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*Intergenerational Mobility
and Equality of Opportunity*

Abstract

Intergenerational mobility—the association between parents' and adult children's economic wellbeing—is an important sociological concept because it provides information about inequality of opportunity in society, and it has gained relevance in the recent past due to the increase economic inequality in most of the affluent world. This article provides an overview of the different measures of mobility used by sociologists and economists, as well as main empirical findings about mobility. I then move to topics that push mobility analysis beyond its bivariate focus: The association between intergenerational mobility and economic inequality, the mechanisms for mobility, and the validity of mobility as a measure of inequality of opportunity. I suggest that the association between mobility and inequality is likely spurious, driven by varying institutional arrangements across countries, and that mobility analysis is most useful when focused on describing the bivariate intergenerational association across countries and over time.

Keywords: Intergenerational mobility; Economic inequality; Equality of opportunity.

INTERGENERATIONAL MOBILITY IS MEASURED by the association between parents' and adult children's economic status, where status can be measured by income, earnings, occupation, class, education, wealth, or other markers of socioeconomic advantage. Mobility is an important concept because it provides information about equality of opportunity in society. A low intergenerational association suggests that individuals have an equal chance of succeeding (or failing) regardless of social origins. In contrast, a strong intergenerational association indicates that children will closely replicate their parents' position in the socioeconomic hierarchy, suggesting the persistent influence of the advantages of birth. The recent increase in economic inequality in the United States and other advanced industrial countries [OECD 2008; McCall and Percheski

2010] underscores the importance of the question of mobility, based on the assumption that growing inequality will strengthen the intergenerational persistence of advantage. More generally, using mobility as a metric, the relationship between equality of outcomes and opportunity can be examined.

As is the case for inequality, mobility is a population-level comparative concept. While there will always be rags-to-riches and riches-to-rags biographies in societies, mobility measures, at the aggregate level, show how prevalent these stories are. Mobility is comparative because no empirical society is characterized by either null association or perfect association between parents and children. It is the relative comparison across countries or periods that provides bounds to gauge the level of intergenerational persistence in a particular context.

Scholars focus on “relative mobility,” i.e. the association or persistence between parents’ and adult children’s economic wellbeing *net* of any changes in the economic structure and in the aggregate levels of economic wellbeing across generations (sociologists call this component “structural mobility”). If rapid economic growth lifts all boats or if industrialization pushes individuals from agriculture to manufacturing and service employment, these components of mobility will be controlled away. This means that relative mobility cannot be directional. Each upward move requires a downward move that “frees up” a coveted space in the socioeconomic hierarchy, hence the metaphor of “taking turns” across generations to describe mobility [Hout 2004]. This notion of intergenerational association has no correlate in the population’s experiences: mobility as a lived experience—and likely as a source of satisfaction, value orientations, and attitudes—includes both changes in aggregate standard of living and economic structure and net departures from social origins. Nor does it have a direct correlate in discussions about promoting upward mobility through, for example, educational expansion, because changes in educational distributions do not necessarily detach individuals from their social origins.

The analysis of mobility is largely bivariate, focusing on the description of the association between parents and children. This is no small feat: as I will discuss, producing a valid and comparable measure of intergenerational association across time and place carries substantial methodological and data challenges. A central methodological challenge is to devise a valid measure for parents’ and children’s long-term economic status (called “permanent” or “lifetime”

income by economists), purged of errors of measurement and transitory fluctuations; this is the theoretical concept believed to shape children's outcomes¹.

The analysis of mobility poses data challenges because it requires information on the economic circumstances of adult children and their parents when the children were growing up. Three data sources are used: long-term panel surveys following families over several decades; administrative data matching parents and children (for example, tax records); and cross-sectional surveys of adult children collecting retrospective information about their parents. The latter data source is the most common but the most error-prone. It permits the analysis of class and occupational persistence because children's retrospective reports of parental occupation have acceptable validity and reliability. However, it does not allow for the analysis of income or earnings mobility. As a result, analysis of economic mobility is a "rich country" endeavor, largely restricted to about two dozen affluent countries (see for instance Blanden 2013, Bjorklund and Jantti 2009, Black and Devereux 2011, Fox *et al.* forthcoming), and only recently expanding to middle-income countries such as China, Brazil, and Chile [Gong *et al.* 2012; Torche 2014] by way of methodological innovations that link independent samples of parents and children [Angrist and Krueger 1992].

Occupational and class mobility analysis can rely on cross-sectional surveys with retrospective information about parents, and so they have been conducted in many more countries, both developed and developing [Hout and DiPrete 2006, Torche 2014]. However, occupational and economic mobility are different concepts, and they are empirically uncorrelated across countries. As striking examples, the United States and Chile feature limited earnings mobility but higher levels of class mobility [Bjorklund and Jantti 2000; Blanden *et al.* 2013; Torche 2005; Nunez and Miranda 2010]. These discrepancies raise an important question concerning the validity and value of different measures of well-being in capturing the persistence of advantage across generations.

This article begins by reviewing economic and sociological perspectives for the analysis of intergenerational persistence and offering its main empirical findings. It then discusses topics that push mobility analysis beyond its bivariate focus and evaluate the utility of the

¹ The mobility literature consistently focuses on long-term status, but recent research suggests that income fluctuation, net of long-term averages, may also shape

children's wellbeing during childhood [Hill *et al.* 2013] and may have an important role for intergenerational mobility [Carneiro *et al.* 2015].

concept: the relationship between cross-sectional inequality and intergenerational mobility, the mechanisms of mobility, the analysis of mobility across multiple generations, and the extent to which mobility captures equality of opportunity. The conclusions suggest that mobility is a useful descriptive measure of inequality of opportunity in society, which would ideally be available for every country in the world. However, it tells us very little about causal processes and mechanisms for the persistence of advantage. Addressing mobility mechanisms requires *both* isolating the causal effect of specific factors such as educational policy and family structure, *and* moving beyond these specific factors to assess how institutional contexts shape intergenerational opportunity.

