Intergenerational Mobility: What Do We Care About? What Should We Care About?

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Abstract

Inequality threatens intergenerational income mobility, but different types of inequality threaten mobility in different ways, raising distinct policy challenges. This is why empirical researchers should be agnostic in the choice of statistics they use to measure intergenerational mobility. I argue that Australia is on the whole characterised by a good deal of intergenerational mobility, but that a full picture requires judicious international comparisons across different dimensions of mobility citizens care about, mobility not just of incomes, but also of position and direction, particularly the scope for upward mobility.

1. Introduction

We care about equality of opportunity for two reasons. In the first instance, equality of opportunity implies that all talents will be fully realised, and in this sense it means labour markets will be more efficient, that overall productivity will grow at a faster rate. In other words, we care about equality of opportunity for instrumental reasons. But we also care about it for intrinsic reasons: equal opportunity might be seen as being 'fair', a notion of fairness that might be more widely shared among citizens than one based solely on equality of outcomes. With more equality of opportunity citizens may even be less concerned about resulting inequality of outcomes, contributing to a more inclusive society.

This said, equality of opportunity is not straightforward to define. The degree to which family background echoes into adulthood is certainly core to the notion, and documenting socio-economic gradients in the outcomes citizens care about is an important first step towards a constructive policy conversation. This step begins with measurement. I focus on just one of many dimensions of equal opportunity: the degree of stickiness between the incomes of parents and the incomes of their adult children. Income mobility across generations does not directly translate into equality of opportunity, but it is a necessary part of the public policy dialogue on this issue, particularly during an era of rising income inequality. In framing this dialogue a good deal rests on estimating the right number, even if—as Jencks and Tach (2006), Roemer (2004) and others have cautioned—that number does not indicate the

optimal degree of mobility associated with equality of opportunities.

I stick to the challenges of interpreting the Australian empirical literature on intergenerational income mobility, and explore three dimensions, or perhaps more accurately, three meanings, of a single question: What is the 'right' number?

The first dimension of 'right' refers to the correct value of a popular summary measure of intergenerational mobility, the intergenerational elasticity of incomes. Accurately estimating this statistic is a challenging measurement problem. Australian researchers have produced a range of values, and to make sense of this variation we must be armed with an understanding of the differences in data and methods between studies. Only then can we answer: What is the 'right' estimate for Australia?

The second dimension of the word 'right' refers to one of the purposes to which we put these estimates: international comparisons. Where does Australia stand relative to other countries? Ultimately this question is important not so much because it allows us to construct a league table to establish bragging rights, or to direct shame, but because it may help outline the underlying drivers of social mobility, and hence open a window to discuss policies that might change things for the better. But this requires us to make judicious comparisons between countries that share similar values and institutions, preconditions for policy learning across jurisdictions. What is the 'right' set of countries to which Australia should be compared?

The final dimension of the word 'right' concerns what is, or rather what are, the right statistics to be using in the first place. Intergenerational income elasticity offers an overall indicator of intergenerational mobility and the transmission of inequality across generations, much in the way that the Gini coefficient is an overall indicator of inequality at a point in time. Pairing these statistics, as in the Great Gatsby Curve, offers a picture of the relationship between inequality and mobility. But just as the Gini does not offer a full picture of inequality, not being sensitive to changes in extremes of income distribution, so too does intergenerational elasticity have its limitations. To fully understand intergenerational mobility we must be agnostic as to the right statistic, use indicators appropriate to the measurement challenges we face and be sensitive to the concerns citizens have. What are the 'right' statistics to highlight the consequences and concerns of the types of inequalities motivating the public policy agenda?

