

Parental Rural-Urban Migration and Child Education

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November 22, 2024

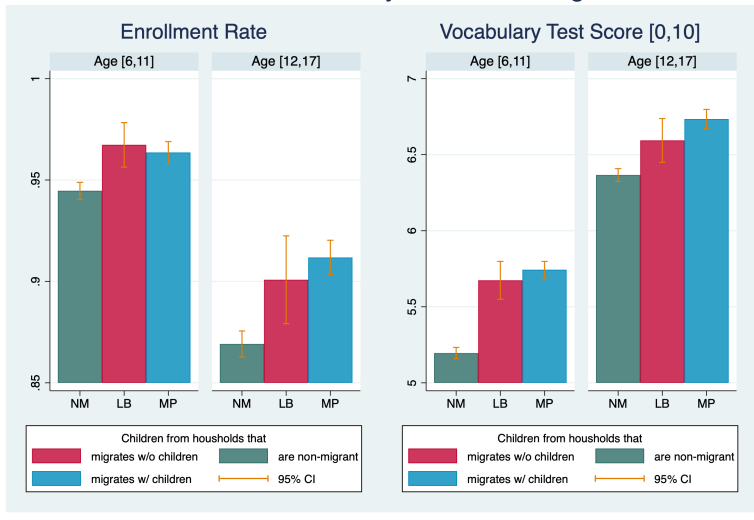
Introduction

Internal Migration in China

- Internal migration
 - In China, 376 million people lived someplace other than their household registration place (Chinese Census 2020)
 - Worldwide, 281 million international migrants in 2020, 3.6% of the world population (IOM 2020)
- Rural-urban migrants
 - 89.8% of migrants in China are blue-collar workers in the manufacturing sector;
 - 49% of the migrants finish middle school.
- Rural Children
 - About 1/3 rural children have experienced parental migration
 - Nearly half (49.2%) of rural-urban migrants without household registration in China choose to leave their children behind¹ in rural areas as of 2005. Gao et al. (2023)

¹Children left behind are much more likely to be cared for by grandparents (71%) than their counterparts living with their parents (20%). Zhong (2024)

Child Educational Outcomes by Household Migration Modes



Data Source: CFPS 2010-2020.

Parental Migration and Child Education

- **How does rural-urban parental migration affect child welfare?**
 - How are parents' work locations and children's school locations jointly decided by the household?
 - How are children's educational outcomes affected?
 - What policies would be most effective in improving the welfare of rural-urban migrants and their children?
 - How do mobility frictions affect these decisions?

This Paper

- A nested discrete choice model of parental migration decisions and children's educational decisions.
 - Estimated with panel data on rural children and their parents from the China Family Panel Studies (CFPS) 2010-2020.
 - Patterns of effects vary by the level of children's education.
 - Mobility restrictions are not effective in controlling rural-urban migration flows as intended.

Literature

- Parental decisions and child outcomes
 - Previous work has mainly focused on the impacting channel of the balance between parental earning capacity and financial transfers ...Antman (2012), Ambler et al. (2015), Bai et al. (2018), Albert et al. (2022)
 - ... and parental time and attention Constant et al. (2013), Marchetta et al. (2021), Yang et al. (2020)
 - Recent literature also includes the role of other extended families in child development Gao et al. (2023), Zhong (2024)
 - I further consider children's school location and treating it as an important input in the child development process, as the quality of schools varies significantly across different types of locations.
- Models of migration that examine the role of migration policies
 - Existing literature has mainly focused on individual decisions rather than family considerations. Bryan et al. (2019), Tombe et al. (2019), Lagakos et al. (2023), Adamopoulos et al. (2024)
 - Recent literature has discussed household migration decisions and related welfare effects. Gao et al. (2023), Imbert et al. (2024), Zhong (2024)
 - The effects of migration policies on children's educational outcomes and other intra-household channels of migration that are previously unobservable in less complex settings.

