Catalogue no. 11-626-X — No. 059
ISSN 1927-503X
ISBN 978-0-660-05447-6

Economic Insights

Intergenerational Income Mobility: New Evidence from Canada

by Wen-Hao Chen, Yuri Ostrovsky and Patrizio Piraino

Release date: June 17, 2016

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

email at STATCAN.infostats-infostats.STATCAN@canada.ca

telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following toll-free numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-877-287-4369

Depository Services Program

- Inquiries line 1-800-635-7943
- Fax line 1-800-565-7757

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "Standards of service to the public."

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Standard table symbols

The following symbols are used in Statistics Canada publications:

. not available for any reference period
.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2016

All rights reserved. Use of this publication is governed by the Statistics Canada Open Licence Agreement.

An HTML version is also available.

Cette publication est aussi disponible en français.

Intergenerational Income Mobility: New Evidence from Canada

by Wen-Hao Chen and Yuri Ostrovsky, Social Analysis and Modelling Division and Patrizio Piraino, University of Cape Town, South Africa

This *Economic Insights* article examines the extent to which the lifetime income of children is correlated with the lifetime income of their fathers—a topic known as intergenerational income mobility. The analysis uses data from Statistics Canada's Intergenerational Income Database, which links together children and their parents using tax files. The data provides information that permits the comparison of the income of children to those of parents at a similar stage of the lifecycle.[1]

Social mobility is often seen as a broad measure of equality of opportunity. An immobile society may be defined as one in which whatever inequality observed in the current generation is passed along to future generations, while a mobile society is one in which individual outcomes are determined by factors other than familial starting points.

A simple yet intuitive way to measure social mobility is to look at intergenerational income elasticity (IGE). This can be estimated by comparing the incomes of parents with those of their children when the latter become adults. The estimated elasticity lies from zero to one, with a value of zero when parents' and their (adult) children's positions in the income distribution are completely unrelated (i.e., complete mobility) and a value of one when parents' and adult children's positions in the income distribution are identical (i.e., complete immobility). Using this index, an early study by Corak and Heisz (1999) indicated that Canada was among the most mobile countries among the advanced economies—similar to Denmark, Finland and Norway—with an estimated IGE around 0.2.

This study re-examines intergenerational earnings and income mobility in Canada using an updated version of the Intergenerational Income Database (IID). The IID identifies a sample of parents and teenage children, and follows the latter into middle age rather than into their early thirties as in Corak and Heisz (1999). Indeed, recent literature indicates that income persistence across generations can be substantially understated when children's incomes are not observed from their mid-career.[2]

Improved measures of fathers' income are also estimated using the updated data.[3] With nearly a quarter of a million observations, the study is also able to examine differences in intergenerational mobility across the income distribution. IGE is also estimated for earnings (i.e., wages and salaries), market income (i.e., earnings plus self-employment and investment income) and total income (i.e., total market income plus government transfers).

Canadians are mobile, but not to the same extent as previously suggested

Using the improved measures of lifetime earnings for both fathers and sons, IGE in Canada is 0.32—meaning that about 32% of the earnings differences among fathers' generations will be passed on to sons (Chart 1). The new result for earnings persistence is higher than the previous Canadian estimate by Corak and Heisz (1999)—who found it to be around 20%. The ability to observe children's earnings at mid-career explains about two-thirds of the discrepancy between the two studies. While the extent of earnings persistence across generations is stronger than previously suggested, it is still relatively modest when compared to estimates for many other advanced countries. The comparable figure for the United States, for instance, is around 40% to 50% depending on the studies.[4]

The degree of intergenerational persistence tends to be greater when market income and total income are measured. Both measures offer additional insight into transmission mechanisms across generations. It is possible that some parents may pass their businesses or positions to their offspring. The estimated intergenerational elasticity for fathers and sons is indeed higher, at about 0.35, using the market income measure, suggesting that other mechanisms such as transmission of jobs or entrepreneurial skills may be also at work.