2. Higher Inequality Threatens Social Mobility

Higher inequality threatens social mobility. Different types of inequality do this in different ways, but the starting point in this conversation is the Great Gatsby Curve, which shows a negative cross-country relationship between income inequality and the degree of intergenerational income mobility.[1]

The Great Gatsby Curve ranks countries along two dimensions. The Gini coefficient measures the degree of cross-sectional post-tax and transfer income inequality about a generation ago, and is used to rank countries in the horizontal direction from least to most unequal. Countries are ranked in the vertical direction from most to least intergenerationally mobile according to the value of the intergenerational income elasticity, the parameter β in the regression to the mean model:

$$lnY_{i,t} = \alpha_j + \beta_j lnY_{i,t-1} + \varepsilon_{i,j}$$

where, $lnY_{i,t}$ refers to the natural logarithm of the permanent income of a member of the tth generation from family i, $lnY_{i,t-1}$ to a similar statistic for the previous generation, and α and β are parameters to be estimated with a representative sample of individuals from country j. The intergenerational income elasticity, β, indicates the degree of regression to the mean.

Figure 1 presents a version of the curve using OECD countries for which there are available data, a wider set than the version offered by Corak (2013, 2006), but narrower than the over 70 countries depicted by Narayan et al. (2018, Figure 4.1). This World Bank publication, and particularly the associated 'Global Database

Figure 1 The Great Gatsby Curve Shows That Higher Inequality a Generation Ago is Associated with Less Intergenerational Income Mobility among the Next Generation
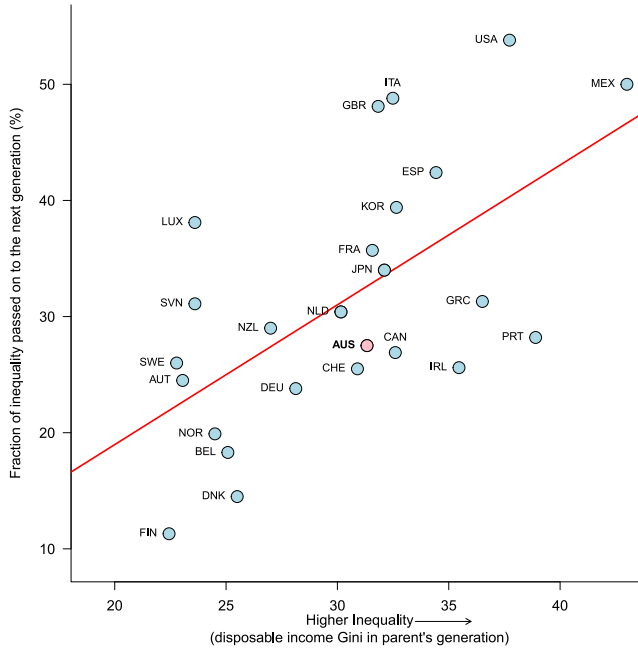
on Intergenerational Mobility', offers a comprehensive set of mobility indicators covering 148 countries, with intergenerational income elasticity available for 75 of them (GDIM 2018). These data in turn rely on EqualChances.org (2019), the source of the information in Figure 1, and particularly the estimate of 0.275 for the Australian intergenerational income elasticity. This estimate implies that a little more than one-quarter of the income inequality between parents is transmitted to children: a 10 per cent difference in the permanent income between fathers being associated with a 2.75 per cent difference between sons.

3. What is the 'Right' Estimate?

The Great Gatsby Curve shows Australia with middling inequality and middling mobility. Accurately estimating the intergenerational income elasticity places demanding data requirements on researchers, and requires care in assessing the potential for measurement

error and life-cycle biases. It is not surprising that the Australian literature can be interpreted as sending conflicting signals, with my reading—partially summarised in Table 1— suggesting estimates ranging from less than 0.2 to as high as 0.4, a range that would place Australia either well above or well below the regression line in Figure 1.[2]

These are conflicting only if we do not account for the sometimes subtle differences in measurement and definition between studies, differences that are not so much the result of errors researchers make, but rather reflect their struggle to exploit the strengths of the data at hand, while trying to minimise their weaknesses. Murray et al. (2018) offer the first use of longitudinally linked data between parents and children in the Household, Income and Labour Dynamics Australia (HILDA) Survey, and summarise by noting that their findings are 'broadly in line with the most recent mobility estimates for Australia' (p. 461). They estimate the intergenerational elasticity to be 0.282 using a

