

TOWARD LOWER ECONOMIC MOBILITY IN NORWAY?

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Equality of opportunities is a widely accepted aim of economic and social policies. It points toward a society with high intergenerational mobility, i.e., a society that is egalitarian in the sense that its members' chances of success do not depend too much on family background. There is a large empirical literature on this topic focusing on (individual or household) earnings, generally showing that intergenerational mobility varies considerably both between and within industrialized nations. The highest mobility is typically found in the Nordic welfare states, and the lowest mobility is observed in the U.S., with the central European countries somewhere between (Corak, 2006; Jäntti et al., 2006; Black and Devereux, 2011, Blanden, 2013; Bratberg et al., 2017). However, the variation within countries is also large, and some regions in the U.S. appear to have mobility levels similar to the Nordic countries (Chetty et al., 2014a).

In the paper “Egalitarianism under Pressure – Toward Lower Economic Mobility in the Knowledge Economy?” (Markussen and Røed, 2017), we provide an in-depth study of social and economic mobility trends in a typical welfare state economy, namely Norway. Our analysis is based on fully comparable and virtually attrition-free parent-offspring data for all offspring born between 1952 and 1975. We examine the origins of trends in intergenerational class mobility in terms of the *transmission of*, as well as the *returns to*, cognitive ability (IQ) and educational attainment. Our analysis incorporates an exceptionally wide range of offspring outcomes measured up to age

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40, such as earnings rank, earnings share, employment, disability program participation, family formation, and mortality. Moreover, we take advantage of complete administrative registers covering almost a 50-year period to explore and assess alternative rank-based social background indicators, measured at alternative stages of the parents' lifecycle and grounded on alternative earnings concepts.

The literature on trends in intergenerational earnings mobility have been held back by methodological difficulties associated with imperfect and asymmetric data, which has raised questions about comparability across birth cohorts. These difficulties involve the selection of earnings/income concept and age of measurement, the comparison of earnings obtained at different stages of the lifecycle, the treatment of attrition and (possibly time-varying) sample selectivity, and the handling of observations with zero earnings. In our paper, we exploit the long series of register based earnings data to assess a number of alternative ranking algorithms, and then choose the algorithms that we consider offer the best combined properties in terms minimizing lifecycle and attenuation biases, facilitating a stable social class interpretation over time, and ensuring a symmetric and attrition-free implementation for all cohorts. Our preferred parental background ranking ends up being based on the sum of both parents' earnings during their respective ages 52–58, whereas the offspring ranking is based on individual earnings during age 28–40. Conditional on survival to age 40 and continued residency in Norway at that point, our data then include consistently defined earnings ranks for both generations for more than 99 % of every cohort born between 1952 and 1975.

Our findings show that the intergenerational earnings rank correlation has been relatively stable for sons born between 1952 and 1975, with a slight increase between the 1952 and the 1965 birth cohorts, followed by a corresponding decline afterwards. For daughters, however, there has been a consistent and significant increase in the intergenerational earnings rank correlation throughout the period. As a result, the mobility patterns for sons and daughters have converged, and toward the end of the period we find that class mobility is even lower for women than for men. When we look at economic outcomes by class background in more detail, we identify some quite powerful developments at the tails of the parental class distribution, the most conspicuous being that persons born into the lower classes have fallen considerably behind. For both sons and daughters, we find that those born into the lower economic classes do gradually worse, in terms of own economic rank as well as in terms of earnings share (measured at age 28–40). For sons, this development is accompanied by a sharp decline in employment. For ex-

ample, while men born into the lowest class vigintile in 1952 were 8 percent less likely to be employed at prime age (28–40) than those born into the highest class vigintile, this differential had increased to 18 percent for men born in 1975. For both men and women, we identify a sharp increase in the class gradient of disability program participation (at age 40), and also a small increase in the class gradient of mortality (between age 18 and 40). Mortality rates dropped for all classes, but the drop was smaller at the bottom of the class distribution.

For all generations, we identify a marked class gradient in the chances of finding a life partner (becoming married and/or a parent by age 40) for men, but no such gradient for women. This is in line with theories of hypergamy, suggesting that women give higher priority to a prospective partner's economic potential than men do when they choose a life companion. Based on this theory, we would expect the class gradient in men's marital chances to become steeper in line with the class gradient in economic outcomes. And this is exactly what we see. In particular, we show that men born into the bottom of the economic class distribution have reduced their marital chances considerably relative to men with more advantageous family background. Hence, lower class men have apparently lost out along all the quality-of-life dimensions of employment, earnings, health, companionship, and life expectancy.

