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A comparison of upward and downward intergenerational mobility in Canada, Sweden and the United States ☆

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HIGHLIGHTS

- We compare intergenerational mobility across Canada, Sweden and the United States.
- Canada has the most downward mobility and the United States has the least.
- We find only small cross-country differences in upward rank mobility.
- We find rather large cross-country differences in absolute mobility.

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ABSTRACT

We use new estimators of directional rank mobility developed by Bhattacharya and Mazumder (2011) to compare rates of upward and downward intergenerational mobility across three countries: Canada, Sweden and the United States. These measures overcome some of the limitations of traditional measures of intergenerational mobility such as the intergenerational elasticity, which are not well suited for analyzing directional movements or for examining differences in mobility across the income distribution. Data for each country include highly comparable, administrative data sources containing sufficiently long time spans of earnings. Our most basic measures of directional mobility, which simply compare whether sons moved up or down in the earnings distribution relative to their fathers, do not differ much across the countries. However, we do find that there are clear differences in the *extent* of the movement. We find larger cross-country differences in downward mobility from the top of the distribution than upward mobility from the bottom. Canada has the most downward mobility while the U.S. has the least, with Sweden in the middle. We find some differences in upward mobility but these are somewhat smaller in magnitude. An important caveat is that our analysis may be sensitive to the concept of income we use and broader measures such as family income could lead to different conclusions. Also, small differences in rank mobility translate into rather large differences in absolute mobility measured in dollars, due to large differences in income inequality across countries.

1. Introduction

A question of long-standing interest among social scientists is the degree to which an individual's status in society is determined by the position of one's parents in the prior generation. This line of inquiry has been primarily motivated by an interest in understanding the degree of equality of opportunity in a society. The sharp rise in inequality in recent decades in some industrialized countries has brought this issue to the forefront as it is sometimes argued that rising inequality may be tolerable from a societal perspective, if there is ample room for families to move up and down the income distribution across generations.

A vast literature has emerged in recent years that has used various measures of intergenerational mobility to try to quantify the persistence

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of economic advantage or disadvantage across generations. We contribute to a strand of the literature that has attempted to compare rates of intergenerational mobility across countries. Our primary contribution is that we provide a rich set of estimates concerning directional rank mobility using large samples from highly comparable sources of administrative earnings data to study mobility in Canada, Sweden and the United States. The analysis of these three countries may be of particular interest since they cover the scale of welfare state policies from low (United States) to moderate (Canada) to large (Sweden).

Economists have focused primarily on the intergenerational elasticity (IGE) in earnings or income between fathers and sons. Previous surveys of the literature (e.g. Solon, 2002; Corak, 2006; Björklund and Jäntti, 2009; Black and Devereux, 2010) report similar results concerning the IGE in Canada, Sweden and the United States. Canada and Sweden appear to have the same level of relatively high income mobility, while mobility in the United States by this measure is significantly lower.

While the IGE is useful for summarizing intergenerational mobility in a single parameter, it has some drawbacks. First, it does not differentiate between upward mobility and downward mobility. In the United States, for example, much of the popular interest in intergenerational mobility has been motivated by concerns about the potential for upward mobility from the bottom. Indeed, the concern about equality of opportunity is really about the opportunity to move up. Second, the IGE is not informative about nonlinearities in mobility. For example, it could be the case that mobility is high in certain parts of the income distribution but not others. Third, the IGE is known to be sensitive to the length of time averages used and the age at which income is measured in each generation. Some have also raised concerns about selection rules concerning instances of non-positive income given the reliance on the log–log specification.[1] Lastly, estimates of the IGE rely on the marginal distributions of fathers' and sons' earnings. Since these distributions vary greatly over time and across countries one may be interested in mobility comparisons that are less influenced by them.

In this paper, we use a set of measures that are designed to measure mobility by simply comparing the relative ranks of fathers and sons in the income distribution of each respective generation. We refer to these as measures of "directional rank mobility" (DRM). For example, if the child's percentile in the distribution is higher than the parents' percentile in the prior generation then this could be classified as upward mobility.[2] We believe that these measures correspond much more closely to what a typical person thinks of as upward mobility compared to the IGE. Simple statistics that calculate the percent of individuals who experience upward or downward mobility at various points of the income distribution in each country can easily be calculated. Bhattacharya and Mazumder (2011) introduced these measures and discuss some of their key properties along with applying them to U.S. data from the NLSY. Mazumder (2011) also uses these methods and find that they can be useful in characterizing interracial differences in intergenerational mobility in the United States.

