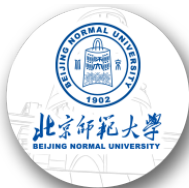# Educational inequality in a risk society: Risk attitudes and family educational investments

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Outline

Family Background and Educational Inequality

- Families exert a large effect on educational opportunities, attainment, and inequalities in almost every society (Björklund and Salvanes 2011).

- Which characteristics of family background are related to educational investments and how the influence comes to pass remain a central question in social science.
  - Empirical studies have focused primarily on factors such as economic resources (e.g., Kornrich 2016), family structures (e.g., Ermisch and Francesconi 2001; Hastings and Schneider 2021), cultural and social capital (e.g., Jæger 2009; Roscigno and Ainsworth-Darnell 1999), and so on.

- A debate over direct family input or more subtle mechanisms.

Family Investments in Children

- Family or parental investments are key parameters in the intergenerational transmission of family advantages.

- Primary forms of family investments in their children are time and money (Flood et al. 2022; Hao and Yeung 2015).
    - Among them, money might be the most "direct" way (Kornrich 2016; Kornrich and Furstenberg 2013).
    - A large portion of family spending is devoted, though not confined, to education.

- A growing body of literature on the determinants of family economic investments in children.

The Role of Mindsets in Stratification and Inequality

- An extensive body of literature emphasizes the role of a series of mindsets in:
  - Social stratification (e.g., Davis 1982; Johnson and Hitlin 2017);
  - Educational inequality (e.g., Alba et al. 2005; Cunningham 2008; De Graaf et al. 1995; Kalmijn and Kraaykamp 2007).

- Theoretical studies on the link between attitudes/mindsets and inequality, to name a few:
  - cultural resources (e.g., Bourdieu 1984; Farkas 2003);
  - rational action theory (e.g., Boudon 1974; Breen and Goldthorpe 1997; Goldthorpe 1998).

- Empirical studies normally see attitudes/mindsets as the consequence of stratification and inequality.

This Paper Draws Focus on

- How parental attitudes lead to inequalities in family investments.

- Attitudes towards risks
  - Normally seen as a stable/measurable personality trait (Josef et al. 2016; Mallpress et al. 2015).
  - The psychological framework recognizes people on a spectrum of risk-taking to risk-averse.
  - Explains a variety of human behavior under uncertainties.

- Family spending on education
  - A direct source of family investments in children.
  - An important mechanism of the intergenerational transmission of family advantages.

Why risk attitude? - World at risk

- Risk society and modern risks
  - Defined not just by the distribution of goods (wealth), but more so by the distribution of risks (posed by technological progress, ecological change, other by-products and so on) (Beck 1986, 1992; Giddens 1990).
  - Key characteristics/propositions:
    - the scale and potential for risks are increasing;
    - human endeavor in dealing with risks generate new ones - manufactured risks marked by Giddens (2003)
    - the subjectivity to it -

- Risk attitudes and human behavior
  - Wehling (2011) and Beck (2007): *anticipation* of risks.
  - Douglas and Wildavsky (1983): our perception of risk is what matters.
  - Risk attitude: subjective view of uncertainties, or decision and behavior when the likelihoods of possible circumstances are unknown.

Why risk attitude? - China at risk

- Education as a risky business in China: high returns on average but large variance.

- Uncertainties in educational investments and returns
  - Macro-level: changes in demographics, labor markets, etc.
  - Mesco-level: changes in the education system.
  - Micro-level: dilemmas faced by Chinese families.

- Value of the Chinese case
  - Complex nature of a risk society.
  - Long tradition of valuing educational investments and high educational expectations regardless of family backgrounds (Li and Xie 2020).
  - Pervasive inequalities (Hannum 1999; Li et al. 2017; Wu 2019).

Outline

Data and dependent variable

- We employ data from the 2019 wave of Chinese Household Finance Survey

- Dependent variable: family educational investments
  - Log education expenditure (winsorized at 5%/95% to further remove the sway of outliers) in the main regression.
  - Share of education expenditure in total household expenditure for robustness checks.

Explanatory variable

- Measurement of risk attitude:
    - by observing the behavior of subjects in a hypothetical or experimental environment (e.g., Abdellaoui et al. 2007; Fellner & Maciejovsky 2007; Vieider et al. 2015);
    - by self-report, such as asking the respondents to indicate their level of agreement with a set of statements (e.g., Akgüç et al. 2016; Jaeger et al. 2010; Van Winson et al. 2016);
    - by detecting behaviors in a real-life environment (e.g., Hoffmann et al. 2013).

- We measure risk attitude by:
    - asking the head of household his/her preferred level of risk and return for an investment on a Likert scale, with 1 being the most risk-taking and 5 the most risk-averse;
    - the share of risky assets in the total household asset portfolio.