Table 1 What is the Right Number? Australian and Canadian Estimates of Intergenerational Income Elasticity

Australian	$\hat{\beta}$	Canadian	$\hat{\beta}$
EqualChances.org	0.275	EqualChances.org	0.269
Leigh	0.260		
Fairbrother, Mahadervan	0.200		
Haung, Perales, Western	0.240–0.280		
Mendolia, Siminski	0.350	Chen et al.	0.320
Murray et al.[a]	0.282	Connolly et al.[a]	0.226–0.313
Deutscher, Mazumder[a,b]	0.241		
Deutscher, Mazumder[a]	0.185	Corak[a]	0.201

Notes: (a) Own and spousal total pre-tax income.
(b) Excluding bottom and top 10 per cent.

sample of 487 parent–child pairs, with a standard error of 0.05, and acknowledge that this estimate may be understated by as much as 30 per cent.

Their methods differ from earlier work—those studies listed higher up in Table 1—in at least two respects. First, their focus is not restricted to just fathers and sons, but they use the incomes of both parents to examine the mobility of sons and daughters, and define adult income as own income plus any spousal income if a spouse is present. Relatedly, income is defined as total income from all market sources and from government transfers before taxes. They do this because they can, because the approach offers a more comprehensive view of mobility, and because they have an eye to international comparisons, particularly the portrait of mobility in the United States offered by Chetty et al. (2014).

The second difference arises from their use of the HILDA Survey, a direct longitudinal link between parents and children which allows them to estimate the regression to the mean model with least squares. The lack of a direct parent–child link led the first wave of Australian research to rely on a version of instrumental variables, using contemporaneous and retrospective information on education and occupation to proxy parent incomes, a method that likely overstates the true value of the parameter (Björklund and Jäntti 1997). But at the same time, the use of the HILDA Survey restricts their analysis to children who are relatively young, in their late 20s and early 30s. Again this compares to

Chetty et al. (2014), but implies the potential to understate the true value of the intergenerational elasticity.

Given the size of the standard errors involved in all of these studies, it probably seems reasonable to suggest: that the focus on just fathers and sons in the earlier research is not a distinguishing difference; that the EqualChances.org (2019) estimate is not off the mark; and, all said and done, that in Australia roughly from one-quarter to certainly no more than one-third of income inequality is passed on from parents to children.

4. What is the 'Right' Set of Comparisons?

Is this too high? Too low? Or just right? We look to international comparisons to help answer these questions. This requires not the best possible estimate for Australia, but the best estimate for the purpose of a comparison with other countries. In fact, most of the papers listed in the second panel of Table 1 also use analytical samples and variable definitions permitting a direct comparison to the United States. This is as much a theme in Leigh (2007) as it is 10 years later in Mendolia and Siminski (2016) and Murray et al. (2018). All these papers echo the finding in Figure 1: the degree of mobility in Australia is about twice as great as that in the United States.

The Great Gatsby Curve is both a help and a hindrance in making informed comparisons. Pictures like Figure 1 should be constructed

and understood as offering the best estimates for comparisons, not the best possible estimate for each country. The Australian literature, as I have suggested, is aware of this caveat. But the other important caution involves the move to a more refined policy conversation: which comparisons are most relevant for policy learning?

Connolly, Corak and Haeck (2019) take this to heart, motivating their comparison of inter-generational mobility in Canada and the United States with public opinion research suggesting that representative samples of individuals in both countries have very similar views on the meaning of the 'American Dream', of the underlying causes—particularly the relative roles of individual initiative and social constraints—and of effective public policies. Countries may find themselves at different points on the Great Gatsby Curve because of different choices, reflecting both different values and different historical legacies that define and limit the scope for policy learning between them. But it is not as if countries can choose to slide up or down the Great Gatsby Curve by adopting the policy framework of an enviable counterpart. It makes more sense to compare the United States to Canada, than to, say, Nordic countries like Denmark.

