Empirical approaches to measuring equality of opportunity

Michael Grätz, University of Lausanne and Stockholm University, michael.gratz@unil.ch

This version: February 25, 2023

Abstract

The notion of equality of opportunity has motivated different empirical approaches. However, not all empirical approaches to measure equality of opportunity have been motivated by the same conception of equality of opportunity. This book chapter distinguishes between two conceptions of equality of opportunity, liberal and radical equality of opportunity, and relates them to empirical approaches which aim at measuring equality of opportunity: research on intergenerational mobility, measures of sibling similarities, surname mobility, and the equality of opportunity measurement advanced by John Roemer. The chapter concludes with some directions for further research suggesting that (1) empirical research should measure and compare both liberal and radical equality of opportunity and (2) more empirical progress will come about by combining the different approaches to measure equality of opportunity.

Keywords: equality of opportunity, intergenerational mobility, life chances, sibling similarity, surname mobility

1. The aim of measuring equality of opportunity

Societally valued resources, such as education, occupation, income, and wealth, are unequally distributed in modern societies. Public interest in understanding these inequalities is substantial, as evidenced by the discussions surrounding the work of Thomas Piketty (2013). Given that resources such as education, occupation, income, and wealth are unequally distributed, the question arises as to whether everyone has the same chance to obtain such resources. This question has motivated theoretical literature in political philosophy and empirical literature in fields such as sociology and economics.

Regarding the philosophical side, philosophers have emphasized that a just society must guarantee that everyone has equal opportunities to access these resources. For instance, John Rawls wrote in *A Theory of Justice*: "The distribution of wealth and income, and the hierarchies of authority, must be consistent with both the liberties of equal citizenship and equality of opportunity." (Rawls 1971:61)

In this quotation, it remains unclear what equality of opportunity precisely is. The most basic definition of equality of opportunity is that it, as a formal criterion, requires that everyone has the same legal rights to access different educational programs and occupations, obtain a high income, and accumulate wealth (Arneson 2018). However, such a basic understanding of equality of opportunity neglects that not everyone may have the same chance to access these resources, even in a society without any legal constraints in obtaining them. Whether individuals' chances are equal or not is a question that can ultimately only be answered by measuring these chances empirically using representative data on a society's population.

This insight has motivated researchers in different scientific disciplines, including sociology and economics, who aim to quantify equality of opportunity in a society. Arguably, the largest collection of literature aiming to quantify equality of opportunity is that regarding intergenerational mobility (Black and Devereux 2011; Breen and Jonsson 2005; Torche 2015).

The literature on intergenerational mobility measures the similarity in education, occupation, income, and wealth between children and their parents. As a result, intergenerational mobility is said to be low if the similarity between parental and child education/occupation/income/wealth is high. If this similarity is low, intergenerational mobility is high. Some researchers in this area abstain from making normative statements; however, others clearly spell out that the study of intergenerational mobility is motivated by an interest in measuring equality of opportunity (Björklund and Jäntti 2020; Torche 2015).

2. The distinction between liberal and radical equality of opportunity

Existing approaches to measuring equality of opportunity, of which research on intergenerational mobility is one example, assume that there is only one form of equality of opportunity. This assumption is, however, not in line with the way the philosophical literature on equality of opportunity has developed since the publication of Rawls' *Theory of Justice*. In fact, different philosophers have entertained different notions of equality of opportunity. Therefore, a distinction can be made between what I call liberal and radical equality of opportunity. The aim of this section is to outline this distinction before I look in the next part at how different empirical approaches to measuring equality of opportunity correspond to these different notions of equality of opportunity.

First, I refer to the conception of equality of opportunity defended by Rawls (1971) as liberal equality of opportunity. Liberal equality of opportunity exists if everyone with the same innate abilities and talents and who puts in the same effort has the same chance to achieve a high education, occupation, income, and wealth. Rawls wrote (1971:71): "those with similar abilities and skills should have similar life chances. More specifically, assuming that there is a distribution of natural assets, those who are at the same level of talent and ability, and have the same willingness to use them, should have the same prospects of success regardless of their initial place in the social system, that is, irrespective of the income class into which they are born." In short, in a just society, according to the liberal conception of equality of opportunity, only two factors are allowed to affect life chances such as education, occupation, income, and wealth: (1) innate abilities/talents and (2) effort. The liberal conception of equality of opportunity corresponds to the widely held notion of meritocracy (Sandel 2020; Young 1958). Inequalities are just under this notion of equality of opportunity if they are due to either someone putting in more effort than someone else or someone possessing more societally valued innate abilities than someone else.