*Measurement and main findings of mobility research:
sociological and economic perspectives*

Sociology and economics have made important contributions to the analysis of mobility. Both disciplines focus on the association between parents and adult children, but they favor different measures of economic status and different strategies to gauge the intergenerational association. Sociologists have traditionally focused on occupational status and social class while economists focus on pecuniary measures such as wages, earnings and income, although these disciplinary boundaries are less rigid in current scholarship (e.g. Mitnik *et al.* 2015; Bjorklund and Jantti 2000).

Occupational status and class mobility

The concept of occupational status was originally devised by Duncan [1961] in the context of the American status attainment tradition. Occupational status is a one-dimensional hierarchy based on the mean education and earnings of each occupation's incumbents, and it is claimed to provide a good proxy for long-term economic status, even better than single-year income or earnings [Goldberger 1989; Zimmerman 1992]. Several updates and refinements of the original occupational status index recalibrate the weights attached to education and income, account for the upgrading of occupational structure and for gender differences in occupational participation

[Stevens and Featherman 1981; Nakao and Treas 1994], and offer an internationally comparable index [Ganzeboom *et al.* 1992]. These measures have produced an important body of work (e.g. Grusky and DiPrete 1990, Beller and Hout 2006, Yaish and Anderson 2012). However, the sociological analysis of occupational status mobility has declined as earnings and income mobility have gained centrality.

While measures of occupational status subsume all sources of socioeconomic advantage into a single one-dimensional hierarchy, classes are categorical groupings based on specific occupational assets believed to determine life chances [Wright 1985; 1997; Goldthorpe 1987; Grusky and Weeden 2006]. Classes capture not only the amount but also the type of occupational resources controlled by individuals, and thus considers “the sources of inequality and not only its surface manifestations” [Portes and Hoffman 2003]. Researchers claim that different classes are distinctly affected by contextual factors such as economic restructuring, globalization, or labor market policies, even if their incumbents have similar levels of occupational status [Breen and Whelan 1996]. As such, differences between classes are not reduced to a single hierarchy.

Class is not just an economic phenomenon. Similar life chances may provide a structural platform for the formation of common values, attitudes, tastes, and behaviors, which will define “classes as cultures” [Wright 1997; Willis 1981; Bourdieu 1984; Lamont 1992; 2002]. Furthermore, members of a class can gain awareness of their common interests and build a shared identity, which can become the basis of collective action. This defines “classes as actors,” as expressed in the famous Marxist “class for itself” [Marx 1973: 238-239]. Even though the notion of classes as cultures and actors is important for understanding the impact of stratification on social dynamics, mobility analysts focus on the Weberian “weak” notion of classes [Wright 2002], as determinants of “unequal chances individuals have of sharing in the economic and cultural goods which exist in society” [Giddens 1973: 130-131] i.e. on classes as expression of socioeconomic inequality.

The most widely used class classification was devised by Erikson, Goldthorpe and Portocarero [1979]. The classification is based on “employment relations” [Erikson and Goldthorpe 1992: 35-47; Goldthorpe 2007: 101-124] and combines the distinction between employer, self-employed and employees with further distinctions based on level of skill, sector of employment, and authority in the workplace. Its most common version has seven classes, including professionals and managers, clerical workers, self-employed, farmers, skilled manual workers, and farm workers. This class classification emerged in the

context of a major project known as the Comparative Analysis of Social Mobility in Industrialized Countries CASMIN, which compared mobility across fifteen industrialized countries in the 1970s. An alternative class classification was devised by Wright [1985; 1997]. This perspective expands the Marxist notion of exploitation by defining “multiple exploitations” based on ownership of the means of production (capital), organizational assets (authority) and skills (expert knowledge) as sources of class divisions. Both class schemas have been used in empirical research but the CASMIN classification has become the standard for comparative mobility analysis.

Earnings and income mobility

Economists favor pecuniary measures of economic well-being, including earnings and income. Like class and status, earnings provide a measure of well-being strictly based on the labor market. As a result, they do not include those who are not working or extra-occupational resources, such as financial assets and public and private transfers. They thereby potentially exclude the “underclass,” poorly attached to the labor market [Grusky and Weeden 2008], and the “overclass,” whose income largely depends on returns to capital. Total family income includes returns from labor earnings, assets, and transfers accruing to all family members. By focusing on the family, income measures account for dynamics such as spousal selection (assortative mating) and intra-household division of labor that are neglected in individual-level measures. Income data have several advantages: in addition to capturing diverse sources of revenue, income measures have a one-to-one correlation with standard measures of economic inequality. Furthermore, high-quality intergenerational income data are increasingly available from tax registries and other administrative sources. These factors explain the growing relevance of income in the study of mobility [Chetty *et al.* 2014; Mitnik *et al.* 2015].

How is mobility measured and what are the main empirical findings of mobility research?

The strategies to capture intergenerational mobility depend on the measure of status used. With continuous variables such as occupational status, income, and earnings, researchers rely on linear regression models that capture the expected value of children’s status across levels

of parental status. Because income and earnings distributions are highly skewed, the variables are recoded using logarithms, which transform the regression coefficient into an elasticity indicating the proportion of a one percent difference in parents' income that will be transmitted as income differences between their children. Measures of elasticity usually range between zero and one, with zero indicating no intergenerational association and one indicating that the proportional earnings differences of parents will be exactly replicated in the children's generation [Blanden 2013].