On this basis I suggest that it also makes more policy sense to compare Australia not just to the United States, but also to Canada. These three countries have 'big' geographies, share a Commonwealth legacy, and have throughout their history been immigrant-receiving nations, factors that place diversity front-and-centre of policy debates, to say nothing of the challenges involving significant indigenous populations. Further, both Australia and Canada are trading nations, with important regions being significantly influenced by resource-based development. Besides, significant examples of policy learning between these countries are easy to cite, lessons on the design and use of income contingent student loans and points-based immigration programs being two obvious examples of Australian social mobility poli-cies that have spilled over to the Canadian policy landscape.

Bradbury et al. (2015) look closely at this triad of countries, in addition to Great Britain, and show that a whole host of indicators associated with family life, child development and social support—inputs and outcomes associated with social mobility—are remark-ably similar in Australia and Canada. Their findings deal with shorter-term mobility indicators, and suggest that children are somewhat more mobile in Australia than in Canada, but that both of these countries are much closer to each other than to the United States and Great Britain.

For this reason, I suggest that judicious comparisons from the Great Gatsby Curve involve not just Australia and the United States, but also Australia and Canada, and as a result in Table 1 I pair some recent and credible estimates of Canadian intergenerational income elasticity to their most comparable Australian counterparts. The EqualChances.org (2019) estimates suggest that intergenerational elasti-city is essentially the same in the two countries. But my reading of the more refined studies using direct parent–child links suggests slightly more relative mobility in Australia.

This is a conclusion that would be in line with Bradbury et al. (2015), and the other comparisons in Table 1. Murray et al. (2018) and Connolly, Corak and Haeck (2019) offer results based on similar age cohorts, as do Deutscher and Mazumder (2019) and Corak (2019) using somewhat older cohorts. This later pair of studies is almost exactly compar-able, as both use administrative data asso-ciated with the income tax system with similarly defined income measures.[3] Deutscher and Mazumder (2019) estimate the Australian intergenerational elasticity to be 0.185, while Corak (2019) finds 0.201, with the standard errors in both studies being so small as to suggest that the difference is statistically significant even if there is not a big economic significance between them.

5. What Are the 'Right' Statistics?

But this raises a puzzle that might pull us back from the earlier conclusion that roughly one-quarter of inequality is passed on between

generations, Deutscher and Mazumder (2019) suggesting a significantly lower value for the intergenerational elasticity than Murray et al. (2018).

Like Murray et al. (2018), Deutscher and Mazumder (2019) use parents and children who have been directly linked, and they also use an analytical sample and income definitions comparable to Chetty et al. (2014), but they estimate the intergenerational income elasticity to be 0.185, and offer a much tighter confidence interval, the standard error being 0.001. The difference is that this study uses administrative records from the tax system, offering a sample of 1.025 million parent–child pairs, representing close to the population of children born between 1978 and 1982, and with the children being in their early 30s when their adult incomes are measured, a bit older but not much different than Murray et al. (2018).

This is a puzzle that offers a segue to highlight a limitation hardwired into the regression to the mean model, and to suggest that the intergenerational elasticity is masking important policy-relevant dimensions of mobility. The difference between the estimates from these two studies may mean, ironically, that the much more detailed administrative data used by Deutscher and Mazumder (2019) render the intergenerational elasticity less valuable as an overall summary indicator, while at the same time offering a valuable avenue to produce important complementary statistics that shed light on hidden dimensions.

The regression to the mean model assumes that the data-generating process is linear. Deutscher and Mazumder (2019, Figure 2) note that their large sample size permits them to uncover significant nonlinearities in the relationship between parent and child incomes, rather flat at very low incomes, steepening in the body of the joint income distribution, before flattening again (and then rising sharply at the very, very top). Roughly speaking, the relationship between parent and child incomes can be described as an elongated S, this pattern also being found in other countries using administrative data (Corak and Heisz 1999).