The theoretical literature on economic mobility highlights that intergenerational persistence in economic outcomes operates through the heritability of earnings-related traits as well as through investments in human capital; see, e.g., Becker and Tomes (1979; 1986) and Solon (1999; 2004). Hence, in order to identify the mechanisms behind the changing patterns of class mobility, we examine the trends in the intergenerational transmission of human capital and its economic returns. Human capital has two dimensions in our analysis. The first is innate cognitive ability, which we measure by ability scores obtained in IQ tests administered by the armed forces to all Norwegian boys aged 18–19. The second is educational attainment, which we measure as the highest completed education at age 40.

From a policy perspective, it is important to find out why mobility out of the lower classes has declined, and in particular to understand the distinct roles of the intergenerational transfer of *ability*, on the one hand, and the transfer of *opportunities given ability*, on the other. While we normally think of higher class persistence as undesirable, as it reflects less *equality of opportunities* in the offspring generation, it may also arise from a transition toward a more mobile and fluid society in the parent generation. In particular, to the extent that class immobility originates from the transfer of ability,

we would expect that societal changes in the parent generation toward meritocracy lead to a period of declining observed class mobility for their offspring, as the higher correlation between class and ability in the parent generation – through genetic/social heritability – induces a higher correlation between ability and class also in the offspring generation; see Nybom and Stuhler (2014). However, our findings do not support this meritocracy hypothesis. The stronger association between parent and offspring outcomes at the bottom of the class distribution is *not* an artefact of a higher correlation between economic success and cognitive ability *within* the parent generation. While there is indeed a strong class gradient in cognitive ability, there is no evidence that it has become steeper over time. In particular, the share of low ability offspring has not systematically shifted toward the bottom classes.

Yet, it could still be the case that the declining mobility out of the bottom classes tells a story that is more about ability than about class. Even a stable class gradient in the ability distribution may be responsible for declining mobility if the economic returns to cognitive ability increase. However, recent empirical evidence suggests otherwise. If anything, the economic returns to cognitive ability has declined over the past few decades; see, e.g., Castex and Dechter (2014) and Edin et al. (2017). This is also confirmed by our data. We find that the difference in earnings rank outcomes between sons with high and low cognitive ability has been significantly *reduced* over time. The larger share of low ability offspring in the lower economic classes has therefore been a force for increased earnings rank mobility, *ceteris paribus*.

Why have the returns to cognitive ability declined? Recent research point to the rising value of social skills in the labor market, as computers are still a poor substitute for human interaction (Deming, 2017); and empirical evidence indicates a considerable increase in the economic returns to non-cognitive abilities over the past few decades (Edin et al., 2017). While our data do not allow us to investigate the role of non-cognitive skills, we present evidence indicating that one important (additional) explanation is found in the massive expansion of educational capacity during the post-war period, which made secondary and tertiary education accessible to a much larger share of the population, *including those with lower cognitive ability*. The increasing supply of educational opportunities *substituted* for (lack of) innate cognitive ability in the production of offspring's outcomes, and this levelled the playing field across ability groups. However, it did not level the playing field across classes in the same fashion. While low-ability offspring raised their relative educational attainment considerably, there was no such educational upgrading in the lowest classes – despite their higher share of low-

ability offspring. At the same time, the economic returns to education increased sharply, thus enlarging the handicap of being at the bottom of the educational attainment distribution.

Given that education at all levels in Norway is provided by the government, free of charge and with a purely qualification-based admittance policy, it is perhaps surprising that there is a steep social gradient in educational attainment, and that the large expansions of the educational system in the post-war period have not managed to lift the relative educational achievements of the lower classes. However, the finding that the class gradient in educational attainment is not eradicated by the removal of tuition fees accords well with existing evidence showing that the influence of family background on educational attainment is fairly similar in countries with and without such fees; see, e.g., Landersø and Heckman (2017) for a comparison of Denmark and the U.S. The reason is that there is a class gradient in the capability to take advantage of free educational opportunities also. A plausible explanation for this is found in empirical literature showing that family support and encouragement are important inputs in the production of educational outcomes, and that lower-class families provide less such encouragement and support; see Mayer et al. (2015). In particular, it has been documented that economically advantaged parents on average produce more cognitively stimulating home learning environments, and spend more time on supporting their children's education (Guryan et al., 2008; Kalil et al., 2012). *Ceteris paribus*, this implies that as educational attainment becomes a more critical ingredient of economic success, the handicap of being born into a less resourceful family increases, and the economic mobility out of the lower classes declines.