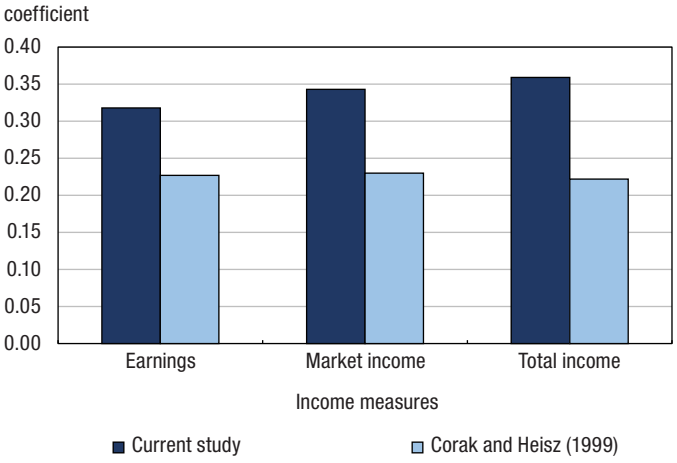
To measure IGE on the basis of total income, fathers and sons who are less attached to the labour market are included in the analysis as long as they received transfers from governments at any level (i.e., local or national). If the sons of low-income

1. A more detailed study is also available. See Chen, Ostrovsky and Piraino (2015).
2. In the research literature, this issue known as lifecycle bias. See, for example, Grawe (2006), Haider and Solon (2006) and Gouskova, Chiteji and Stafford (2010).
3. To improve the measure of fathers' lifetime incomes, their annual incomes at age 35 to 55 were averaged, conditional on having had positive values in at least 10 of these 21 years.
4. See, for example, Mazumder (2005).

fathers are more likely to receive government assistance, this may be reflected in the IGE estimates. The intergenerational persistence increases further, albeit moderately, for total income, at 0.36.

The progression in intergenerational persistence from earnings to income measures, however, was not observed in the previous study. One possible explanation is that sons who became self-employed later in life may have not yet started (or may have just started) their own business when they are in their early thirties. As a result, the bias arising from lifecycle variation can be more pronounced for income than for earnings.

Chart 1
Relationship between sons' and fathers' lifetime income, measured by intergenerational income elasticity



Notes: Earnings include wages and salaries. Market income includes earnings plus self-employment and investment income. Total income includes market income plus government transfers. M. Corak and A. Heisz. 1999. "The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence from Longitudinal Income Tax Data."
Source: Statistics Canada, authors' calculations based on data from the Intergenerational Income Database.

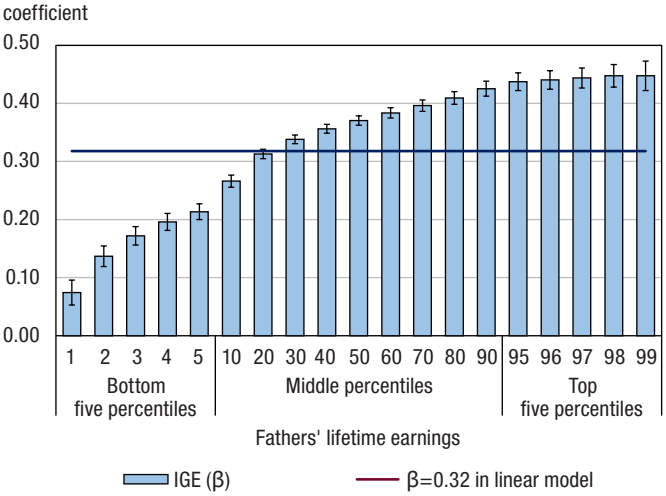
In general, the intergenerational transmission of earnings and income is weaker for daughters than for sons. Using father–daughter pairs, the estimated elasticity is about 0.23 for earnings and from 0.24 to 0.25 for income. This results seem to suggest that daughters' outcomes are less dependent on the earnings and incomes of their fathers. These estimates are comparable to those obtained in earlier studies. Unlike the father–son estimates, the father–daughter IGE estimates do not seem to be affected by the age at which daughters' earnings and income are observed. In fact, estimates based on daughters' earnings at age 30 are very similar to those based on daughters' earnings at age 40.