Fitting a straight line through an elongated S-shape leads to a compromise estimate of the intergenerational elasticity, overstating the truth at the extremes and understating it in the broad middle. When Deutscher and Mazumder (2019) restrict their sample by excluding those in the bottom and the top 10 per cent, they obtain an estimate of 0.241 with a standard error of 0.002. This estimate is in the range of the 0.282 offered by Murray et al. (2018), particularly when we are aware of the 0.05 standard error associated with the latter result. Survey data like the HILDA tend to be less representative of individuals in both the very top and bottom of the income distribution, so it is not unreasonable to suggest that with a sample of 487 Murray et al. (2018) are inclined to produce a trimmed estimate representative of the 80 per cent of the population in the middle of the income distribution.[4]

What is important is that we appreciate the use to which we put the intergenerational elasticity, and if that purpose is to offer a broad summary measure of the degree of relative mobility then we should be certain that it accurately reflects the broad majority of the population, without at the same time losing sight that it does not capture all aspects of the mobility process for the entire population. The challenges of those in the bottom 10 or even 20 per cent of the population may be very different, a very small estimate of the intergenerational elasticity indicating rapid regression to a different, much lower mean, this group lacking the absolute mobility needed to climb the income ladder.

In this sense, citizens and policy makers also care about 'position', and in particular about directional mobility. A good deal of public policy discussion is framed in terms of upward mobility, but the intergenerational elasticity is a coarse measure of directions, referring to mobility both upward and downward, and offering no information about absolute mobility. A focus on upward mobility needs us to explicitly recognise nonlinearities, differences in the degree of mobility across the income distribution.

Table 2 Selected Cells of the Quintile Transition Matrix between Parent and Child Incomes: Australia, Canada and the United States

Transition	Australia	Canada	*Canada*	US
$P_{1,5}$	12.3	11.4	17.0	10.9
$P_{1,1}$	31.0	30.1	29.1	33.7
$P_{5,5}$	30.7	32.3	24.6	36.5

Sources: Deutscher and Mazumder (2019), Corak (2019) and Connolly, Corak and Haeck (2019).

This is the important window that big data opens up, and Deutscher and Mazumder (2019) carefully exploit the large sample size available to them to produce a host of complementary statistics, the most relevant being the transition matrix across quintiles of the joint parent–child distribution. In my view three particularly relevant cells of this five by five matrix are those associated with rags-to-riches movement, intergenerational cycles of low income and intergenerational cycles of high income, or more precisely:

$$P_{1,5} = Pr\{Y_t \in top \mid Y_{t-1} \in bottom\}$$
$$P_{1,1} = Pr\{Y_t \in bottom \mid Y_{t-1} \in bottom\}$$
$$P_{5,5} = Pr\{Y_t \in top \mid Y_{t-1} \in top\}$$

Upward mobility from the bottom to the top quintile, $P_{1,5}$, embodies the rags-to-riches movement of the 'American Dream', but is only possible if movement out of the bottom is fluid, that is, if intergenerational cycles of low income, $P_{1,1}$, are surmountable. It is also only possible if intergenerational cycles of high income, $P_{5,5}$, are also fluid, opening space at the top for the children of lower-ranked families. Of course, there is nothing to stop us looking at the full matrix or looking at even more finely defined matrices, but these three cells are central to framing a story about upward mobility.[5]

Australia and Canada are very similar along these dimensions. Table 2 shows that the chances of a child born to parents in the bottom fifth moving to the top fifth amounts to 12.3 per cent in Australia and 11.4 per cent in Canada. The two countries also have similar probabilities of being trapped in low

income—31 and 30 per cent respectively—as well as intergenerational cycles of privilege, with the children of top-ranking parents having a 31 and 32 per cent chance of growing up to be top fifth adults, respectively. If there were no relationship between parent and child outcomes, then all of these probabilities would be 20 per cent. Cycles of privilege and poverty are both well above this reference point, and rags-to-riches movement well below.