Background

Mobility Restrictions in Developing Countries

- Rural-urban migration:
 - Positive side: overall productivity effects; Bryan et al. (2019), Lagakos et al. (2023)
 - Negative side: urban congestion; pollution. Akbar et al. (2023), Chen et al. (2022)
- Governments in less developed regions were much more likely (78%) than those in more developed regions (51%) to have adopted policies to reduce rural-urban migration. United Nations (2015)

Mobility Restrictions in China

The Population Capacity of a City

The opening of China's state-owned industries to privatization in the 1990s

- Increased demand for labor in urban manufacturing sectors
- Substantial rural-urban migration flows driven by employment opportunities
- Potential decline in agricultural productivity at origin;
 Limited population sustaining capacity of destinations
- Household registration stringency to control migration

The Household Registration (*Hukou*) System

- Access to local welfare services is linked to the location of household registration.
- How to obtain a local *Hukou*:
 - By birth (born into the household, no *jus soli*), marriage, or certain formal sector jobs
 - By application (for restrictive cities requirements are set for social insurance participation, education level, investment and real estate purchase, and employment conditions, etc., vary by prefecture)

Data

Data

- Longitudinal survey: China Family Panel Studies (CFPS), by Peking University, China
- The CFPS baseline (2010) sample covers 25 provincial-level administrative regions (31 in total), representing 95% of China's population.

CFPS Sample sizes				
Wave	Number of sampled individuals aged			
	[0,5]	[6,14]	[15,18]	[19,50]
2010	3,614	4,986	1,980	19,151
2012	3,551	4,642	2,096	21,465
2014	3,597	4,572	1,952	21,332
2016	2,989	4,566	2,293	20,413
2018	2,240	4,821	1,603	18,278
2020	859	3,982	1,251	13,930
2022	55	3,542	1,244	12,572

Rural-Urban Migration

- *Migrant*: a rural *Hukou* holder who lives in an urban place and has moved across counties (beyond commuting distance).
- Rural-Urban Division
 - Urban areas are divided into two types: *town* (refers to rural county seat, township, and suburb) and *city*.
 - County-level data is used (a 6-digit postal code identifies a county, digits 1-2 identify the province, digits 1-4 identify the prefecture).
 - Rural/Town/City: a county of type Rural/Town/City (this “type” is reported by the survey, based on the classification of National Bureau of Statistics of China).

Descriptive Statistics: Children

Descriptive statistics of enrolled children aged [6,18]						
Parent Work Location	Child School Location	Count (Share)	Age	Word Score, Z-Score	Math Score, Z-Score	Edu. Expenses
Rural	Rural	2,519 (77.05%)	10.93 (0.02)	-0.09 (0.01)	-0.1 (0.01)	0.7 (0.02)
Rural	Town (O)	517 (15.82%)	13.29 (0.06)	0.07 (0.02)	0.2 (0.02)	2.17 (0.07)
Rural	City (O)	233 (7.13%)	14.07 (0.09)	0.02 (0.03)	0.14 (0.03)	3.64 (0.17)
Town	Rural	511 (47.25%)	10.54 (0.05)	0.08 (0.03)	-0.06 (0.03)	1 (0.06)
Town	Town (O)	258 (23.83%)	11.83 (0.09)	0.14 (0.03)	0.17 (0.03)	1.44 (0.08)
Town	City (O)	49 (4.53%)	12.55 (0.2)	0.43 (0.07)	0.31 (0.07)	2.82 (0.39)
Town	Town (W)	171 (15.77%)	11.65 (0.11)	0.24 (0.05)	0.27 (0.05)	1.63 (0.11)
Town	City (W)	93 (8.61%)	12.59 (0.16)	0.34 (0.07)	0.3 (0.07)	4.17 (0.29)
City	Rural	187 (39.73%)	11.46 (0.1)	0.32 (0.04)	0.16 (0.04)	2.48 (0.21)
City	Town (O)	45 (9.54%)	11.72 (0.19)	0.31 (0.1)	0.18 (0.1)	2.04 (0.27)
City	City (O)	79 (16.90%)	12.14 (0.15)	0.25 (0.06)	0.25 (0.05)	2.77 (0.35)
City	Town (W)	44 (9.30%)	11.14 (0.2)	-0.06 (0.19)	0.58 (0.12)	2.42 (0.27)
City	City (W)	115 (24.53%)	11.03 (0.13)	0.24 (0.07)	0.23 (0.06)	3.69 (0.3)

^a Counts are per-wave counts, averaged over waves 2010 through 2022.