Several factors could help explain this result. Typically, women are more likely than men to experience career breaks related to child-bearing and child rearing during the early stages of their working life. The findings are also consistent with results from other countries regarding the role of "assortative mating," which has been identified in the literature as one of the possible reasons for lower IGEs for daughters. In the presence of marital sorting, daughters with high earnings potential are more likely to marry high-earnings husbands, and could choose to work fewer hours or accept lower pay in exchange for better work–family balance. In the presence of assortative mating, the lifetime earnings of their father may be more closely tied to the daughters' family income (including spousal) earnings than to their own earnings. The remainder of this analysis is restricted to fathers and sons.

Mobility is not the same across the population

The average mobility patterns documented above mask heterogeneity across the population. Across the earnings distribution, the degree of intergenerational earnings mobility in Canada is characterized by a marked nonlinear pattern (Chart 2). Earnings persistence is quite low for sons at the bottom percentiles of the fathers' earnings distribution (i.e., below 0.2), which suggests a significant degree of upward mobility for sons born to very low-earning fathers. By contrast, earnings persistence is strong for those at the other end of spectrum. The estimated intergenerational elasticity reaches 0.44 or higher for the top 5 percentiles of fathers' earnings, suggesting that nearly half of the earnings advantage among fathers with the highest earnings will be passed on to their sons.

Chart 2
Non-linear relationship between sons' and fathers' lifetime earnings, measured by intergenerational income elasticity (IGE)



Notes: Lifetime earnings are calculated by averaging fathers' earnings at age 35 to 55 and sons' earnings at age 38 to 42. The vertical error lines overlaid on the bars indicate the 95% confidence intervals (CIs). CIs indicate the degree of variability in the estimate and enable more valid comparisons of differences between estimates.
Source: Statistics Canada, authors' calculations based on data from the Intergenerational Income Database

Canadian mobility pattern is more similar to Nordic than the U.S. evidence

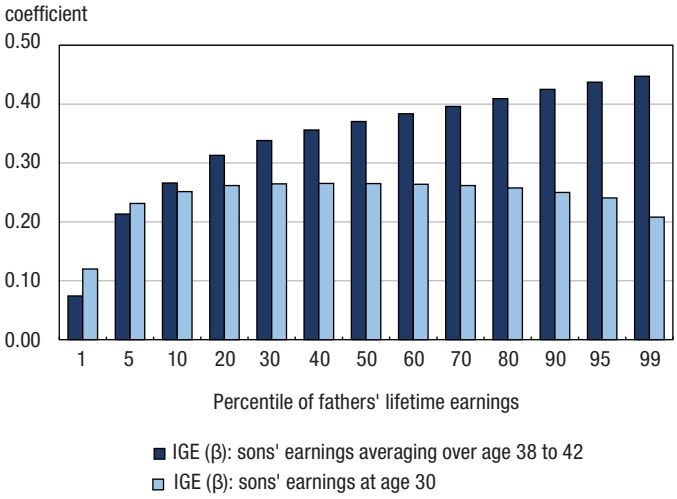
The pattern of nonlinearity observed in the Canadian data seems to be more in line with the Nordic evidence: a modest intergenerational relationship in the lower segments of the fathers' distribution and an increasingly positive correlation in middle and upper segments (Bratsberg et al. 2007). The United States, by contrast, exhibit an almost perfectly linear relationship between children's and parents' ranks in the income distribution (Chetty et al. 2014).

While the exact reasons why mobility differs across the distribution are not analyzed in this article, the Nordic literature suggests that institutional factors may explain why mobility is higher at the bottom. Bratsberg et al. (2007), in particular, argue that educational and welfare systems in the Nordic countries help the upward mobility of young people with few parental resources. Parental factors influencing mobility at the top can be even more complex. Important channels discussed in the literature include jobs, networking and family-specific capital (Björklund, Roine and Waldenström 2012; Corak and Piraino 2011; Kramarz and Skans 2014).