The important caveat in comparisons of this sort is that the income distribution could differ across countries possibly making the income levels associated with each quintile very different. Connolly, Corak and Haeck (2019) are conscious of this in their Canada–United States comparison and place Canadians in the United States income distribution. The last two columns of Table 2 are taken from their study, and show that when differences in absolute income levels are accounted for, Canadians are much more upwardly mobile, reflecting weaker cycles of poverty and privilege. To date there are no other comparative studies that recognise this need, but my suspicion would be that Australia more closely resembles the Canadian findings than the American.

Big data also offers the opportunity to develop a more nuanced understanding of these patterns when it is used to paint within-country pictures of intergenerational mobility, sometimes for rather finely defined geographic areas. This is the important contribution of Chetty et al. (2014) that others are now following, including Deutscher and Mazumder (2019).[6] As an example, Figure 2 is taken from Corak (2019) and shows the correlation between rags-to-riches movement with cycles of privilege in Panel (a), and cycles of poverty in Panel (b), when these probabilities are defined for each of 266 Census Divisions that tile the entire country, each dot in the figure representing one of these sub-national regions.

This picture makes clear that upward mobility is negatively associated with intergenerational cycles of poverty; the higher the chances of busting out of the bottom, the less likely the chances of moving from bottom to

Figure 2 Rags to Riches Mobility is Higher Where the Cycle of Poverty is Lower: The Correlation between Three Selected Cells of the Quintile Transition Matrix across Canadian Census Divisons
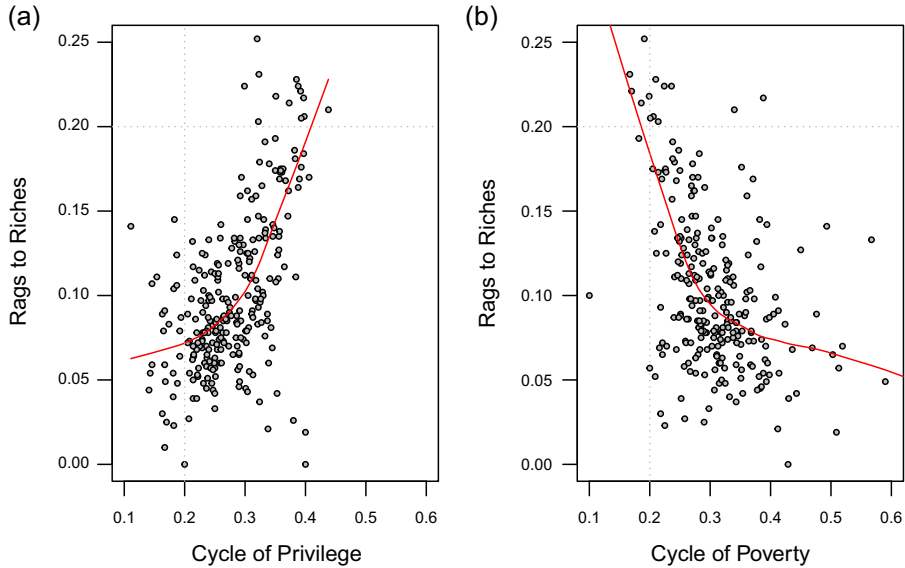
top. In regions where the cycles of privilege are higher, the chances of moving from bottom to top are also higher. Corak (2016a) shows that these patterns are similar in the United States.[7]

These results ask us to pay attention to intergenerational cycles of low income, and my reading of the findings and details in the associated literature, including the Australian studies, suggests three broad conclusions that may inform public policy.

