Proposal:
Cross-Country Differences in the Relationships
between Genetic Endowments and Resources During Retirement

Due to recent advances in behavioral genetics, it is now possible to relate specific genetic variants to educational attainment (Lee et al., 2018; Okbay et al., 2016) These variants are summarized as an index (similar to a weighted average) known as a polygenic score, which can be computed for individuals in large data sets who have provided their genetic information. A higher polygenic score means, roughly, that an individual has more of the genetic variants that predict education.

Building on these advances and using data from the Health and Retirement Study (HRS), Barth, Papageorge, and Thom (2018) document an economically large and statistically significant gene-wealth gradient. A one-standard-deviation-rise in the polygenic score is associated with roughly $130,000 of additional wealth at retirement. Some of this gradient can be explained by completed education and lifetime income. Still, even after controlling for these channels, the gene-wealth gradient is not fully explained. The authors offer evidence that some of the remaining portion of the gene-wealth gradient can be explained through genetic differences in investment decisions (e.g., stock market participation) and, more generally, in how individuals make dynamic decisions (e.g., time horizons and probabilistic thinking).

The proposed research is related to **Risk and Resources in Older Age**. The aim is to extend results in Barth, Papageorge, and Thom (2018) to assess whether similar gene-wealth gradients and underlying mechanisms are found in the United Kingdom, using the English Longitudinal Study of Ageing (ELSA) data set. In particular, the research would assess whether there is a gene-wealth gradient in the ELSA; if this gradient is similar in size to the one documented in the U.S. using data from the HRS; and if the same mechanisms help to explain it to a similar degree. This includes assessing whether labor income, demographic choices (e.g., number of children) and retirement age help to explain the gene-wealth gradient in the UK even if these factors do not explain the gradient in the U.S. Answering these

questions would allow us to assess whether the genetic variants related to education have similar relationships to retirement wealth and financial decisions in two different countries.

A broader set of questions that can be addressed with the proposed research asks what sets of social policies, captured by differences across countries, mitigate or exacerbate the impact of genetic heterogeneity on economic outcomes relevant to retirement. For example, differences in taxation, housing policies, social insurance and so on could lead to different behavior and outcomes across countries among people with similar genetic endowments. In this sense, this study attempts to estimate a "gene-by-environment" interaction, where the "environment" is a set of policies particular to a country.

Together, these types of findings would provide some basis for designing policies related to retirement in a manner that takes better account of genetic heterogeneity in the population. To illustrate, suppose we find that, for a given polygenic score, under-saving and poverty during retirement are less prevalent under one country's set of policies versus the other's. The next step would be to examine at what point in the lifecycle or on what particular dimensions (e.g., income, savings or portfolio choices) differences in behavior and outcomes emerge. Next, we would investigate which particular policies seem to explain such differences. Finally, we could exploit temporal or cross-sectional variation in such policies within a country to assess if individuals in both countries facing similar policies also exhibit similar outcomes or have comparable resources during retirement.

References

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