^b For variables other than counts, standard errors in parentheses.

^c (O) denotes town/city closest to *Hukou* location. (W) denotes town/city closest to work location.

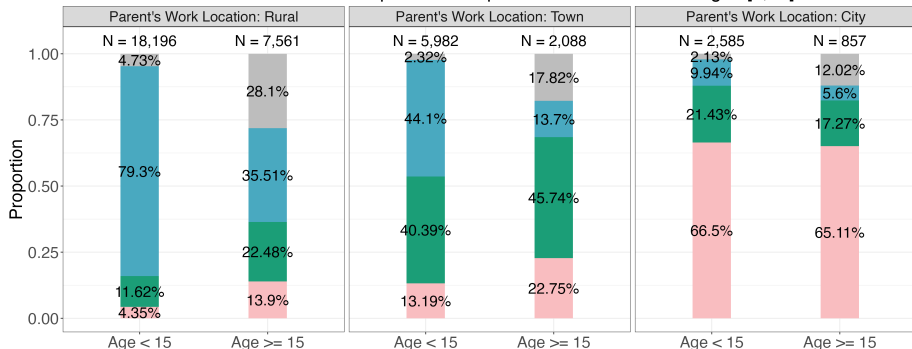
^d The money unit is 1,000 CNY deflated to 2010 (around 115 EUR or 147 USD).

^e Test scores are z-scores adjusted for age and gender.

Descriptive Statistics: Children

Enrollment rate and type

CFPS data 2010-2022 pooled. Sample: rural-*Hukou* children ages [6,18]



Enrollment Status / Location of School: ■ Not Enrolled ■ Rural ■ Town ■ City

Note: 1. Rural or urban refer to the child's *Hukou* type at birth or, if missing, at baseline (2010). 2. Compulsory education in China: 6 years of primary school and 3 years of junior secondary school, usually beginning at age 6 and ending at age 15. 3. The completion rate of nine-year compulsory education in China was 94% as of 2014 (National Bureau of Statistics of China, 2015).

Where do parents move?

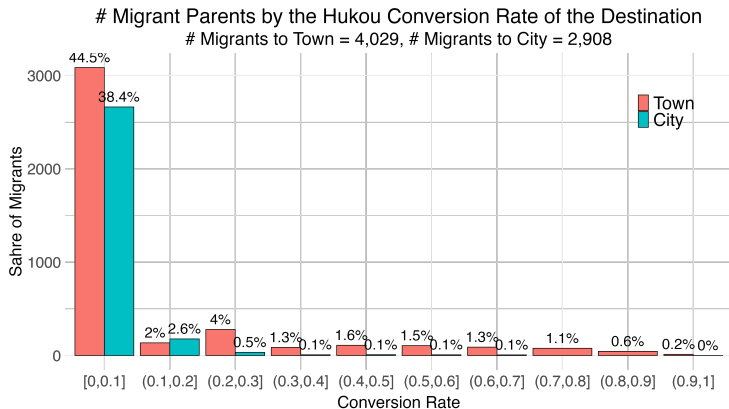


Figure 1: The Concentration of Migrants in Big and Restrictive Cities

Data Source: CFPS 2010-2020.