Empirical estimates of earnings and income elasticities are currently available for about two dozen countries. They vary widely between approximately 0.15 and 0.70. In the United States, the country on which probably the most research exists, estimates of income and earnings elasticities range between 0.30 and 0.60 depending on methodological decisions [Black and Devereux 2011].

Elasticities, the staple measure of intergenerational persistence, include information about both the association between parents and children and any changes in the income distribution across generations. *Ceteris paribus*, an increase in inequality across generations will increase the elasticity, and a decline in inequality will reduce it. To control for changes in inequality, researchers have used alternative measures such as the correlation coefficient and the rank-rank coefficient linking parents' and children's income ranks rather than levels. The choice of measure is consequential in contexts that have experienced substantial changes in inequality. For example, intergenerational persistence is stronger in the US than in Sweden and the UK when using elasticity but similar using the rank-rank correlation or the correlation coefficient [Corak *et al.* 2014; Eberharter 2013], suggesting that the "mobility deficit" in the US has been exacerbated by growing inequality.

Naturally, reducing the mobility process to a single measure of *linear average persistence* across generations is a simplification. Recent work uses alternative strategies to capture the pattern and not just the overall level of intergenerational association. These include matrices cross-classifying parents' and children's income quintiles, models allowing for nonlinearities in the intergenerational association, and quantile regression models examining income dispersion around the regression line [Corak and Heisz 1999; Couch and Lillard 2004; Peters 1992; Eide and Showalter 1999]. Based on these approaches it is possible to examine whether average persistence is stronger for the rich or the poor, and whether the dispersion in children's income

varies across the socioeconomic hierarchy. For example, Corak and Heisz (1999) find that intergenerational persistence is greater at the upper end than at the lower end of earnings distribution in Canada, and Eide and Showalter [1999] found much more variance around predicted children's income for poor than for wealthy parents in the US. Both findings signal stronger persistence at the top.

An important challenge in the analysis of economic mobility is that single-year measures of earnings or income provide poor proxies for long-term economic status. The problems are manifold. First, respondents are reluctant to report their income, likely to report it with error, and likely to experience transitory income fluctuations that can persist over many years (measurement error and persistent transitory shocks). Furthermore, the transitory component of income varies over the life cycle (age-related bias), and the association between current and long-term earnings is not constant over the life cycle (life-cycle earnings bias). Starting in the 1980s, a small cottage industry in economics has addressed these issues [Jenkins 1987; Zimmerman 1992; Solon 1992; Peters 1992; Mazumder 2005, Haider and Solon 2006; Grawe 2006]. Currently, the convention is to take income averages over many years in order to reduce measurement error, and to center measures around age 40, a stage in the life cycle that has been found less prone to bias.

A recent alternative attempt to address these measurement challenges uses surname-level averages of economic status for parents and children [Clark 2014; Clark *et al.* 2015]. Such averages are claimed to capture individuals' underlying competence purged from random variation. Intergenerational persistence of surname-level status is very high—with coefficients of around 0.80 or even higher—and surprisingly stable across time and place, including medieval England, Sweden since 1600, and Chile in the 20th century. Based on these findings, Clark [2014] argues that intergenerational mobility is limited, impervious to social policy and that, because its main determinant is exogenous genetic endowments shaping competence, it should be left alone. The approach suffers from two serious problems. First, surname-level averages capture not only individual-level attributes but also group-level factors—e.g. discrimination, group networks, historical barriers to integration, etc.—that have an independent effect on individual status (hence the high estimates of persistence). Second, taking group-level averages does not solve the measurement error issue that motivates their use [Torche and Corvalan 2015]. Surname data can provide interesting information for historical analyses when

individual-level data are not available, but it does not provide an adequate measure of mobility as experienced by individuals.

In sum, the analysis of economic mobility involves substantial methodological challenges. These methodological issues are not just a technical detail. Rather, they have vast implications for the estimated magnitude of the intergenerational association. In the US for example, early measures of intergenerational earnings elasticities yielded low values of 0.15–0.20 [Becker and Tomes 1986; Behrman and Taubman 1985], leading to the conclusion that earnings were not strongly transmitted across generations. As concluded by Becker and Tomes [1986: 32], “aside from families victimized by discrimination [...] almost all earnings advantages and disadvantages of ancestors are wiped out in three generations.” We now know that this finding was an artifact of using single-year measures of earnings and small, homogeneous samples. The use of better techniques has led to the consensual figure of intergenerational elasticity being raised to about 0.40 in the 1990s [Solon 1999], and to around 0.50 or more in the 2000s [Black and Devereux 2011; Torche 2015]. Seemingly small methodological decisions can have large consequences. For example, decisions about how to deal with non-linearities and with zero income values in the US result in estimates of the intergenerational elasticity widely varying between 0.30 and 0.70, which spans most of the estimates in the empirical literature [Chetty *et al.* 2014].

After decades of research, we have learned that producing reliable estimates of economic mobility is a colossal task. The growing availability of administrative data with little measurement error and comprehensive coverage of the life-course should alleviate the problem. Still, no single estimate mobility will provide a conclusive answer. Rather, it should be seen as an additional data point in the distribution of plausible measures.