Our findings add to a small empirical literature on post-war trends in intergenerational economic mobility. Most of the contributions to this literature have examined the development of intergenerational earnings elasticities and/or brother correlations, and have thus, in contrast to our own contribution, primarily focused on economic mobility *conditional* on employment (or positive earnings/income). Important contributions to this literature include Hertz (2007) and Lee and Solon (2009) for the U.S., Blenden et al. (2004) and Nicoletti and Ermisch (2007) for the U.K., Lefranc and Trannoy (2005) for France, Björklund et al. (2009) for Sweden, Pekkala and Lucas (2007) for Finland, and Bratberg et al. (2005) and Hansen (2010) for Norway.

More recent contributions also incorporate trends in intergenerational rank-rank associations, and are thus more similar to the approach used to study earnings mobility in the present paper. For the U.S., this includes Chetty et al. (2014b), who present intergenerational family income rank-

rank slopes for offspring born between 1971 and 1993, based on administrative tax returns data. Offspring incomes are recorded somewhat differently for different birth cohorts, however, due to incomplete data. The main conclusion is that intergenerational mobility has been stable throughout the period, with rank-rank correlations around 0.30. Pekkarinen et al. (2017), report trends in intergenerational rank-rank earnings mobility for sons born in Norway between 1932 and 1974. In the main part of the analysis, offspring earnings are recorded at age 35 for all cohorts, whereas the earnings of fathers are recorded between age 55 and 64. A key finding is that the rank-rank correlation coefficient has remained remarkably stable around 0.19 for all post-war birth cohorts.

It follows from this brief review that there is a small existing literature studying mobility trends in Norway (Bratberg et al., 2005; Hansen, 2010; Pekkarinen et al., 2017). Our research complements this literature in at least three ways: First, we examine a wide range of quality-of-life outcomes, not only to earnings, but also to health, companionship (family formation), and mortality. This is important in our context, as it reveals a remarkably systematic deterioration of quality-of-life outcomes for offspring born into the lowest economic classes. Second, as outlined above, we present a novel analysis of the mechanisms behind the observed decline in the relative economic performance of lower class offspring, with a focus on the intergenerational transfer of and the economic returns to both the (largely inherited) cognitive ability (IQ) and educational attainment. A key finding is that while the educational revolution has made the largely genetic transmission of ability less critical for intergenerational mobility, it has magnified the influence of the social/environmental transmission mechanism. Finally, as a foundation for our analysis, we offer a systematic assessment of how mothers' and fathers' earnings can be combined to provide the best and most stable class-ranking algorithm. This is critical for the assessment of trends in intergenerational mobility, as the economic roles of mothers and fathers have changed considerably over time. For example, while Bratberg et al. (2005) use the father's earnings only to identify economic background, and report increased economic mobility for sons born in the period from 1950 to 1965, Hansen (2010) uses the *sum* of the mother's and the father's earnings and show that this leads to the conclusion of stable intergenerational earnings elasticities for the same period.

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References

- Becker, G.S., and Tomes, N. (1979). An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility. *Journal of Political Economy*, Vol. 87, 1153–1189.
- Becker, G.S., and Tomes, N. (1986). Human Capital and the Rise and Fall of Families. *Journal of Labor Economics*, Vol. 4, S1–S39.
- Björklund, A., Jäntti, M., and Lindquist, M.J. (2009). Family Background and Income During the Rise of the Welfare State: Brother Correlations in Income for Swedish Men Born 1932–1968. *Journal of Public Economics*, Vol. 93, 671–680.
- . How Important is Family Background for Labor-Economic Outcomes? *Labour Economics*, Vol. 19, 465–474.
- Black, S. and Devereux, P.J. (2011). Recent Developments in Intergenerational Mobility. In O. Aschenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 4B, 1487–1541). Amsterdam: Elsevier.
- Blanden, J. (2013). Cross-Country Rankings in Intergenerational Mobility: A comparison of Approaches from Economics and Sociology. *Journal of Economic Surveys*, Vol. 27, No. 1, 38–73.
- Blanden, J., Goodman, A., Grepp, P, and Machin, S. (2004). Changes in Intergenerational Mobility in Britain. In Corak, M. (ed.) *Generational Income Mobility in North America and Europe*, pp. 122–146, Cambridge University Press, Cambridge.
- Bratberg, E., Davis, J., Mazumder, B., Nybom, M., Schnitzlein, D. and Vaage, K. (2017). A comparison of intergenerational mobility curves in Germany, Norway, Sweden, and the U.S. *Scandinavian Journal of Economics*, Vol. 119, No. 1, 72–101.
- Bratberg, E., Nilsen, Ø.A., and Vaage, K. (2005). Intergenerational Earnings Mobility in Norway: Levels and Trends. *Scandinavian Journal of Economics*, Vol. 107, No. 3, 419–435.
- Castex, G. and Dechter, E.K. (2014). The Changing Roles of Education and Ability in Wage Determination. *Journal of Labor Economics*, Vol. 32, No. 4, 685–710.
- Chetty, R., Hendren, N., Kline, P., and Saez, E. (2014a). Where is the Land of Opportunity? Geography of Intergenerational Mobility in the United States. *Quarterly Journal of Economics*, Vol. 129, No. 4, 1553–1623.
- Chetty, R., Hendren, N., Kline, P., Saez, E., and Turner, N. (2014b). Is the United States Still a Land of Opportunity? Recent Trends in Intergenerational Mobility. *American Economic Review: Papers & Proceedings*, Vol. 104, No. 5, 141–147.