Descriptive Statistics: Parents

Descriptive statistics of parents and counts of children by group, pooled data

Work Location	School Location	Count	No. Children	Father				Mother			
				Age	Completes 9-yr. Edu.	Avg Income	White-collar	Age	Completes 9-yr. Edu.	Avg Income	White-collar
Rural	Rural	17,632	1.91 (0.01)	39.5 (0)	51.8% (0.4%)	15.9 (0.2)	8.3% (0.2%)	37.5 (0)	39.6% (0.4%)	8.8 (0.1)	7.4% (0.2%)
Rural	Town (O)	3,621	1.73 (0.01)	41.4 (0.1)	56.5% (0.8%)	21.1 (0.6)	8.6% (0.5%)	39.8 (0.1)	46.6% (0.8%)	11 (0.2)	9.0% (0.5%)
Rural	City (O)	1,632	1.61 (0.02)	42.2 (0.2)	62.8% (1.2%)	24.5 (0.8)	13.7% (0.9%)	40.6 (0.1)	48.4% (1.2%)	14.1 (0.4)	11.8% (0.8%)
Town	Rural	3,576	1.79 (0.01)	38.9 (0.1)	65.9% (0.8%)	30.3 (0.7)	13.0% (0.6%)	36.8 (0.1)	54.4% (0.8%)	18.3 (0.6)	11.5% (0.5%)
Town	Town (O)	1,804	1.67 (0.02)	40.3 (0.2)	59.3% (1.2%)	20 (0.7)	13.0% (0.8%)	38.3 (0.1)	54.5% (1.2%)	12.9 (0.4)	12.3% (0.8%)
Town	City (O)	343	1.41 (0.03)	41.6 (0.3)	72.0% (2.4%)	37 (2.5)	12.5% (1.8%)	39.5 (0.3)	69.4% (2.5%)	24.2 (1.7)	12.9% (1.8%)
Town	Town (W)	1,194	1.67 (0.02)	39.3 (0.2)	64.0% (1.4%)	30.1 (1.1)	15.0% (1.0%)	37.3 (0.2)	55.3% (1.4%)	17.1 (0.7)	14.5% (1.0%)
Town	City (W)	652	1.55 (0.03)	40.7 (0.3)	74.2% (1.7%)	46.7 (2.7)	17.9% (1.5%)	39 (0.2)	67.2% (1.8%)	27.7 (1.8)	19.0% (1.5%)
City	Rural	1,307	1.5 (0.02)	40.7 (0.2)	81.6% (1.1%)	39.8 (1.9)	20.3% (1.1%)	38.8 (0.2)	73.1% (1.2%)	26.4 (1.1)	19.0% (1.1%)
City	Town (O)	314	1.61 (0.03)	40.4 (0.3)	77.7% (2.4%)	36.6 (3.2)	17.2% (2.1%)	38.3 (0.3)	74.8% (2.5%)	23.5 (2.2)	16.1% (2.1%)
City	City (O)	556	1.39 (0.02)	41 (0.2)	74.8% (1.8%)	38.8 (3)	17.4% (1.6%)	39.1 (0.2)	72.3% (1.9%)	24.6 (2.3)	16.2% (1.6%)
City	Town (W)	306	1.45 (0.04)	40 (0.3)	83.7% (2.1%)	47.9 (3.3)	22.5% (2.4%)	38.4 (0.3)	79.1% (2.3%)	27.3 (1.7)	26.2% (2.5%)
City	City (W)	807	1.43 (0.02)	39.7 (0.2)	81.4% (1.4%)	48.8 (2.3)	24.4% (1.5%)	37.8 (0.2)	79.2% (1.4%)	31.8 (1.5)	26.8% (1.6%)

^a Standard errors in parentheses.

^b (O) denotes town/city closest to household *Hukou* location. (W) denotes town/city closest to parent work location.

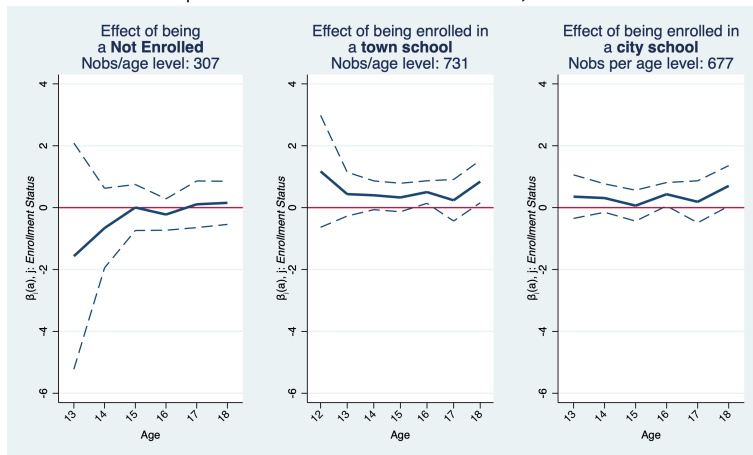
^c The income unit is 1,000 CNY deflated to 2010 (around 115 EUR or 147 USD).