The analysis of class mobility uses altogether different techniques. Given that differences between classes cannot be subsumed to a single hierarchy, analysts consider the entire mobility table cross-classifying classes of origin and destination, and model the associations in different regions of the table with log-linear models [Featherman and Hauser 1978; Hout 1984]. The landmark CASMIN project comparing advanced industrial countries found that countries differ in their occupational structure, but net intergenerational mobility was extremely similar across countries and over time. These findings were expressed in the “common” and “constant” social fluidity hypotheses, respectively. The basic temporal and international similarity was

systematized into a “core model” [Erikson and Goldthorpe 1992]. The model is theoretically driven and distinguishes mobility barriers based on hierarchy (status differences between classes), inheritance (class-specific propensities to remain in classes of origin) and sector (barrier between agricultural and non-agricultural classes), in addition to country-specific affinities or disaffinities between specific classes. This model has been the obligatory referent for comparative class mobility research, but it has been subject to important criticism [Hout and Hauser 1992].

Analysis of country-specific trends in class mobility has questioned the “constant fluidity hypothesis.” A major follow-up of the CASMIN project analyzing mobility until the 1990s in 11 European countries found growing mobility in some countries, but null or slight temporal change in others [Breen 2004]. While Britain, Israel and Germany are best characterized by “constant fluidity”; growing openness is detected in France, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, and Sweden. Changes in Ireland and Italy are quite minor [Layte and Whelan 2004; Pisati and Schizzerotto 2004], and France, the Netherlands, and Brazil display a sustained increase in mobility [Ganzeboom and Luijkx 2004; Vallet 2004; Torche and Ribeiro 2010]. An important open question is the contextual factors accounting for variation in class mobility across time and place.

Mobility and inequality

If mobility captures equality of opportunity, a central concern is how mobility relates to cross-sectional inequality. Much literature suggests that higher inequality reduces intergenerational mobility. Several theoretical mechanisms account for this relationship. Inequality in the parental generation implies wider disparities in the formative environments of children and less progressive human capital investments, which results in less mobility [Neckerman and Torche 2007; Ermisch *et al.* 2012]. Higher inequality also implies higher returns to schooling in labor and other markets, which induce intergenerational rigidity [Solon 2004]. Additionally, inequality may induce residential segregation, resulting in a more skewed composition of peer groups along socioeconomic lines [Durlauf 1996; Reardon and Bischoff 2011].

An alternative pathway of influence is the political realm. Political dynamics can result in a positive or a negative link between inequality and mobility. As suggested by the median-voter theorem, higher inequality induces median voters to push for redistribution, which could foster mobility. Evidence about this pathway is inconsistent. Some cross-national studies find support for the median voter hypotheses [Kenworthy and Pontusson 2005; Milanovic 2000]. In others the association is null or negative [Perotti 1996] or varies depending on the type of redistributive program [Osberg *et al.* 2004]. The political system could also result in a negative association between inequality and mobility if high economic concentration strengthens the influence of the wealthy through political contributions and lobbying, thus reducing the scope for redistributive policies [Burtless and Jencks 2003]. No conclusive evidence about this hypothesis exists to date. Research in the United States has shown that inequality matters for political influence [Bartels 2008; Gilens 2012], but it is not clear whether the pattern of unequal influence has increased as inequality has risen, and no comparable evidence exists in other countries [Kenworthy 2015].

These mechanisms linking inequality and mobility are plausible, but they leave much to be explained in terms of their level of analysis, appropriate time lags, first-order effects versus externalities, potential tipping points, and the vast risk of spuriousness. As we will discuss, the association between inequality and mobility may largely be driven by other variables that shape both dimensions of inequality, such as institutional arrangements and welfare state configurations.

Inequality and mobility: the evidence

Surprisingly, cross-country comparisons of class mobility show a small or null association between mobility and economic inequality [Erikson and Goldthorpe 1992; Breen and Luijckx 2004; Torche 2005; Ribeiro 2007]. This finding again suggests that social class captures sources of advantage distinct from economic disparities. In contrast, there is a strong positive association between cross-sectional inequality and intergenerational earnings and income persistence. Egalitarian Scandinavian countries feature the highest levels of mobility with elasticities of about 0.20, whereas more unequal Italy, the United Kingdom, and particularly the United States are less mobile with elasticities reaching 0.40 or more [Bjorklund and Jantti 2009; Blanden

2013; Jantti *et al.* 2006; Solon 2002; Jantti and Jenkins 2015]. When much more unequal Latin American countries have been added to the comparison, they feature even higher elasticities reaching about 0.60 or more [Torche 2014]. The negative cross-country association between inequality and mobility has transcended academia and been popularized in the “Great Gatsby” curve [Corak 2013; Krueger 2012].

The association between economic inequality and earnings mobility fails, however, to materialize when changes within countries are examined. The most salient case is the United States, which has experienced large increases in economic and educational disparities since the late 1970s, with the household income Gini rising from 0.40 in 1980 to 0.48 in 2012 [US Census Bureau 2015], and access to higher education becoming more stratified by income [Belley and Lochner 2007]. However, mobility does not seem to have declined during this period, with the large majority of studies finding insignificant change over time [Fertig 2003; Mayer and Lopoo 2005; Hertz 2007; Lee and Solon 2009; Bloome 2014]. While this inconclusiveness could be attributed to data limitations, a recent analysis using a large administrative dataset with little measurement error suggests that the absence of mobility trends as inequality has increased may be an accurate finding [Chetty *et al.* 2014].