This latter observation points to a limitation of liberal equality of opportunity that Rawls was aware of: Individuals cannot be held accountable for their innate abilities and talents because they have no control over them. In addition, it is arbitrary from a moral perspective which abilities and talents are valued in a society. The liberal notion of equality of opportunity criticizes inequalities arising from ascribed characteristics such as ethnicity, sex, and social class, because individuals cannot be held accountable for those. However, they also cannot be held accountable for their innate abilities and talents. Rawls (1971:73–74) wrote: "While the liberal conception seems clearly preferable to the system of natural liberty, intuitively it still appears defective. For one thing, even if it works to perfection in eliminating the influence of social contingencies, it still permits the distribution of wealth and income to be determined by the natural distribution of abilities and talents. Within the limits allowed by the background arrangements, distributive shares are decided by the outcome of the natural lottery; and this outcome is arbitrary from a moral perspective."

In his *Theory of Justice*, Rawls (1971) handled this problematic aspect of liberal equality of opportunity by developing the so-called "difference principle", which postulates that inequalities in the distributions of resources in a society must be beneficial to all members of a society. Rawls did not develop a conception of equality of opportunity that criticizes the impact of innate abilities on life chances. Other philosophers have, however, done so. I refer to these approaches to equality of opportunity as radical equality of opportunity.

Radical equality of opportunity criticizes liberal equality of opportunity because the latter perceives as just inequalities arising from differences in innate abilities and talents. For instance, Sandel (2020:24) wrote, “Morally, it is unclear why the talented deserve the outsize rewards that market-driven societies lavish on the successful. Central to the case for the meritocratic ethic is the idea that we do not deserve to be rewarded, or held back, based on factors beyond our control. But is having (or lacking) certain talents really our own doing? If not, it is hard to see why those who rise thanks to their talents deserve greater rewards than those who may be equally hardworking but less endowed with the gifts a market society happens to price.”

Radical equality of opportunity is often referred to as the luck egalitarian version of equality of opportunity (Arneson 2018; Cohen 2008; Dworkin 2000; Nagel 1991; Roemer 1998; Segall 2013; Temkin 1993). I refer to this conception of equality of opportunity as radical equality of opportunity. Radical equality of opportunity argues that any influence on the accumulation of resources that the individual has no full control over is unjust. Cohen (2008:403) wrote therefore, “inequalities are just if and only if they reflect patterns of choice, and of failures to choose, on the part of the people among whom the inequality prevails.”

Even though there are differences between liberal and radical equality of opportunity, there are also several similarities. Inequalities arising from ascribed characteristics such as social class, sex, and race are perceived as unjust from the perspective of both liberal and radical equality of opportunity. Inequalities that arise because individuals put in different degrees of effort are just under both conceptions of equality of opportunity. Effort refers to factors over which an individual has full control. Therefore, radical equality of opportunity is, at least on a theoretical level, not identical to equality of outcome.

3. Empirical approaches to measuring liberal and radical equality of opportunity

Empirical research on equality of opportunity has *either* measured the liberal *or* the radical conception of equality of opportunity. To date, no empirical research measuring and comparing liberal and radical equality of opportunity has been conducted.

As mentioned above, intergenerational mobility research is motivated by a concern for liberal equality of opportunity (e.g., Breen and Goldthorpe 1999; Esping-Andersen and Cimentada 2018; Goldthorpe and Jackson 2008; Jencks and Tach 2006; Torche 2015a). To take an example from some leading researchers working in this area, Breen and Goldthorpe (1999:6) argued: “In a perfect meritocracy, class of origin and class of destination would be statistically independent once merit was taken into account.” Merit comprises both innate abilities/talents and effort. In this sense, research on intergenerational mobility is built on the notion that equality of opportunity is secured if only innate abilities and effort, but no other factors, affect access to education and occupations and the accumulation of income and wealth.