^d 9-yr. edu.: The compulsory education in China, 6 years of primary school plus 3 years of middle school.

^e The **highest** value of each indicator in each group (of work location type) is in red, the **lowest** in green.

Schools in Different Locations

Coefficients from **AR(1)** regression on child's **current** enrollment status
Dependent variable: **Word Test Score, z-score**



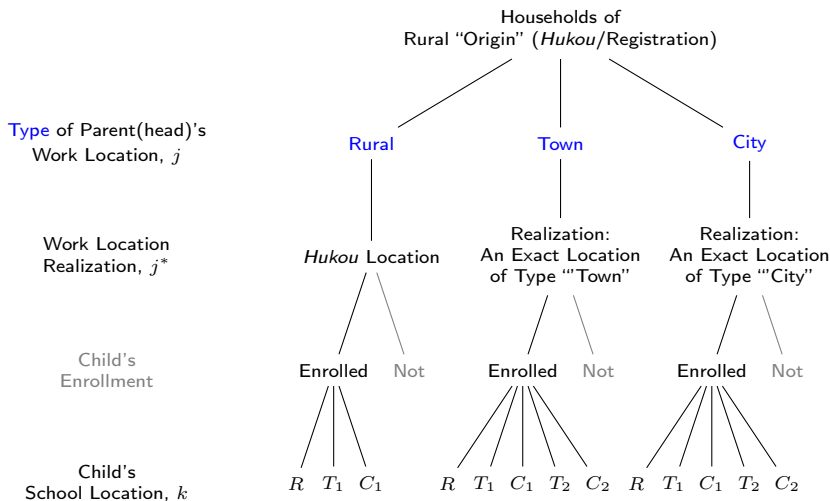
Note: a. The base category of child's enrollment is *Rural School* (N=1612). b. Control variables included in reg lagged test score ($t-2$), individual FE. c. Point estimates are displayed along with their 95% confidence interval

Figure 2: Child's Word Test Score Regression Coefficients

Model

Household's Decision

The Nested Structure



- R : the *Hukou* Location;
- T_1 or C_1 : Location closest to ***Hukou*** with type of "Town" or "City";
- T_2 or C_2 : Location closest to **parent(head)'s work location** with type of "Town" or "City".

Household's Decision

The Upper Nest: Work Location

- Decision on the **type of parent's work location**

$$d_1 = j, j \in \{Rural, Town, City\}$$

- Given type j , **one exact location (county) j^* is realized:**

- the *Hukou* location if $j = Rural$;
- a random draw if $j = Town$ or $City$ from the distribution $f_i(j^*|j) = \frac{M_{O_i, j^*}}{M_{O_i, j}}$,
 O_i : *Hukou* location of household i , M : baseline migration stock.

- The indirect utility:

$$U_j^{(1)} = \gamma_j \cdot x^{(1)} + \sum_{j^*} p_{j^*|j} \cdot (\beta \cdot y_{j^*} + \rho_j \cdot V_{j^*}) + \varepsilon_j^{(1)}$$

where

- $x^{(1)}$: demographics of the parent (age, age-sq, edu., #child)
- y_{j^*} : expected labor income, housing price, institutional costs

Household's Decision

The Lower Nest: School Location

- Decision on **child school location**

$d_2 = k, k \in \{\text{Rural (R, Hukou Location),}$
 Town (T_1) or City (C_1) Closest to Hukou Location,
 Town (T_2) or City (C_2) Closest to Work Location $j^*\}$

- The indirect utility:

$$U_{j^*k}^{(2)} = \alpha_j \cdot z_{j^*k} + \mu_{jk} \cdot x^{(2)} + \varepsilon_{j^*k}^{(2)}$$

where

- $x^{(2)}$: demographics of child (age, age-sq, gender)
- z_{j^*k} : expected education expenses, and test scores

Estimation

Two-stage LIML Estimation

School location stage:

- $\frac{\hat{\alpha}}{\rho_j}$ and $\frac{\hat{\mu}}{\rho_j}$ from maximizing the log-likelihood of a conditional Logit model

$$\ln L_2 = \sum_i \sum_j \sum_{j^*} \sum_k d_{ij^*k} \ln p_{ik|j^*}$$

where

- k : school location, $k \in \{R, T_1, T_2, C_1, C_2\}$,

$$p_{k|j^*} = \frac{\exp \left[(\alpha_j \cdot z_{j^*k} + \mu_{jk} \cdot x^{(2)}) / \rho_j \right]}{\sum_{l=1}^{K_j^*} \exp \left[(\alpha_j \cdot z_{j^*l} + \mu_{jl} \cdot x^{(2)}) / \rho_j \right]}$$

Expected Costs and Benefits of School Location Choice

- The **education expenses** of the child choosing a school at location k is predicted using:

$$\ln c_{kt} = \theta_{j(k),a}^c \cdot a_t^c + \delta_{1,k}^c + \delta_{2,t}^c + \varepsilon_{kt}^c$$

where $j(k)$ is the type (R/T/C) of location k .

- The **test score** (z-score adjusted for age and gender) of the child choosing a school at location k is predicted by:

$$s_{kt} = \theta_{j(k),a}^s \cdot a_t^s + \delta_{2,k}^s + \delta_{3,t}^s + \varepsilon_{kt}^s$$

Two-stage LIML Estimation

Work location stage:

- $\hat{\beta}$, $\hat{\gamma}_j$, and $\hat{\rho}_j$ from maximizing the log-likelihood of a conditional Logit model

$$\ln L_1 = \sum_i \sum_j d_{ij} \ln p_{ij}$$

where

- j : type of work location, $j \in \{R, T, C\}$;

$$p_j = \frac{\exp \left[\gamma_j \cdot x^{(1)} + \sum_{j^*} p_{j^*|j} \cdot (\beta \cdot y_{j^*} + \rho_j \cdot V_{j^*}) \right]}{\sum_{m=1}^J \exp \left[\gamma_m \cdot x^{(1)} + \sum_{m^*} p_{m^*|m} \cdot (\beta \cdot y_{m^*} + \rho_m \cdot V_{m^*}) \right]}$$

$$V_{j^*} = \ln \left\{ \sum_{l=1}^{K_j^*} \exp \left[(\alpha_j \cdot z_{j^*l} + \mu_{jl} \cdot x^{(2)}) / \rho_j \right] \right\}$$

- j^* : a specific county in type j realized with probability:

$$p_{j^*|j} = \frac{M(O, j^*)}{\sum_{\{\tilde{j}: \text{type}(\tilde{j})=j\}} M(O, \tilde{j})}$$

O : *Hukou* location of the household; M : baseline migration stock

Grains from Migration

- The **labor income** of the parent choosing work location j^* within type j , in logs of real terms (CNY, 2010), is predicted from regression:

$$\ln w_{j^*t} = \theta_{1,a}^w \cdot a_t^p + \theta_{2,je}^w \cdot e_i^p + \delta_{1,j^*}^w + \delta_{2,t}^w + \varepsilon_{j^*t}^w$$

where p denotes parent, a is age, and e is the level of education.

Migration Costs

- **Hukou Conversion Rate** Imbert et al. (2024)

- The share of migrants who had converted their *Hukou* registration place to the local prefecture by the last wave of the survey:

$$C_{l,\overline{edu}} = \frac{\sum_i \mathbb{1}\{d_i = l, edu_i = \overline{edu}\} \cdot \mathbb{1}\{hk_{i,a_0} \neq l\} \cdot \mathbb{1}\{hk_{i,T} = l\}}{\sum_i \mathbb{1}\{d_i = l, edu_i = \overline{edu}\} \cdot \mathbb{1}\{hk_{i,a_0} \neq l\}}$$

d : living location; hk : *Hukou* location

a_0 : year of birth, T : year of the last observation in the survey

- Has variation for both cities and towns;

- **Housing Prices** Brueckner et al. (2015), Garriga et al. (2023)

- reported by the survey

Results

Alternative-Specific Regressors Estimates from Conditional Logit Regression on School Location Choice.