Trends in other countries are more consistent with a negative association between inequality and mobility, but the evidence is weak. The United Kingdom experienced a large increase in inequality between 1980 and 1990 [Equality Trust 2011]. Researchers have found an increase in the intergenerational elasticity for cohorts born between 1960 and 1970, but not between those born between 1950 and 1960 [Blanden *et al.* 2013; Nicoletti and Ermisch 2007], a trend that does not fully match with the increase in inequality. Another interesting case is Finland, in which an increase in economic mobility was detected from cohorts born between 1930 and 1950, a period in which inequality largely declined [Pekkala and Lucas 2007]. However, growing mobility may have been entirely driven by comprehensive school reform, without the additional influence of income inequality [Pekkarinen *et al.* 2009].

The strong association between inequality and mobility across countries but weak association in their trends within countries strongly suggests that the link between inequality and mobility is spurious, driven by institutional arrangements organized into welfare state regimes [Esping-Andersen 1990; Hall and Solstike 2001; Arts and Gelissen 2002]. Coherent configurations of institutional arrangements, including redistribution via taxes and transfers, protection

against risk, and early investments in human capital likely shape both cross-sectional inequality and its transmission across generations in ways that vary across countries, but which result in limited immediate change within countries when inequality drops or rises in the short-term.

Studying the influence of such institutional arrangements on intergenerational persistence is a challenging task. The most common strategy involves comparing countries exploiting their variation in institutional arrangements [Ichino *et al.* 2011; Behrman *et al.* 1999; Beller and Hout 2006]. For example, Ichino *et al.* [2011] found a strong correlation between public expenditures on education and intergenerational income elasticity across ten advanced industrial countries. This *cross-country multivariate strategy* is limited, however, by small sample sizes and high correlation between institutional and economic factors, preventing claims beyond the thinnest of description.

An alternative strategy is to exploit plausibly exogenous variation in specific policies to assess their causal effect on mobility. For example Pekkarienen *et al.* [2009] exploited the fact that comprehensive school reform was implemented gradually across the country in Finland to examine its effect on intergenerational income elasticity. Similarly, Rauscher [forthcoming] leveraged variation across time and state in early compulsory schooling laws in the US to assess the causal effect of educational expansion on mobility. The main limitation of this *isolating policy effects* strategy is that examining a single policy component may provide a correct but hardly generalizable answer if the effect depends on the institutional milieu in which it emerges. While neither strategy alone provides a conclusive answer, their integration offers a promising avenue to explain the determinants of mobility.

Mechanisms of mobility

A long tradition in sociology has examined the mechanisms that account for the transmission of advantage across generations. The seminal work by Blau and Duncan [1967] pioneered the status attainment tradition by offering a mobility model including its intergenerational and life-cycle components. The key variables in this model are father's education and occupational status, children's educational attainment, children's occupational status at first job, and adult children's socioeconomic status. The examination of

mechanisms was continued by the Wisconsin school, which added psychosocial mediating factors including cognitive ability, significant others' influences, aspirations, expectations, and school performance to the status attainment model [Sewell *et al.* 1969; 1970; Haller and Portes 1973]. Mobility mechanisms have recently been rediscovered by economists, who use similar multivariate models as those in the status attainment tradition and include mediators such as educational attainment, cognitive skill, personality traits, and occupational experience (e.g., Eide and Showalter 1999; Blanden, Gregg, and Macmillan 2007, Bowles, Gintis, and Groves 2005; Smeeding, Erikson, and Jantti 2011).

One important finding in the tradition accounting for mechanisms is the central role of education as *both* the main vehicle for intergenerational reproduction and the main avenue for mobility [Hout and DiPrete 2006]. Education is the main vehicle for reproduction because most of the intergenerational association is mediated by children's educational attainment. Three components of its mediating role are conventionally analyzed: the association between social origins and educational attainment (conventionally called "inequality of educational opportunity"), the association between education and socioeconomic advantage ("returns to schooling") and the direct intergenerational association once education is accounted for.

The direct intergenerational association net of education has been found to be non-zero but minor [Blau and Duncan 1967; Sewell and Hauser 1975], and to vary across levels of educational attainment. It is strong among those with less than a college degree, very weak among college graduates, and strong again among those with a graduate degree [Hout 1988; Torche 2011]. While a college degree fulfills its meritocratic promise, the strong intergenerational association among those with a graduate degree questions the meritocratic nature of highly skilled labor markets, and refocuses attention on features of the higher-education system that contribute to intergenerational persistence by providing avenues for advantaged families to invest in their children's schooling. As post-secondary educational systems have expanded and diversified, important sources of such "horizontal educational stratification" may include institutional selectivity and field of study (Gerber and Cheung 2008). The weak intergenerational association among college-degree holders also offers an avenue for increasing mobility through educational expansion via a compositional effect: as education expands and larger proportions of each cohort gain access to a college degree, mobility

should increase due to the growing numbers of college graduates in the population. This compositional effect has contributed to mobility in several countries including Sweden, Great Britain, Germany, France, and the United States [Breen and Jonsson 2007; Breen 2010; Vallet 2004; Pfeffer and Hertel 2015]. An open question is whether the meritocratic power of the college degree is partly driven by positive selectivity of college graduates and may decline as college expansion reduces selectivity.

An important sociological contribution is the comparative analysis of inequality of educational opportunity across time and place. Early work comparing thirteen advanced industrial countries found persistent educational inequality in spite of massive educational expansion [Shavit and Blossfeld 1993] but more recent analysis has found equalization in several countries (Breen *et al.* 2009). Beyond self-evident financial constraints, inequality of educational opportunity has been accounted for by class-stratified choices. Boudon [1974] argues that class differences in educational attainment depend on prior academic performance and choice conditional on performance, in particular the choice to continue in school at each educational transition; and that the influence of past performance on choice is class-stratified. Disadvantaged children are highly sensitive to prior performance when deciding whether to continue to the next educational level while advantaged children persist regardless of their prior attainment. Cross-country variation in inequality of educational opportunity appears to emerge largely from class-based choices, not academic performance [Jackson and Jonsson 2013].