In another example, leading empirical sociologist Gøsta Esping-Andersen (2009:123) wrote, “From an equity perspective, children’s life chances should depend less on the lottery of birth than on their own latent abilities.” As pointed out by Arneson (2018), this statement, while representative of the thinking of researchers who empirically estimate intergenerational mobility, is a liberal understanding of equality of opportunity. The effects of innate abilities on life chances are as unjust from the perspective of radical equality of opportunity as the effects of the social circumstances in which someone is born.

Therefore, research on intergenerational mobility aims toward measuring liberal equality of opportunity. This measure of liberal equality of opportunity is, however, incomplete. Let us take the example of income mobility. Income mobility measures the correlation between parental and child income. The correlation between parental and child income, however, overestimates liberal equality of opportunity because many parental characteristics other than income, such as parental occupation and parental education, also affect child income (Mood 2017). While this problem can, in principle, be addressed by summing up the influences of parental income, parental education, and parental occupation, this is not possible with respect to parental characteristics that are either impossible or difficult to measure. Examples of such characteristics are parents' innate abilities and talents and their motivation to influence the development and earning potential of their children.

For this reason, a second approach to measuring liberal equality of opportunity is important: sibling correlations. The sibling correlation approach measures the similarity of siblings in education, occupation, income, and wealth and uses the resulting estimate as a measure of liberal inequality of opportunity (Björklund and Jäntti 2012, 2020; Grätz 2018; Grätz et al. 2021; Sieben and de Graaf 2001). Sibling correlations measure how similar siblings are to each other compared to unrelated individuals. For this reason, sibling similarity measures provide broader measures of the impact of background characteristics than correlations between parental and child characteristics (Björklund and Jäntti 2020). Sibling correlations have the advantage that they include factors that are shared by siblings but cannot be measured. This includes parental characteristics, such as parental personalities and their interest in fostering the life chances of their children. It should be noted, however, that there is inequality among siblings, which is why sibling correlations do not provide perfect measures of liberal inequality of opportunity (Björklund and Jäntti 2012; Conley 2004). Because sibling correlations do not consider these inequalities, they still underestimate the liberal inequality of opportunity, but less so than measures of intergenerational mobility.

In addition to the literature on intergenerational mobility and sibling similarity, there is literature on the influences of genes on life chances, which is largely motivated by liberal equality of opportunity. Many researchers working in this area understand the substantial impact of genes on life chances as an indicator of a high level of equality of opportunity (Asbury and Plomin 2014; Conley and Fletcher 2017; Engzell and Tropf 2019; Plomin 2018). These researchers advocate for policies that increase the impact of genes on education, occupation, income, and wealth to increase equality of opportunity. Such reasoning is based on the liberal and not on the radical notion of equality of opportunity. From the radical perspective, it is unjust to make individuals responsible for the genes with which they are born (Harden 2021). Therefore, radical equality of opportunity is only achieved if there is no effect of genes on life chances.

There is another approach to measuring liberal inequality of opportunity that was advanced by Gregory Clark (2015): using rare surnames to measure inequality of opportunity. The idea is slightly similar to the sibling similarity approach, with the difference that rare surnames are used to estimate the universal impact of family background on life chances. In practice, this approach measures the occurrence of these surnames in influential, important positions. The results obtained with this approach are very much at odds with findings from the literature on intergenerational mobility. In particular, the rare surname approach reveals considerably lower levels of liberal equality of opportunity than studies measuring intergenerational mobility. On methodological grounds, the surname approach has been criticized because it measures group and not individual mobility (Torche and Corvalan 2018). Here, however, the most important factor is that this approach also provides a measure of liberal and not radical equality of opportunity, as inequalities caused by differences in innate abilities of offspring from the same family are not considered.

While the approaches discussed thus far have measured liberal equality of opportunity, there is one approach of importance that is based on the notion of radical equality of opportunity and that aims to measure this conception of equality of opportunity (Roemer 1998; Roemer and Trannoy 2016). Strongly related to the idea that all factors beyond an individual’s control are sources of unjust inequality, this approach measures all these factors and sums them up to obtain an indicator of unjust inequality. In addition, this approach measures the impact of those factors an individual has control over to obtain an indicator of effort, which has an impact on life chances considered just under the conception of radical equality of opportunity.

