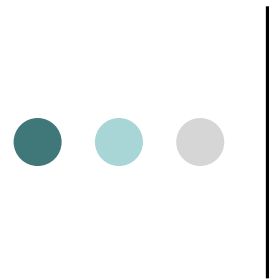




# Inter-city dispersion and growth in Gini coefficients

	1996	2001	2006	1996 – 2006 % change	
Mean Gini <sup>§</sup>	0.365	0.364	0.379	Range	( <i>n</i> *)
Min. / max.	0.330 / 0.412	0.320 / 0.422	0.330 / 0.491	> 7%	19
Std. deviation	0.019	0.022	0.027	3.5 – 7%	22
Coef. of variation	0.053	0.060	0.071	0 – 3.5%	28
				< 0%	18

*Note:* § The mean represents the average of all 87 metropolitan Gini values; \* represents the number of cities that fall into the specified range.



# Modeling approach

- **Benchmark OLS model:**

$$GINI_{it} = \alpha + \beta X_{it} + \delta PROV_{it} + \varepsilon_{it}$$

where  $X_{it}$ : log of labour force population  
median wages, unemployment rate, % manufacturing  
female participation rate, education ratio, % young and % senior

- **First-difference model:**

$$\Delta GINI_{it} = \alpha + \beta \Delta X_{it} + \Delta \varepsilon_{it}$$

where represents change over each census cycle.

- **Fixed-effects model**

# Cross-sectional regression results for earnings inequality

	Gini coefficient		
	1996	2001	2006
Log (Labour force population)	0.003* [0.183] (0.108)	0.007** [0.413] (0.000)	0.009** [0.426] (0.000)
Economic development	-1.59e-06** [-0.312] (0.029)	-1.90e-06** [-0.333] (0.015)	-9.55e-07 [-0.179] (0.119)
Unemployment rate	0.104 [0.110] (0.307)	0.211* [0.218] (0.092)	0.269** [0.181] (0.017)
Percent manufacturing	-0.043** [-0.190] (0.042)	-0.042* [-0.170] (0.082)	-0.060** [-0.172] (0.04)
Female participation rate	-0.142 [-0.152] (0.192)	-0.349** [-0.346] (0.011)	-0.428** [-0.374] (0.000)
Percent visible minority	0.160** [0.426] (0.000)	0.092** [0.264] (0.011)	0.077* [0.221] (0.057)
Education ratio	-0.105** [-0.221] (0.039)	0.016 [0.032] (0.797)	0.038 [0.063] (0.616)
Percent young	0.038 [0.125] (0.221)	-0.001 [-0.001] (0.998)	0.028 [0.055] (0.556)
Percent senior	0.039** [0.212] (0.039)	0.019 [0.095] (0.458)	0.064** [0.255] (0.013)
Constant	0.445** (0.000)	0.493** (0.000)	0.459** (0.000)
Province dummies	Yes	Yes	Yes
R <sup>2</sup>	0.773	0.707	0.778
n	87	87	87

Note: Beta coefficients are reported in brackets and heteroskedasticity-robust *p*-values are in parentheses; \* and \*\* indicate coefficients are statistically significant at the 0.10 and 0.05 levels, respectively.



# Panel data regression results, 1996 - 2006

	Gini coefficient	
	First-difference	Fixed-effects
Log (Labour force population)	0.067** [0.250] (0.010)	0.056** (0.021)
Economic development	-2.08e-06** [-0.214] (0.022)	-1.38e-06* (0.071)
Unemployment rate	0.141 [0.086] (0.256)	0.121 (0.325)
Percent manufacturing	-0.183** [-0.266] (0.000)	-0.211** (0.000)
Female participation rate	-0.091 [-0.055] (0.531)	-0.102 (0.351)
Percent visible minority	0.329** [0.327] (0.000)	0.290** (0.000)
Education ratio	-0.031 [-0.032] (0.685)	0.032 (0.647)
Percent young	0.052 [0.079] (0.293)	0.009 (0.823)
Percent senior	-0.006 [-0.009] (0.920)	0.036 (0.501)
Constant	0.002 (0.644)	-0.146 (0.617)
$R^2$	0.311	0.469
$F$ (Prob > $F$ )	8.4 (0.000)	16.5 (0.000)
$n$	174	261

Note: Beta coefficients are reported in brackets and heteroskedasticity-robust  $p$ -values are in parentheses; \* and \*\* indicate coefficients are statistically significant at the 0.10 and 0.05 levels, respectively.



# Conclusions and future research

## ○ Key findings:

- Growing geographical divides: large vs. small cities, western vs. eastern cities
- Explanatory factors
  - 1. City size increasingly influential
  - 2. Deindustrialization, % visible minorities and economic development
  - 3. Aging of population, female participation rate

## ○ Future research:

- Policy and institutional controls, trade-related factors