The search for mobility mechanisms is a laudable enterprise but it faces theoretical and empirical limitations. At the theoretical level, both status attainment and economic traditions are largely oblivious of structural factors, and in particular power dynamics, in explaining the role of the educational system in social mobility. Critical approaches argue that the educational system may serve as an institutional device for intergenerational class persistence (Bourdieu 1977a; 1977b, Bourdieu and Passeron 1977; Bowles and Gintis 1976). As elaborated by Bourdieu, schools may provide a vehicle to legitimize and maintain the socioeconomic structure by transforming class distinctions into educational distinctions represented as emerging from merit, and channeling children of different social origins into different positions. These critical approaches remind us of the limits of educational expansion as a strategy to foster mobility.

At the empirical level, the search for mechanisms in both sociology and economics relies on path-analytic models. Researchers add mediating variables to a model linking parents' and children's status and interpret the path connecting origins to destinations through each putative mediator as capturing their mediating role. The coefficient associated with parental status once mediators are added is interpreted as the "direct effect" of social origins. This is not a correct interpretation. Virtually all putative mediators are endogenous and they provide limited information about mechanisms for transmission. To provide an intuitive interpretation of this claim, consider the following: accounting for a child's educational attainment as a mediator means comparing children with the same level of educational attainment but different social origins: say, two college graduates, one from a poor family and one from a wealthy family. If educational attainment is correlated with unobserved factors shaping economic success (for example, cognitive ability or motivation), the model implies comparing a poor child who "made it to college" (perhaps given her unobserved outstanding ability) with a wealthy child who "just attained a college degree" (perhaps given her limited motivation). This inappropriate comparison of their potential outcomes departs from a causal effect. If we could account for all the factors that account for children's socioeconomic status and that may be passed across generations, we would be able to rule out endogeneity and parameter estimates would provide information about causal connections. But such exhaustive measurement of all potential pathways of intergenerational influence is unrealistic.

Alternatively, researchers could exploit random variation in putative mediators, such as by using natural experiments, in order to capture their causal effect. But the analytical requirements for causal interpretation of mechanisms are stringent. Technically, mediation analysis requires "sequential ignorability" i.e. both parents' status and the putative mediator should be allocated at "as random" [Imai *et al.* 2011]. This is certainly not the case in naturalistic settings².

Scholars are increasingly aware of these challenges to causal interpretation. A common response is to claim that even if no causal effects can be captured, mobility models including mediators are

² Even if sequential ignorability holds, an additional issue emerges if, in their attempt to address spuriousness, researchers condition on a "collider," a variable that is itself caused by two variables, one related to the treatment and the

other related to the outcome. By conditioning on a common cause, researchers necessarily create an association between them [Pearl 1995]. This problem is known as endogenous selection bias [Elwert and Winship 2014].

valuable descriptive devices that help researchers assess the different pathways for the transmission of advantage. The problem with this approach is that descriptive models can yield estimates that differ not only in magnitude but also in size from causal estimates. This is a concern in terms of theoretical or policy implications of the findings. Description has a central place in the study of mobility, but given the challenges of establishing causal relationships from observational data when multiple variables are included and mediation is assumed, it is probably prudent to focus the descriptive effort on the bivariate intergenerational association.

Multigenerational mobility

Another application of the question about mechanisms for mobility is the study of intergenerational associations across more than two generations. Although the analysis could consider many generations of ancestors, most of this research has expanded to include three generations—grandparents, parents, and children [Mare 2011]. In these settings, the parental generation can be seen as a mediating factor linking grandparents to children. The initial question when mobility across multiple generations is considered is whether the process is Markovian, i.e., one in which the outcome at any stage depends only on the outcome of the previous stage. In this “memory-less” process, the status of children depends on their parents’ status only, without an additional direct role for grandparents or other ancestors.

Empirical analysis of three-generation association dates back to the 1950s and 1960s [Svalastoga 1959; Hodge 1966]. In a classic study, Hodge [1966] found that the process of mobility was largely Markovian, with little direct association between grandparents and children. The finding of null or weak grandparents’ effects once parental status is accounted for has been replicated with different measures of economic well-being [Hauser and Warren 1997; Erola and Moisisio 2007], although some studies have found a direct association between the status of grandparents and children [Chan and Boliver 2013; Lindahl *et al.* 2012].

An important challenge for the analysis of multigenerational mobility is the interpretation of the direct association between grandparents and children net of parents’ resources. This problem is just another example of the limitations of mediation analysis with

observational data. Theoretical models in economics have indeed predicted a small negative association between grandparents and grandchildren when the association is conditional on children's status [Becker and Tomes 1979, Solon 2014]. As put by Solon [2014] "if the parents did not earn more despite the advantages of higher grandparents' income, this signals that the parent got a poor draw in the genetic/cultural endowment, and that poor draw tends to be passed to some extent to children." The intuition behind this example suggests that when we condition on parents' socioeconomic status, we compare children whose parents have similar status—say, low—but whose grandparents have different statuses and who are therefore very likely to differ in terms of unobserved factors (what Solon calls genetic/cultural endowments). Controlling for parents' status can result in a "grandparents' effect" that differs not only in magnitude but also in sign from the true causal effect.