Analytic strategy

- The effect of risk attitudes on educational investments

$$Edu\_exp = \alpha_0 + \alpha_1 \times Risk\_att + Z \times \beta + \epsilon \qquad (1)$$

- Inequality of family educational investments
  - Inequality indices: mean logarithmic deviation (MLD), Theil, Gini (e.g., Bourguignon and Morrisson 2002; Marrero and Rodríguez 2013)
  - Regression based approach: Shorrocks-Shapley decomposition (e.g., Mabel et al. 2020)

Outline

Descriptive Facts

- A demonstration of risk attitudes for different families
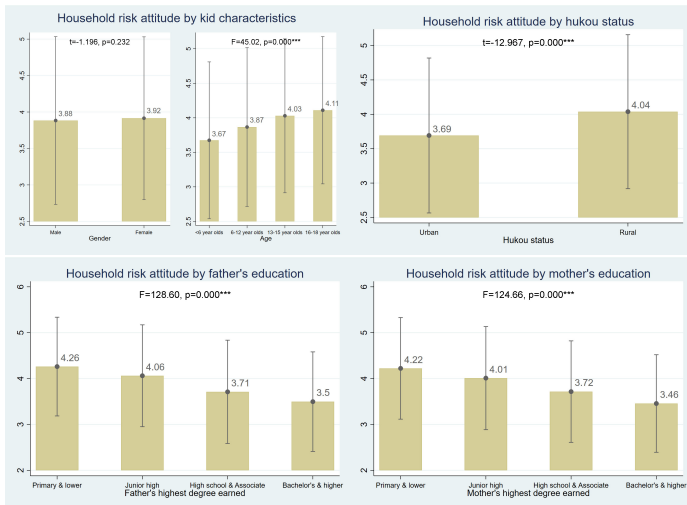
Descriptive Facts

- A demonstration of risk attitudes for different families

Descriptive Facts

- Education expenditure for families of different risk attitudes

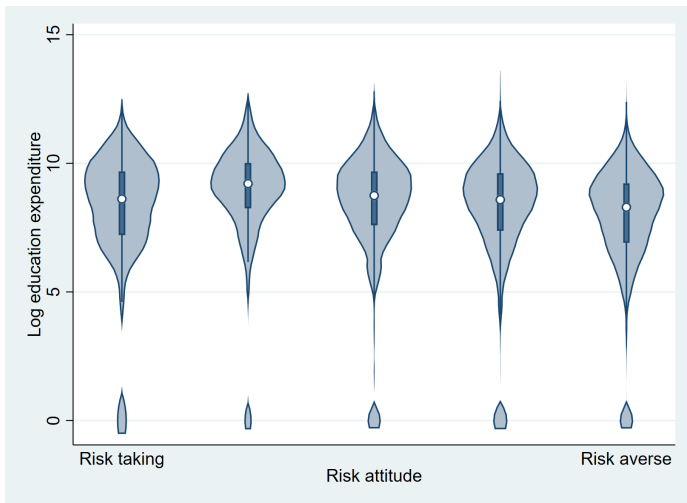# The Effect of Risk Attitudes on Educational Investments

- We then run the following regression equation:

$$Edu\_exp_{i,h,c} = \alpha_0 + \alpha_1 \times Risk\_att_{h,c} + X_i \times \beta_1 + Parent_i \times \beta_2 \\ + Family_h \times \beta_3 + \tau_c + \epsilon_{i,h,c} \tag{2}$$

- An instrumental variable approach: we instrument for risk attitudes with accidents or unexpected major changes a family suffered
    - Major life events - such as disasters, diseases or health deterioration - can have a lasting effect on risk attitudes and risk-taking behaviors (see, e.g., Banks et al. 2020; Dohmen et al. 2016; Yi et al. 2022).
    - Participants of the CHFS were asked if their family had experienced any incidents that had had a huge impact on them.
    - Jackknife Instrumental Variable Estimators (JIVE) developed by Angrist et al. (1999) are employed.

The Effect of Risk Attitudes on Educational Investments

Table 1. Benchmark results and results of IV estimation

	Log education expenditure		
	OLS	JIVE1	JIVE2
VARIABLES	(1)	(2)	(3)
Risk attitude	-0.068***	-0.094***	-0.106***
	(0.015)	(0.025)	(0.025)
CONTROLS	YES	YES	YES
City FE	YES	YES	YES
Observations	7,329	7,329	7,329
R-squared	0.415	0.415	0.414

Robust standard errors in parentheses;
***p<0.01, ** p<0.05, * p<0.1

Inequality of Family Educational Investments

- Inequality indices
  - We adopt the Mean Logarithmic Deviation (MLD) and the Theil index, both of a General Entropy class and are decomposable into a between-group and within-group component.
  - The sample is divided into 5 subgroups by different levels of risk attitude.

- Shorrocks-Shapley decomposition of R-squared based on equation (2).