First, intergenerational cycles of poverty are more strongly correlated with income inequality in the bottom half of the income distribution, than with overall inequality or with top-end inequality. Second, this is in turn related to less robust and less inclusive labour markets, but also with more challenging family circumstances. For example, the proportion of children raised in single-parent households in a community is also a strong correlate of intergenerational low income. And finally, the legacy of exclusion and 'distance' —whether geographic or social—of historically disadvantaged groups from mainstream incomes and human capital investments raises particularly persistent intergenerational cycles of disadvantage. For example, within country

analyses using Australian, Canadian and American big data all reveal the challenges faced by indigenous populations. In addition, the United States is distinguished by the historical challenges faced by the country's significant black population. This, along with more unequal labour markets, is what leads the United States to have much lower overall rates of intergenerational mobility than countries like Australia and Canada.

6. Conclusion

Our understanding of intergenerational income dynamics advances through a sometimes awkward dance between three partners: theorists, statisticians and policy makers. Theory, data and policy interest allow empirical researchers to frame and answer relevant questions. But at different times, a different partner steps up and takes the lead in this dance, and Australian economists have recently been able to take important steps in understanding intergenerational mobility because their appreciation of theory and statistical methods has coupled with important advances in the availability of good data. The maturing and continued development of the

HILDA Survey, and enhanced access to administrative data have both been powerful steps advancing our knowledge of intergenerational dynamics in Australia, how it compares to other countries, and what to do about it.

We have learned that about one-quarter to no more than one-third of income inequality among parents is passed on to a recent generation of children. We have also learned that this compares relatively well to many other rich countries, particularly when the comparison is restricted to countries that offer the most scope for policy learning, Canada and the United States. But we have also learned that we need to be agnostic in our use of statistics in order to capture all dimensions of intergenerational dynamics relevant for the way citizens lead their lives, and for informing public policy directed to equality of opportunity. In particular, I have suggested that we need to complement our understanding of the degree of regression to the mean, with a clearer picture of absolute mobility, directional mobility and within-country variations. The steps we have taken in these areas suggest that breaking intergenerational cycles of low income should be the top priority of public policy directed to creating opportunities that allow all children to become all that they can be.

Endnotes

1. Corak (2016b) explains how this scatter plot got its name, and the empirical literature which gave rise to it, including the contributions of Andrews and Leigh (2009), Blanden (2013), Corak (2006) and Solon (2004).

2. This table is not meant to offer a comprehensive survey, but rather a list of the recent influential studies. The sources are: Chen, Ostrovsky and Piraino (2017), Connolly, Corak and Haeck (2019), Corak (2019), Deutscher and Mazumder (2019), EqualChances.org (2019), Fairbrother and Mahadevan (2016), Huang, Perales and Western (2016), Leigh (2007), Mendolia and Siminski (2016) and Murray et al. (2018).

3. The incomes of children are captured at a slightly younger age in the Australian study, the oldest being 33 years of age. In the Canadian study the children are in their late 30s and early 40s.

4. To be clear this is not a criticism of their small sample size, after all Solon (1992) kick-started this literature with similar data from the United States, using a sample of 290 father–son pairs from the Panel Study of Income Dynamics. The point is to use a representative sample and to be aware of the underlying population to which it speaks.

5. Another policy-relevant framing is to focus on movement from the bottom into the middle, using say $P_{1,3}$ and $P_{1,4}$ as markers of upward mobility. Chetty et al. (2014), Corak (2019) and Deutscher and Mazumder (2019) also examine percentile transition matrices.

6. Acciari, Polo and Violante (2019), Corak (2019), Heidrich (2017) and Jansen (2018) also independently use administrative data from Italy, Canada, Sweden and The Netherlands respectively to paint sub-national pictures of intergenerational mobility in these countries.

7. The methodological quirk to keep in mind in interpreting these findings is that quintile ranks are defined in terms of the national income distribution, not the regional income distribution, and that children are placed in the geographic area in which they were raised with no regard to the region in which they may be living and working as adults, geographic mobility being entirely permitted in the data.

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