However, it should be noted that at least two problems arise from this approach. First, as an empirical fact, the estimates of *in*equality of opportunity obtained by this approach are lower than those obtained by the sibling correlation approach (Björklund and Jäntti 2020). However, radical inequality must be higher than liberal inequality of opportunity if abilities have some impact on life chances.

Second, it is not always easy to justify that a measure only reflects circumstances or only reflects effort. On the one hand, the measures used to measure effort need to be free of any possible impact from circumstances. Researchers have mainly used two measures for effort: (1) working hours and (2) years of education. Both measures can, however, be affected by circumstances, such as social origins and innate abilities. Noncognitive skills affect how many hours someone is willing to work. Cognitive (and noncognitive) skills affect educational attainment and, thereby, the years of education obtained by a person. Roemer and Trannoy (2016) suggested that this issue could be addressed by only comparing effort levels among individuals with the same circumstances. However, this requires all circumstances to be observable, which is a strong assumption. Additionally, not all circumstance variables used in the empirical applications of this method are free from the impact of effort. For instance, Björklund, Jäntti, and Roemer (2012) used IQ at age 18 as a circumstance variable. IQ at such a late age may, however, not only reflect innate abilities but also the effort someone has put in during childhood to learn and develop her or his skills.

4. Conclusions and directions for future research

Different empirical approaches to measuring equality of opportunity are motivated by different underlying conceptions of equality of opportunity. Most empirical research in sociology and economics is motivated by the liberal conception of equality of opportunity. This is the case even though many researchers who study intergenerational mobility avoid using a normative language and speaking of equality of opportunity. However, as Torche (2015) put it, “Mobility is an important concept because it provides information about equality of opportunity in society." The information it provides refers to liberal and not radical equality of opportunity.

Even though this is the case, intergenerational mobility is not a perfect measure of liberal inequality of opportunity. On the one hand, as explained above, this approach underestimates inequality of opportunity because it only focuses on one parental characteristic and its association with one measure of children´s life chances. On the other hand, not every correlation between parental and child education/occupation/income/wealth contradicts the liberal conception of equality of opportunity (Jencks and Tach 2006). From the perspective of liberal equality of opportunity, the effects of innate abilities on life chances are just, and if parents transmit some of these abilities to their children, parental and child characteristics can be correlated with each other without contradicting liberal equality of opportunity.

Of course, these inequalities are unjust from the perspective of radical equality of opportunity. Fewer approaches have been applied to measuring radical equality of opportunity. However, this is a growing area of research. John Roemer's work has been ground-breaking in this respect. However, as argued above, it is not always easy to empirically differentiate between the influences of circumstances and effort. It is an empirical challenge to empirically disentangle, in particular, the effects of innate abilities (which are part of the circumstances) and effort from each other.

More progress can be expected in the future. Using the theoretical distinction between liberal and radical equality of opportunity will allow researchers to produce more precise empirical estimates. Research comparing liberal and radical equality of opportunity and estimating how these types of equality of opportunity vary differently across countries and may have changed differently across cohorts remains lacking.

On a methodological level, progress can be made by combining the different approaches. All approaches overestimate equality and underestimate inequality; the sibling similarity approach is least affected by this phenomenon. Therefore, it makes sense to use this approach as the starting point for measuring inequality of opportunity. However, the sibling similarity approach ignores the impact of differences between siblings on life chances. Therefore, this approach must be complemented by other approaches to provide more accurate measures of inequality of opportunity.

REFERENCES

Arneson, R. (2018). Four conceptions of equal opportunity. *The Economic Journal*, 128, F152–F173.

Asbury, K., & Plomin, R. (2014). *G is for genes: The impact of genetics on education and achievement.* Chichester: Wiley Blackwell.

Bell, D. (1973). *The coming of post-industrial society.* New York: Basic Books.

Björklund, A., & Jäntti, M. (2012). How important is family background for labor-economic outcomes? *Labour Economics*, 19, 465–474.

Björklund, A., & Jäntti, M. (2020). Intergenerational mobility, intergenerational effects, sibling correlations, and equality of opportunity: A comparison of four approaches. *Research in Social Stratification and Mobility,* 70, 100455.

Björklund, A., Jäntti, M., & Roemer, J. (2012). Equality of opportunity and the distribution of long-run income in Sweden. *Social Choice and Welfare*, 39, 675–696.