Given these challenges, a productive avenue might be to examine specific mechanisms linking more than two generations using a falsification logic. For example Zeng and Xie [2014] reasoned that if grandparents shape children's outcomes through interacting with them, then their influence should be stronger when they co-reside with their grandchildren than when they live somewhere else or are deceased. Their analysis of rural China confirms that indeed the education of co-resident grandparents has a positive association with grandchildren's education, but the education of deceased or non-co-resident grandparents does not. This dual finding strongly supports the plausibility of an interactional mechanism. More examination of theoretically-driven mechanisms is needed to advance the understanding of influences of grandparents and extended families on individual well-being.

Does intergenerational mobility measure equality of opportunity?

We care about mobility in large part because it provides information about equality of opportunity. But perfectly equal opportunity does not imply eliminating all sources of socioeconomic resemblance between parents and children. Equal opportunity does not require, nor can it request, equalizing factors such as inherited differences in ability and early household socialization of tastes [Jencks and Tach 2006]. Assuming that these factors play a role in every society, equal opportunity will not result in a null association between parents and children.

The extent to which mobility does capture equality of opportunity is claimed to depend on which *mechanisms* account for intergenerational reproduction [Jenck and Tach 2006; Swift 2004]. To the extent that persistence emerges from *class-based achievement barriers* preventing children from developing their full potential due to lack of parental access to financial, cultural or social resources, or preventing adults from being rewarded for their productivity due to factors transmitted across generations such as racial discrimination, the intergenerational association will be interpreted as capturing inequality of opportunity. But if intergenerational persistence is due to *genetic inheritance or by cultural endowments transmitted through early socialization of tastes*, it is interpreted as unrelated to equality of opportunity.

This argument is problematic. As section 4 argues, it is difficult to disentangle the causal effect of different mechanisms. More importantly, a growing body of research from the biological and behavioral sciences shows that the distinction between barriers to achievement and inheritance of endowments such as genes or tastes exists only at the analytical level and is probably immaterial for practical purposes. Research shows that individual capabilities are shaped by the socio-economic environment starting as early as the prenatal period, in multiple ways that have consequences for later life, shaping health, development, and socioeconomic well-being [Knudsen *et al.* 2006; Palloni 2006]. As a landmark study summarizes, “virtually every aspect of early human development is affected by the environment and experiences encountered in cumulative fashion, beginning in the prenatal period and extending into the early childhood years” [Shonkoff and Phillips 2000: 6].

The same may apply to so-called cultural endowments transmitted through early socialization. As elaborated by Bourdieu [1977b: 82-83] social class constraints shape tastes and dispositions from early on in life in ways that are unconscious, coalescing into a “system of lasting, transposable dispositions which, integrating past experiences, functions at every moment as a matrix of perceptions, appreciations, and actions.” This approach suggests that attributes usually described as temperament or propensities may be firmly rooted in class circumstances, and questions the exogeneity of tastes.

Social class also shapes endowments in less subtle, more blatant ways. Disadvantaged children are more likely to be exposed to a myriad of environmental insults such as violence [Harrell *et al.* 2014], lead [Tong *et al.* 2000], and pollution [Bell and Ebisu 2012], which may severely

constrain their cognitive development in early life. Recent research using neuroimaging technology suggests that poverty is associated with brain structure and function very early in childhood, and this association is largely net of genetic variation [Noble *et al.* 2015; Hair *et al.* 2015]. A recent scholarship on epigenetics further transcends the distinction between socioeconomic constraints and transmission of endowments. Epigenetics (meaning “above” or “in addition to” genes) shows that environmental factors alter gene expression and activity in ways that are persistent and heritable but which do not involve change in DNA sequence. For example, prenatal exposure to stress—which is highly stratified by socioeconomic status [Turner *et al.* 1995]—results in low birth weight driven by gene expression of “stress hormones” in the placenta [Hobel 2004; McLean *et al.* 1995]. Given that birth weight predicts health, development and socioeconomic outcomes [Conley *et al.* 2003], this epigenetic effect shapes individual endowments in ways that could easily be interpreted as hereditary but that are purely environmental. Because epigenetic influences can be inherited even if there is no change in gene structure [Yehuda *et al.* 2015], the effects of the environmental exposures can be transmitted across generations, much as DNA can.

These bodies of research naturally do not rule out the potential for an autonomous role of genes or tastes in the transmission of advantage. However, they suggest that environmental exposures shape individual health and attainment from conception in durable ways that can easily, and incorrectly, be construed as genetic or cultural endowments. This renders the distinction between endowments and socioeconomic constraints blurry to the point of being immaterial. It also suggests that policies intended to promote upward mobility among disadvantaged populations are necessary but not sufficient to alter opportunity in a single generation, and gives credence to the longstanding insight that a potent way to equalize intergenerational opportunity is to equalize economic well-being across families, particularly those with children (e.g. Jencks *et al.* 1972).

Summary and conclusions

Intergenerational mobility, operationalized as the strength of the association between parents’ and adult children’s socioeconomic

status, is a central concept for stratification research because it provides information about inequality of opportunity in society. Producing a valid and reliable measure of intergenerational association is no small feat. It requires selecting a measure of status that captures long-term economic well-being purged from temporary fluctuation at the right stage of the life course for both parents and children. These challenges are not just a methodological detail. Rather, they have major substantive consequences affecting the assessment of mobility across countries and over time.

Different measures of intergenerational association exist, including class, occupational status, education, income, earnings, and wealth. Sociological scholarship has historically focused on class and occupational mobility and has produced a valuable body of research. However, recent academic and policy discussion emphasizes economic mobility measured by earnings and income. Several reasons explain the emphasis on income: the simplicity in describing the intergenerational association through a single parameter linking continuous variables, the one-to-one correlation between metrics for mobility and economic inequality, and the growing availability of income and earnings data from administrative sources.