	All Origins			Origins without Secondary School	
	[6,12]	[12,15]	[15,18]	[12,15]	[15,18]
<i>School-Location-Specific Variables</i>					
No. Primary Schools (Work = R)	0.001 (0.020)				
No. Primary Schools (Work = T)	-0.008 (0.029)				
No. Primary Schools (Work = C)	-0.775*** (0.108)				
No. Secondary Schools (Work = R)		0.065 (0.071)	-0.025 (0.052)	-0.035 (0.203)	-0.014 (0.160)
No. Secondary Schools (Work = T)		-0.094 (0.095)	-0.130 (0.079)	-0.728 (0.488)	-0.525 (0.291)
No. Secondary Schools (Work = C)		-0.429 (0.286)	-0.487 (0.385)	-1.091 (0.667)	-1.959* (0.901)
Word Score, z (Work = R)		-0.530*** (0.110)	-0.161 (0.093)	-0.529* (0.206)	-0.501** (0.180)
Word Score, z (Work = T)		0.099 (0.122)	0.257* (0.117)	0.150 (0.225)	0.296 (0.202)
Word Score, z (Work = C)		0.081 (0.143)	0.301* (0.119)	0.126 (0.257)	0.023 (0.222)
Edu. Expenses (Work = R)	-0.067* (0.032)	-0.074 (0.039)	-0.077 (0.054)	-0.022 (0.114)	0.243** (0.091)
Edu. Expenses (Work = T)	-0.006 (0.033)	-0.059 (0.041)	-0.098 (0.056)	-0.038 (0.115)	0.165 (0.092)
Edu. Expenses (Work = C)	0.007 (0.036)	0.002 (0.045)	-0.063 (0.059)	0.042 (0.117)	0.200* (0.096)
N	225,745	109,174	103,753	45,591	43,420
Log-likelihood	-26916.2	-13669.1	-15268.1	-5779.4	-6231.9

a. Cluster(individual level)-robust standard errors in parentheses.

b. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

c. Sample: rural households.

d. Time variable: two year waves. Data 2010-2022 pooled.

e. Test scores are the z-scores adjusted for age and gender.

f. Monetary units are in logs and are deflated to CNY 2010.

Conditional Logit Regression on Work Location Choice.

	All Origins			Origins without Secondary School	
	[6,12]	[12,15]	[15,18]	[12,15]	[15,18]
<i>Work-Location-Specific Variables</i>					
Inclusive Value (Work=R)	0.457*** (0.112)	0.690*** (0.069)	0.558*** (0.092)	0.731*** (0.128)	0.918*** (0.127)
Inclusive Value (Work=T)	0.095 (0.219)	0.554*** (0.163)	0.567*** (0.104)	0.639* (0.292)	0.864*** (0.129)
Inclusive Value (Work=C)	0.738*** (0.115)	0.332 (0.266)	0.663*** (0.129)	0.731 (0.390)	0.880*** (0.143)
Income	0.073 (0.054)	0.120 (0.068)	-0.047 (0.069)	0.489*** (0.104)	0.249* (0.101)
Housing Price	-0.019** (0.007)	-0.046*** (0.011)	-0.005 (0.010)	-0.069*** (0.021)	-0.008 (0.017)
Conversion Rate	-0.782*** (0.090)	-1.010*** (0.115)	-0.936*** (0.113)	-1.132*** (0.193)	-1.136*** (0.188)
<i>Work Location: Town</i>					
Age (Parent)	0.017 (0.041)	-0.008 (0.062)	-0.005 (0.067)	-0.201* (0.099)	-0.126 (0.114)
Age-sq. (Parent)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.002* (0.001)	0.001 (0.001)
Completes 9-yr Edu. (Parent)	0.481*** (0.059)	0.304*** (0.074)	0.025 (0.073)	0.177 (0.116)	-0.040 (0.115)
No. Children (Parent)	-0.153*** (0.036)	-0.080 (0.046)	-0.132* (0.052)	-0.107 (0.077)	-0.142 (0.086)
Constant	-2.261** (0.785)	-1.602 (1.427)	-1.081 (1.641)	2.853 (2.258)	2.242 (2.716)
<i>Work Location: City</i>					
Age (Parent)	0.548*** (0.094)	0.474** (0.154)	0.446** (0.169)	0.381 (0.262)	0.270 (0.225)
Age-sq. (Parent)	-0.006*** (0.001)	-0.005** (0.002)	-0.004* (0.002)	-0.004 (0.003)	-0.003 (0.002)
Completes 9-yr Edu. (Parent)	1.122*** (0.101)	1.167*** (0.122)	0.826*** (0.119)	1.133*** (0.188)	1.126*** (0.195)
No. Children (Parent)	-0.716*** (0.070)	-0.707*** (0.085)	-0.381*** (0.090)	-0.781*** (0.136)	-0.494*** (0.143)
Constant	-12.366*** (1.856)	-12.736*** (3.392)	-12.525** (4.023)	-10.133 (5.817)	-7.917 (5.283)
N	43,335	21,594	20,658	9,627	9,156
Log-likelihood	-9981.1	-4780.3	-4866.1	-2020.8	-1975.5