Longer historical income data over one's lifecycle is essential for intergenerational analysis

One of the important contributions of this article is to show that estimates of IGE are very different when children's income is measured at the early stage of their working lives instead of at mid-career. This has led to understatement of the average persistence across generations (as seen in Chart 1). It also has substantial impact on estimates of IGE at different points across the income distribution. The distortion is likely to be greater in the upper part of the distribution, since most children poised to be high earnings adults have not yet reached their full earnings potential at younger ages. Indeed, Chart 3 reveals a very different pattern of nonlinearity when sons' earnings at age 38 to 42 rather than at age 30 are used. Because of lifecycle variation, the extent of the correlation between fathers' and sons' earnings tends to be underestimated throughout virtually the entire distribution of fathers' earnings, with greater distortion in the upper part of the distribution. The estimated elasticity at the 95th percentile, for instance, is only 0.24 when calculated using sons' earnings at age 30—which is about 45% lower than the estimate (0.44) when calculated using sons' earnings at age 38 to 42.

Chart 3
Non-linear relationship between sons' and fathers' lifetime earnings, two scenarios, measured by intergenerational income elasticity (IGE)



Source: Statistics Canada, authors' calculations based on data from the Intergenerational Income Database.

Conclusion

Two conclusions emerge from this study.

First, Canada is still a mobile society, but not as strongly as previously thought. The intergenerational income elasticity for Canada is estimated to be around 0.32, suggesting that about one-third of income differences among the fathers' generation will be passed onto sons. This is higher than the 0.2 estimate obtained in previous Canadian literature.

Second, the extent of intergenerational income mobility is not the same for all. In general, the intergenerational transmission of earnings and income is weaker for daughters than for sons. In addition, income persistence is much stronger at the top of the income distribution, implying that the path into top income is more difficult for children whose fathers were not at the top of the income distribution. In contrast, a good deal of generational mobility is evident for sons born to very low-income fathers.

References

Björklund, A., J. Roine, and D. Waldenström (2012). "Intergenerational top income mobility in Sweden: Capitalistic dynasties in the land of equal opportunity?" *Journal of Public Economics* 96 (5-6): 474–484.

Bratsberg, B., K. Røed, O. Raaum, R. Naylor, M. Jäntti, T. Eriksson, and E. Österbacka. 2007. "Nonlinearities in Intergenerational Earnings Mobility: Consequences for Cross-country Comparisons." *The Economic Journal* 117: C72-92.

Chen, W.-H., Y. Ostrovsky, and P. Piraino. 2016. *Intergenerational Income Transmission: New Evidence from Canada*. Analytical Studies Branch Research Paper Series, no. 379. Statistics Canada Catalogue no. 11F0019M. Ottawa: Statistics Canada.

Chetty, R., N. Hendren, P. Kline, and E. Saez. 2014. "Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." *The Quarterly Journal of Economics* 129 (4): 1553–1623.

Corak, M., and A. Heisz. 1999. "The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence from Longitudinal Income Tax Data." *The Journal of Human Resources* 34 (3): 504–533.

Corak, M., and P. Piraino. 2011. "The Intergenerational Transmission of Employers." *Journal of Labor Economics* 29 (1): 37–68.

Gouskova, E., N. Chiteji, and F. Stafford. 2010. "Estimating the intergenerational persistence of lifetime earnings with life course matching: Evidence from the PSID." *Labour Economics* 17 (3): 592–597.

Grawe, N.D. 2006. "Lifecycle bias in estimates of intergenerational earnings persistence." *Labour Economics* 13 (5): 551–570.

Haider, S., and G. Solon. 2006. "Life-cycle Variation in the Association between Current and Lifetime Earnings." *The American Economic Review* 96 (4): 1308–1320.

Kramarz, F., and O.N. Skans. 2014. "When Strong Ties are Strong: Networks and Youth Labour Market Entry." *The Review of Economic Studies* 81:1164–1200.

Mazumder, B. 2005. "Fortunate Sons: New Estimates of Intergenerational Mobility in the United States Using Social Security Earnings Data." *The Review of Economics and Statistics* 87 (2): 235–255.