Inequality of Family Educational Investments

Table 2. Inequality indices for family educational investments

		All (N=7,329)	Male (N=3,998)	Female (N=3,331)	Urban (N=2,973)	Rural (N=4,356)
MLD	**Total inequality**	**0.842**	**0.855**	**0.820**	**0.747**	**0.802**
	Ineq. between groups	0.034	0.038	0.029	0.031	0.010
	Ineq. within groups	0.806	0.817	0.792	0.716	0.792
	Within-group to total	*3.98%*	*4.45%*	*3.49%*	*4.11%*	*1.30%*
Theil	**Total inequality**	**0.719**	**0.733**	**0.699**	**0.605**	**0.730**
	Ineq. between groups	0.034	0.038	0.029	0.029	0.011
	Ineq. within groups	0.684	0.695	0.670	0.577	0.719
	Within-group to total	*4.66%*	*5.15%*	*4.10%*	*4.78%*	*1.47%*
Gini	**Total inequality**	**0.606**	**0.601**	**0.601**	**0.569**	**0.598**

Inequality of Family Educational Investments

Table 3. Shorrocks-Shapley decomposition of regression outcomes

Factor	Education expenditure		Log education expenditure	
	Shapley value	Percent	Shapley value	Percent
Economic resource (Household asset, debt & consumption)	0.2001	51.01%	0.1920	56.05%
Cultural capital (Both parents' educational level)	0.0965	24.50%	0.0809	23.62%
Urban/rural (Hukou status)	0.0300	7.63%	0.0210	6.13%
Personal characteristics (Age & gender)	0.0048	1.21%	0.0093	2.72%
Risk attitude	**0.0091**	**2.31%**	**0.0066**	**1.91%**

Outline

Robustness Checks

- Controlling for additional covariates
  - annual household income: original or logarithmic
  - financial assets, financial debts, and annual property income

- Another measurement of risk attitude: share of risky assets
  - stocks, bonds, mutual funds, derivatives, financial products, non-RMB asset, and gold
  - negatively correlated with self-reported risk attitude (r=-0.114)
  - 9 cases dropped for inability/refusal to answer

- Another measurement of family educational investment
  - log education expenditure (original value & winsorized at 1%/99%)
  - share of education expenditure

Another Measurement of Risk Attitude

Table 4. Robustness checks: Another measurement of the explanatory variable

VARIABLES	Log education expenditure					
	(1)	(2)	(3)	(4)	(5)	(6)
Risk attitude	-0.068***	-0.063***			-0.065***	-0.061***
	(0.015)	(0.015)			(0.015)	(0.015)
Share of risky assets			1.142***	0.896**	0.981**	0.769*
			(0.422)	(0.429)	(0.424)	(0.430)
Total household income	YES	YES	YES	YES	YES	YES
Property income	YES	YES	YES	YES	YES	YES
Financial asset & debt		YES		YES		YES
CONTROLS	YES	YES	YES	YES	YES	YES
City FE	YES	YES	YES	YES	YES	YES
Observations	7,329	7,329	7,320	7,320	7,320	7,320
R-squared	0.415	0.416	0.414	0.414	0.415	0.416

Robust standard errors in parentheses;
***p<0.01, ** p<0.05, * p<0.1

Another Measurement of Family Educational Investment

Table 5. Robustness checks: Another measurement of the dependent variable

VARIABLES	Share of education expenditure					
	(1)	(2)	(3)	(4)	(5)	(6)
Risk attitude	-0.0037***	-0.0037***			-0.0036***	-0.0036***
	(0.0011)	(0.0011)			(0.0011)	(0.0011)
Share of risky assets			0.074**	0.073**	0.065**	0.066**
			(0.030)	(0.031)	(0.030)	(0.031)
Total household income	YES	YES	YES	YES	YES	YES
Property income	YES	YES	YES	YES	YES	YES
Financial asset & debt		YES		YES		YES
CONTROLS	YES	YES	YES	YES	YES	YES
City FE	YES	YES	YES	YES	YES	YES
Observations	7,329	7,329	7,320	7,320	7,320	7,320
R-squared	0.268	0.268	0.267	0.267	0.269	0.269

Robust standard errors in parentheses;
***p<0.01, ** p<0.05, * p<0.1

Outline

Contributions and Implications

- The determinants of family investments in children.

- How attitudes and mindsets can lead to inequalities.
  - Our findings may be regarded as possible mechanisms through which risk attitudes translate into inequalities in educational attainments and outcomes.

- Causes of widening gaps in educational investments and attainments in China today.

Limitations

- The measurement of risk attitudes may be somewhat simplistic (see Pennings and Garcia 2001).

- The de facto risks and uncertainties of educational investment for each family are not taken into account.
  - It is reasonable to assume that families may be faced with different types of uncertainties and expect different returns to and/or costs of education.
  - see Fitzsimons (2007) and Brodaty et al. (2014).

- Other forms of family investments (e.g., Del Boca et al. 2014; Flood et al. 2022).

Thank you for your attention!

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