- Corak, M. (2006). Do Poor Children Become Poor Adults? Lessons from a Cross-Country Comparison of Generational Earnings Mobility. In John Creedy, Guyonne Kalb (ed.) *Dynamics of Inequality and Poverty* (Research on Economic Inequality, Volume 13) Emerald Group Publishing Limited, 143–188.
- Deming, D.J. (2017). The Growing Importance of Social Skills in the Labor Market. *The Quarterly Journal of Economics*, forthcoming.
- Edin, P.A., Fredriksson, P., Nybom, M., and Öckert, B. (2017). The Rising Return to Non-Cognitive Skill. IZA Discussion Paper No. 10914.
- Guryan, J., Hurst, E. and Kearney, M.S. (2008). Parental Education and Parental Time with Children. *Journal of Economic Perspectives*, Vol. 22, No. 3, 23–46.
- Hansen, M.N. (2010). Change in Intergenerational Economic Mobility in Norway: Conventional Versus Joint Classifications of Economic Origin. *Journal of Economic Inequality*, Vol. 8, 133–155.
- Hertz, T. (2007). Trends in the Intergenerational Elasticity of Family Income in the United States. *Industrial Relations*, Vol. 46, 22–50.
- Jäntti, M., Bratsberg, B., Røed, K., Raaum, O., Naylor, R., Österbacka, E., Björklund, A. and Eriksson, T. (2006). American Exceptionalism in a New Light: A Comparison of Intergenerational Earnings Mobility in the Nordic countries, the United Kingdom and the United States. IZA Discussion Paper No. 1938.
- Kalil, A., Ryan, R.M. and Corey M.R. (2012). Diverging Destinies: Maternal Education and the Developmental Gradient in Time with Children. *Demography*, Vol. 49, No. 4, 1361–1383.
- Landersø, R., and Heckman, J.J. (2017). The Scandinavian Fantasy: The Sources of Intergenerational Mobility in Denmark and the US. *Scandinavian Journal of Economics*, Vol. 119, o. 1, 178–230.
- Lee, C.-I. and Solon, G. (2009). Trends in Intergenerational Income Mobility. *Review of Economics and Statistics*, Vol. 91, No. 4, 766–772.
- Lefranc, A. and Trannoy, A. (2005). Intergenerational Earnings Mobility in France: Is France More Mobile Than the US? *Annales D'Economie et de Statistique*, No. 78.
- Markussen, S. And Røed, K. (2017). Egalitarianism under Pressure – Toward Lower Economic Mobility in the Knowledge Economy. Work in progress.
- Mayer, S.E., Kalil, A., Oreopoulos, P., and Gallegos, S. (2015). Using Behavioral Insights to Increase Parental Engagement: The Parents and Children Together (PACT) Intervention. NBER Working Paper 21602.

- Nicoletti, C., and Ermisch, J. (2007). Intergenerational Earnings Mobility: Changes across Cohorts in Britain. *The B.E. Journal of Economic Analysis & Policy. Contributions*, Vol. 7, No. 2, Article 9.
- Nybom, M. and Stuhler, J. (2014). Interpreting Trends in Intergenerational Mobility. Working Paper 3/2014, SOFI, University of Stockholm.
- Pekkala, S. and Lucas, R.E. (2007). Differences across Cohorts in Finnish Intergenerational Income Mobility. *Industrial Relations*, Vol. 46, 81–111.
- Pekkarinen, T., Salvanes, K.G., and Sarvimäki, M. (2017). The Evolution of Social Mobility: Norway during the Twentieth Century. *Scandinavian Journal of Economics*, Vol. 119, No. 1, 5–33.
- Solon, G. (1999). Intergenerational Mobility in the Labor Market. In O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 3, 1761–1800.
- Solon, G. (2004). A Model of Intergenerational Mobility Variation over Time and Place. Chapter 2 in M. Corak (ed.) *Generational Income Mobility in North America and Europe*. Cambridge University Press, Cambridge, UK.