As far as we are aware, no previous study has utilized the directional rank mobility measures on data outside of the United States. The study closest to ours is by Jäntti et al. (2006) who in addition to examining differences in the IGE, also examine four specific transition probabilities using data from the United States, the United Kingdom, Denmark, Finland, Norway and Sweden. They find significantly lower rates of upward mobility from the bottom of the distribution in the United States compared to the Nordic countries. They also find slightly lower rates of long-distance downward mobility in the United States relative to those in the Nordic countries.[3] But these differences are much less dramatic. They generally found the United Kingdom to fall somewhere between the United States and the Nordic countries.[4]

We utilize administrative data on earnings of fathers and sons for all three countries, including the United States. This provides us with a degree of consistency in both the concept of income we are using and arguably with the reliability of the data that is not typically seen in this literature. Nevertheless, we fully acknowledge that some differences in the data remain that could present issues. For instance, the U.S. data set is relatively small compared to the Canadian and Swedish data sets and the number of years across which we can average fathers' earnings ranges from 5 years in Canada to 30 years in Sweden. To assess the potential importance of such differences, we run a series of robustness checks using Swedish data that has been "worsened" in order to look more like the U.S. data.

Our most basic measures of directional mobility that simply compare whether sons moved or up or down relative to their fathers at different points in the distribution, are similar across the countries. There are however, notable differences in the *amount* of movement. We find larger cross-country differences in downward mobility from the top of the distribution than upward mobility from the bottom. Canada has the most downward mobility while the United States has the least, with Sweden in the middle. We find some differences in upward mobility but these are somewhat smaller in magnitude. An important caveat is that our analysis may be sensitive to the concept of income we use (taxable earnings) and that broader measures such as family income could lead to different conclusions. Also, small differences in rank mobility translate into rather large differences in absolute mobility measured in dollars, since there exist large differences in income inequality across countries.

2. Measures

2.1. Transition probabilities

Before describing the new measures of directional rank mobility, we first define transition probabilities. These serve as a useful base for comparison for the new measures as well as to earlier studies. The upward transition probability (hereafter "UTP") is the probability that the child's income percentile (Y_1) exceeds a given percentile s, in the child's income distribution by an amount τ, conditional on the parent's income percentile (Y_0) being at or below s in the parent's income distribution.[5]

$$UTP_{\tau,s} = \Pr(Y_1 > s + \tau | Y_0 \leq s) \quad (1)$$

For example, in a simple case where $\tau = 0$ and $s = 0.2$, the upward transition probability ($UTP_{0,s}$) would represent the probability that the child exceeded the bottom quintile in the child's generation, conditional on parent income being in the bottom quintile of the

[1] The IGE is also poorly suited for studying group differences in intergenerational mobility (e.g. immigrants vs. natives) because it is only informative about rates of persistence *within* groups as opposed to differences relative to the entire distribution. However, this is not relevant for our study since we look only at aggregate rates at the national level.

[2] These measures are similar to transition probabilities that have been used in prior studies of mobility to measure movements across particular quantiles of the distribution, except rather than using arbitrarily chosen quantiles, comparisons are made between the actual ranks of the parent and the child.

[3] Long distance downward mobility means that the father is in the uppermost quintile, while the son ends up in the lowest quintile.

[4] In a companion paper to Jäntti et al. (2006), Bratsberg et al. (2007) present non-linear estimates of the IGE in the same set of countries (excluding Sweden). They find larger cross-country differences in estimates of the IGE in the bottom of the income distribution than in the middle and the top. This implies that cross-country comparisons based on linear estimates of the IGE may be misleading.

[5] Bhattacharya and Mazumder (2011) use a more general notation that allows for a less restricted set of transition probabilities. For example, transition probabilities can be estimated conditional on parent income lying within any specific percentile interval.