Black, S. E., & Devereux, P. J. (2011). Recent developments in intergenerational mobility. Pp. 1487–1541 in O. Ashenfelter, & D. Card (Eds.), *Handbook of labor economics*. Amsterdam: Elsevier.

Blanden, J. (2013). Cross-country rankings in intergenerational mobility: A comparison of approaches from economics and sociology. *Journal of Economic Surveys*, 27, 38–73.

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure.* New York: The Free Press.

Breen, R., & Goldthorpe, J. H. (1999). Class inequality and meritocracy: A critique of Saunders and an alternative analysis. *The British Journal of Sociology*, 50, 1–27.

Breen, R., & Jonsson, J. O. (2005). Inequality of opportunity in comparative perspective: Recent research on educational attainment and social mobility. *Annual Review of Sociology*, 31, 223–243.

Breen, R., & Jonsson, J. O. (2007). Explaining change in social fluidity: Educational equalization and educational expansion in twentieth-century Sweden. *American Journal of Sociology*, 112, 1775–1810.

Breen, R., Luijkx, R., Müller, W., & Pollak, R. (2009). Nonpersistent inequality in educational attainment: Evidence from eight European countries. *American Journal of Sociology*, 114, 1475–1521.

Breen, R., Mood, C., & Jonsson, J. O. (2016). How much scope for a mobility paradox? The relationship between social and income mobility in Sweden. *Sociological Science*, 3, 39–90.

Buchmann, C., DiPrete, T. A., & McDaniel, A. (2008). Gender inequalities in education. *Annual Review of Sociology*, 34, 319–337.

Bukodi, E., & Goldthorpe, J. H. (2013). Decomposing ‘social origins’: The effects of parents’ class, status, and education on the educational attainment of their children. *European Sociological Review*, 29, 1024–1039.

Busemeyer, M. R., & Nikolai, R. (2010). Education. Pp. 494–510 in F. G. Castles, S. Leibfried, J. Lewis, H. Obinger, & C. Pierson (Eds.), *The Oxford handbook of the welfare state*. Oxford: Oxford University Press.

Clark, G. (2015). *The son also rises: Surnames and the history of social mobility.* Princeton, NJ: Princeton University Press.

Cohen, G. A. (2008). *Rescuing justice and equality*. Cambridge, MA: Harvard University Press.

Conley, D. (2004). *The pecking order: Which siblings succeed and why.* New York: Pantheon Books.

Conley, D., Domingue, B. W., Cesarini, D., Dawes, C., Rietveld, C. A., & Boardman, J. D. (2015). Is the effect of parental education on offspring biased or moderated by genotype? *Sociological Science*, 2, 82–105.

Conley, D., & Fletcher, J. (2017). *The genome factor: What the social genomics revolution reveals about ourselves, our history and the future.* Princeton, NJ: Princeton University Press.

Corak, M. (2006). Do poor children become poor adults? Lessons from a cross country comparison of generational earnings mobility. Pp. 143–188 in J. Creedy & G. Kalb (Eds.), *Dynamics of inequality and poverty*. Bingley: Emerald.

DiPrete, T. A. (2002). Life course risks, mobility regimes, and mobility consequences: A comparison of Sweden, Germany, and the United States. *American Journal of Sociology*, 108, 267–309.

Dworkin, R. (2000). *Sovereign virtue: The theory and practice of equality.* Cambridge; M.A.: Harvard University Press.

Engzell, P., & Tropf, F. C. (2019). Heritability of education rises with intergenerational mobility. *Proceedings of the National Academy of Sciences*, 116, 25386–25388.

Erikson, R., & Goldthorpe, J. H. (1992). *The constant flux: A study of class mobility in industrial societies.* New York: Oxford University Press.

Esping-Andersen, G. (1990). *Three worlds of welfare capitalism*. Princeton: Princeton University Press.

Esping-Andersen, G. (1999). *Social foundations of postindustrial economies.* Oxford: Oxford University Press.

Esping-Andersen, G. (2009). *The incomplete revolution: Adapting to women's new roles.* Cambridge: Polity Press.

Esping-Andersen, G., & Cimentada, J. (2018). Ability and mobility: The relative influence of skills and social origin on social mobility. *Social Science Research*, 75, 13–31.

