Public spending in education and long-run effects of poverty

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Abstract

Living in a poor household when young has negative long-run effects on individual welfare. For instance, individuals who lived in poor households when young may be more likely to be poor when adults. Moreover, they may also be more prone to suffer health problems when adults. These long-run effects reflect the degree of intergenerational mobility in a society. In countries with low social mobility being poor when young can be a good predictor of the probability of being poor when adult or of the probability of suffering health problems. In addition, it is also well-known that public spending in education is one of the main factors that tends to equalize opportunities among individuals of different backgrounds.

Our objective is to study whether the long-run negative effects of poverty described above are mitigated by public spending in education, and to what extent. Here we describe briefly our approach together with some preliminary evidence we have obtained.

We use data from the 2005 cross-section of the EU-SILC since it includes a module on "Inter-generational transmission of poverty." This module has information on parental background and childhood circumstances. One of these questions (PM100) provides retrospective information about the economic situation when the individual was a teenager.

They are asked how frequent were financial problems in the household when they were young teenagers. It is a categorical variable that takes values from 1 (most of the time) to 5 (never). We summarize the information in PM100 into a binary variable that informs us of whether an individual experienced difficulties when teenager (if PM100 is either 1 or 2) or not. We call this variable "poor_past." Our interest lies on studying the effect of this variable ("poor_past") on current personal circumstances. Other variables in this module provide information on family composition, education of parents, occupation of parents, etc. In this sense, we study long-run consequences of poverty.

We focus on two endogenous variables:

1) Current poverty status ("poor"). We build this dummy variable using HX080 which is an indicator of whether the individual lives in a family with income below the poverty threshold.

2) Current health status ("limited"). We build this variable using PH030 which describes whether individuals are limited in daily activities because of health problems. Our dummy variable ("limited") is one whenever PH030 is 1 (strong limitation) or 2 (limitation) and it is zero whenever PH030 is 3 (no limitation).

To illustrate the long-run effects of poverty we begin by computing probabilities of being poor today and of being limited today, conditional on being poor in the past. Individuals who were not poor when young (poor_past=0) have a probability of .104 of being poor when adults, compared with a probability of .187 for those who were poor when young (poor_past=1). With respect to health status, those who were not poor (poor_past=0) have a probability of .109 of being limited in their daily activities, compared with a probability of .156 for those who were poor when young (poor_past=1).

To study how public spending in education can mitigate these long-run effects, we construct a variable that imputes to each individual a measure of public spending in education. We use the UNESCO database that contains country data on public spending in education per student as a % of per capita GDP at three levels (primary, secondary, tertiary). We eliminate all observations from countries of which we do not have data corresponding to the EU-SILC module or because they are not in the UNESCO database. This determines that our sample has observations from 13 countries in the EU-SILC: Belgium, Cyprus, Denmark, Spain, Finland, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Sweden and United Kingdom. We also restrict our sample to individuals born

between 1960 and 1980.

For instance, to each individual we impute an spending in primary education ("exp_p") that corresponds to average public spending in primary education during the years this individual age was between 6 and 11. Similarly we impute an spending in secondary education ("exp_sec"). We disregard spending in tertiary education, since having a university degree is strongly correlated with poverty status when young.

We control for other covariates that may have an influence on our endogenous variables, but we try to avoid those controls that are themselves caused by poverty status when young. These additional controls also help to reduce selection bias. Our problem is that individuals are not randomly assigned into treatment. That is, individuals were not randomly assigned to a poor family when young. This is a problem for identification. To mitigate this problem we have decided to include some additional observed characteristics from the module like PM010 (main family composition), PM040 (father education) and PM070 (father occupation). The claim is that after conditioning on all these observed characteristics, those individuals who had financial problems when young and those who did not are comparable.

Other controls that seem reasonable are age and gender. We also include country dummies to capture individual country characteristics. Inclusion of country fixed effects reduces the standard errors of the estimates because they explain an important part of the variance in the endogenous variables.

Just to give a flavour of our results, consider the size of the effects when we run a probit regression in which the dependent variable is the probability of being poor. The marginal effect of "past_poor" is .0543284. This is still a sizable effect since the mean value of "poor" is .112. We obtain a marginal effect of "exp_p" of -.0017278. This means that if "exp_p" rises in 1 point (say, from 19% to 20%), the probability of being below the poverty threshold declines in -.0017278. Or, if "exp_p" rises 1 standard deviation (standard deviation of "exp_p" is 10.29, mean is 19.87), the probability of being below the poverty line declines by 10.29*(-.0017278)=-.017779. This, we think, is a sizable effect since it represents a reduction of a 15.87% in its mean value.

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