Effect of Credit Constraints on Children’s Academic Performance in Vietnam

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## Abstract

This paper investigates the effect of credit constraints on children’s academic performances in Vietnam. To estimate precise effects, this paper measures the credit constraints directly and address endogeneity of credit constraints. The results tell us that credit constraints have a more significant effect on academic performance of child in younger age.

## Introduction

- Parents’ decision about child human capital investment depends on the credit constraints.
- If households cannot insure their income against income shocks, parents smooth the consumption and child human capital investment decreases. If households can secure their income by borrowing in financial market, child human capital accumulation might not be affected by income shock. (Becker and Tomes, 1994).
- Many literatures have measured the credit constraints effect on education (e.g. Carneiro and Heckman (2002); Jacoby and Skoufias (1997))
- Empirical studies results vary: not significant (Carneiro and Heckman, 2002), significant (Attanasio and Kaufmann, 2009)
- Two challenges on the estimation of credit constraints effect:
  - Indirect measure of credit constraints
  - Potential bias due to the endogeneity of credit constraints
- Contribution of this paper: Measure the credit constraints directly, address the endogeneity of credit constraints by using 2SLS.

## Theoretical Framework

### Optimal Life Cycle Investment model from Cauckett and Lochner (2012):

Suppose three time periods. During childhood that is period 1 and 2, the problem for parents is:

\[ U = \max_{c_{1}, h_{1}, h_{2}} w(c_{1}) + \beta w(c_{2}) + \beta^{2} w(h_{3}) f(\theta) \]

Subject to the budget constraints:

\[ a_{t+1} = R_{t} a_{t} + y_{t} - l_{t} - c_{t}, \text{ for } t = 1, 2, \]

And the borrowing constraints:

\[ a_{t+1} \leq L_{t}, \text{ for } t = 1, 2, \]

After FOCs and algebra:

\[ f_{t}(\bar{c}_{t}), z_{t}(\bar{c}_{t}, \theta) > f_{t}(\bar{c}_{t}), z_{t}(\bar{c}_{t}, \theta) = \frac{\beta^{2} R^{2}}{w} \]

\[ f_{t}(\bar{c}_{t}, \theta), z_{t}(\bar{c}_{t}, \theta) > f_{t}(\bar{c}_{t}, \theta), z_{t}(\bar{c}_{t}, \theta) = \frac{\beta^{2} R^{2}}{w} \]

• When there is credit constraints during early period, there is under-investment during the period.
• There is under-investment in at least one period or both if any credit constraints binds.

## Methodology

### OLS

- Effect of current credit constraints on children’s current test score:

\[ y_{1t} = \alpha + \beta c_{1t} + \delta_{1} + \epsilon_{1t} \]

- Effect of past credit constraints on children’s late test score:

\[ y_{2t+2} = \alpha + \beta c_{1t+1} + \delta_{2} + \epsilon_{2t+1} \]

### 2SLS

- The first stage of above equations:

\[ c_{1t+1} = \sum_{t} \sum_{l} \sum_{i} c_{ih} w_{i} h_{2t+1} + \sum_{i} k_{ih} x_{i} \]

• The instrumental variables are:
  - Community level: The existence of government supported credit program, other supported credit program and/or a savings cooperative in the community.
  - Household level instrumental variables (existence of relatives in the community, amount of remittances received).

## Results

- Credit constraints decrease younger cohort’s test score: 37.9 points for PPVT and 1.45 points for CDA in Round 2. 124.3 points for PPVT and 11.34 points of Math test in Round 3.
- No significant effect for older cohorts in Round 3 (14-15 years old).
- Credit constraints affect child test score when child is young.
- Early credit constraints negatively affects child test score when only the individual covariates are added.

## Discussion

- The empirical results using OLS and 2SLS tell us that the credit constraints have a negative effect on child educational investment when the child is in young age. This result is supported by other literatures emphasizing the importance of early intervention to enhance human capital accumulation (e.g. Curié et al. 1998, Cunha and Heckman 2012).
- The effect of credit constraints in earlier age to later test score does not have robust effect on child test score. The effect disappears when community fixed effect is controlled.
- There is several issues left in this paper:
  - Measurement of credit constraints: Is it liquidity constraints? Any other variable in the data possible to measure credit constraints better (e.g. interest rate, loan application data, reason of rejection in loan)?
  - Better instrumental variable is needed.

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## Selected References