Research on economic mobility shows substantial variation across countries and a strong association between intergenerational economic persistence and cross-sectional economic inequality. In one extreme, egalitarian Scandinavian countries feature low levels of intergenerational persistence. In the other, highly unequal Latin American countries feature very strong persistence. The United States features both the highest level of inequality and the lowest level of mobility among affluent nations. In contrast, mobility trends within countries are only weakly—if at all—related to changes in inequality. This inconsistency strongly suggests that the mobility-inequality relationship is spurious, likely driven by institutional arrangements shaping the distribution of opportunity and rewards through policy regimes including taxes and transfers, protection against risk, and early investments in human capital. Spuriousness does not mean that cross-sectional inequality is unimportant. Rather, it moves the analytical and policy question one step prior, to the institutional configurations shaping life chances. It also suggests that short-term changes in economic inequality or narrow interventions will have limited influence on mobility.

Researchers have extended the study of mobility beyond its bivariate focus by examining mediators of the intergenerational

association. Particular emphasis has been placed on educational attainment, cognitive ability, personality traits, aspirations, and school performance. These attempts are problematic because putative mediators are correlated with unobserved determinants of economic well-being, making the models uninformative in terms of causal processes. While description is an important task in the social sciences, and fixation with causal identification might favor identifiable but irrelevant questions, the parameter estimates of models including mediators may depart from true causal effects not only in terms of magnitude but also in terms of sign. This is a major concern for the analytical and policy implications of the analysis and suggests that it is probably prudent to focus the descriptive effort on the bivariate intergenerational association.

The main reason we care about mobility is because it captures equality of opportunity. However, it has been argued that not all sources of socioeconomic resemblance between parents and children signal unequal opportunity. Intergenerational persistence emerging from genetic transmission or tastes/preferences socialization will continue to exist even in a perfectly fair society, and thus perfect mobility does not require a zero intergenerational association. This view, even if correct at the analytical level, is questioned by growing evidence suggesting that endowments emerging early in life are critically shaped by the socioeconomic environment. In particular, recent developments in neurobiology and epigenetics show that attributes considered inherited are indeed shaped by socioeconomic circumstances from conception. These discoveries do not rule out the potentially autonomous role of genetic or cultural transmission. However, they do suggest that truly exogenous transmission of endowments might be both slight and similar across time and place, and that the comparative analysis of mobility does inform us about inequality of opportunity in different societies.

The analysis of mobility is still a relatively young enterprise, and it is still largely restricted to the affluent world. Much has been advanced over the last few decades in terms of methodological strategies to produce a valid and reliable measure of intergenerational persistence. The standardization of methods and the growing availability of mobility data will likely further the understanding of mobility around the world in the future. However, it is fair to say that mobility analysis is empirically strong but theoretically weaker. As empirical progress is made, more theoretical work delineating the contours, limits, and implications of mobility analysis is needed.

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Résumé

La mobilité intergénérationnelle – l'association entre le bien-être économique des parents et celui de leurs enfants devenus adultes – est un concept sociologique important dans la mesure où il fournit une information sur l'inégalité des chances en société. Il fait depuis peu l'objet d'une attention croissante en raison de l'augmentation des inégalités économiques dans le monde riche. Cet article présente les différentes mesures de mobilité utilisées par les sociologues et les économistes, ainsi que leurs principaux résultats de recherche. J'en viens ensuite à des sujets qui poussent l'étude de mobilité au delà de son approche bivariable traditionnelle : l'association entre la mobilité intergénérationnelle et l'inégalité économique, les mécanismes de mobilité, et la validité de la mobilité comme mesure de l'inégalité des chances. Je suggère dans cet article que l'association entre mobilité et inégalité est probablement fallacieuse, influencée par des arrangements institutionnels variables d'un pays à un autre, et que l'analyse de mobilité est la plus utile lorsqu'elle se concentre sur la description de l'association intergénérationnelle bivariable entre les pays et dans le temps.

Mots-clés : Mobilité intergénérationnelle ; Inégalité économique ; Egalité des chances.

Zusammenfassung

Die Generationenmobilität – eine Verbindung aus wirtschaftlichem Wohlergehen der Eltern und jener der erwachsenen Kinder – ist ein wichtiges soziologisches Konzept, das über die gesellschaftliche Chancengleichheit informiert. Aufgrund der zunehmenden wirtschaftlichen Ungleichheiten in reichen Ländern steigt das Interesse für dieses Konzept. Dieser Beitrag stellt die verschiedenen Mobilitätsmaßnahmen vor, die von Soziologen und Wirtschaftswissenschaftlern benutzt werden, sowie deren wichtigsten Forschungsergebnisse. In der Folge werde ich Mobilitätsstudien vorstellen, die über ihren ursprünglichen bivariaten Ansatz hinausgehen: die Verbindung aus Generationenmobilität und wirtschaftlicher Ungleichheit, Mobilitätsmechanismen und Bedeutung der Mobilität als Maßeinheit für Chancengleichheit. Ich behaupte, dass es sich wahrscheinlich um eine Scheinverbindung zwischen Mobilität und Ungleichheit handelt, beeinflusst durch institutionelle Vereinbarungen, die von Land zu Land unterschiedlich sind, und dass die Mobilitätsanalyse am besten greift, wenn sie auf die sowohl länder- als auch zeitübergreifende Beschreibung der intergenerationellen, bivariaten Verbindung ausgerichtet ist.

Schlüsselwörter : Generationenmobilität; Wirtschaftliche Ungleichheit; Chancengleichheit.