Featherman, D. A., Jones, F. L., & Hauser, R. (1975). Assumptions of social mobility research in the U.S.: The case of occupational status. *Social Science Research*, 4, 329–360.

Goldthorpe, J. H., & Jackson, M. (2008). Problems of an education-based meritocracy. Pp. 93–116 in A. Lareau and D. Conley (Eds.), *Social class: How does it work?* Russell Sage Foundation Press.

Grätz, M. (2018). Competition in the family: Inequality between siblings and the intergenerational transmission of educational advantage. *Sociological Science*, 5, 246–269.

Grätz, M., Barclay, K. J., Lyngstad, T. H., Wiborg, Ø. N., Erola, J., Karhula, A., Präg, P., Laidley, T., & Conley, D. (2021). Sibling similarity in education across and within societies. *Demography*, 58, 1011–1037.

Hällsten, M., & Thaning, M. (2021). Wealth as one of the "big four" SES dimensions in intergenerational transmissions. *Social Forces*, DOI: 10.1093/sf/soab080.

Harden, K. P. (2021). *The genetic lottery: Why DNA matters for social equality.* Princeton, NJ: Princeton University Press.

Heath, A., & Brinbaum, Y. (2007). Guest editorial: Explaining ethnic inequalities in educational attainment. *Ethnicities*, 7, 291–304.

Jencks, C., & Tach, L. (2006). Would equal opportunity mean more mobility? Pp. 23–58 in *Mobility and inequality: Frontiers of research in sociology and economics*, edited by S. Morgan, D. Grusky, & G. Fields. Palo Alto, CA: Stanford University Press.

Kao, G., & Thompson, J. S. (2003). Racial and ethnic stratification in educational achievement and attainment. *Annual Review of Sociology*, 29, 417–442.

Kerr, C., Dunlop, J. T., Harbison, F., & Myers, C. A. (1960). *Industrialism and industrial man: The problem of labor and management in economic growth.* Cambridge, MA: Harvard University Press.

Lipset, S. M., & Zetterberg, H. (1959). Social mobility in industrial societies. In Lipset, S. M. & Bendix, R. (Eds.), *Social mobility in industrial society* (pp. 11–75). Berkeley: University of California Press.

Meghir, C., & Palme, M. (2005). Educational reform, ability, and family background. *American Economic Review*, 95, 414–424.

Mood, C. (2017). More than money: Social class, income, and the intergenerational persistence of advantage. *Sociological Science*, 4, 263–287.

Nagel, T. (1991). *Equality and partiality.* Oxford: Oxford University Press.

Pfeffer, F. T. (2008). Persistent inequality in educational attainment and its institutional context. *European Sociological Review*, 24, 543–565.

Piketty, T. (2013). *Le capital au XXI siècle.* Paris: Seuil.

Plomin, R. (2018). *Blueprint: How DNA makes us who we are.* Milton Keynes: Allen Lane.

Rawls, J. (1971). *A theory of justice*. Cambridge, MA: Harvard University Press.

Roemer, J. E. (1998). *Equality of opportunity.* Cambridge, MA: Harvard University Press.

Roemer, J. E., & Trannoy, A. (2016). Equality of opportunity: Theory and measurement. *Journal of Economic Literature*, 54, 1288–1332.

Sandel, M. J. (2020). *The tyranny of merit: What's become of the common good.* London: Allen Lane.

Shavit, Y., & Blossfeld, H.-P. (Eds) (1993). *Persistent inequality: Changing educational attainment in thirteen countries*. Boulder: Westview Press.

Segall, S. (2013). *Equality and opportunity.* Oxford: Oxford University Press.

Sieben, I., & de Graaf, P. M. (2001). Testing the modernization hypothesis and the socialist ideology hypothesis: A comparative sibling analysis of educational attainment and occupational status. *British Journal of Sociology*, 52, 441–467.

Temkin, L. (1993). *Inequality.* Oxford: Oxford University Press.

Torche, F. (2015). Intergenerational mobility and equality of opportunity. *European Journal of Sociology*, 56, 343–371.

Torche, F., & Corvalan, A. (2018). Estimating intergenerational mobility with grouped data: A critique of Clark's The Son also Rises. *Sociological Methods and Research*, 47, 787–811.

Young, M. D. (1958). *The rise of the meritocracy, 1870–2033*. London: Thames and Hudson.