a. Cluster-robust standard errors in parentheses. Clustering is at the individual level.

b. * p < 0.05, ** p < 0.01, *** p < 0.001.

Counterfactual Exercises

Counterfactual Exercises

- **Education Subsidy:** reductions in tuition (for compulsory edu.) and other education expenses (cost of school lunches, boarding fees, commuting fares)
 - ① in rural areas: 20%
 - ② in urban areas: 10%
- **House Price Drop:** in Sep. 2024, the new house price index has decreased by 4.6% - 10.3% in major cities, and the existing house price index has decreased by 7.6% - 12% in major cities (National Bureau of Statistics, China), more pronounced in middle-tier cities.
 - ① town: 15%; city: 10%

Parental Migration

Predicted Choice Probabilities of Parental Migration			
Work Location	Age Group		
	Age [6,12)	Age [12,15)	Age [15,18]
<i>A. Baseline</i>			
Rural	0.233	0.323	0.524
Town	0.721	0.257	0.332
City	0.046	0.421	0.144
<i>B. Edu. Expenses Subsidy in Rural Areas (20%)</i>			
Rural	0.232 (-0.1pp.)	0.272 (-15.7pp.)	0.566 (+7.9pp.)
Town	0.722 (+0.0pp.)	0.168 (-34.4pp.)	0.308 (-7.2pp.)
City	0.046 (+0.0pp.)	0.56 (+33.1pp.)	0.126 (-12.1pp.)
<i>C. Edu. Expenses Subsidy at Destination (10%)</i>			
Rural	0.146 (-37.4pp.)	0.329 (+1.9pp.)	0.519 (-1.0pp.)
Town	0.826 (+14.5pp.)	0.269 (+4.7pp.)	0.333 (+0.3pp.)
City	0.028 (-38.0pp.)	0.402 (-4.4pp.)	0.148 (+3.0pp.)
<i>D. House Price Drop (Town: 15%, City: 10%)</i>			
Rural	0.235 (+1.1pp.)	0.323 (+0.2pp.)	0.525 (+0.1pp.)
Town	0.719 (-0.3pp.)	0.253 (-1.6pp.)	0.331 (-0.2pp.)
City	0.046 (-0.1pp.)	0.424 (+0.8pp.)	0.144 (+0.2pp.)

Parent-Child Separation

Predicted Probabilities of Parent-Child Separation			
Work Location	Age Group		
	Age [6,12)	Age [12,15)	Age [15,18]
<i>A. Baseline</i>			
Town	0.426	0.148	0.177
City	0.034	0.331	0.112
<i>B. Edu. Expenses Subsidy in Rural Areas (20%)</i>			
Town	0.426 (+0.1pp.)	0.097 (-34.2pp.)	0.163 (-8.0pp.)
City	0.034 (+0.0pp.)	0.442 (+33.6pp.)	0.098 (-12.2pp.)
<i>C. Edu. Expenses Subsidy at Destination (10%)</i>			
Town	0.506 (+18.8pp.)	0.155 (+4.7pp.)	0.178 (+0.4pp.)
City	0.021 (-38.0pp.)	0.316 (-4.4pp.)	0.115 (+3.1pp.)
<i>D. House Price Drop (Town: 15%, City: 10%)</i>			
Town	0.424 (-0.4pp.)	0.145 (-1.5pp.)	0.176 (-0.2pp.)
City	0.034 (-0.1pp.)	0.333 (+0.8pp.)	0.112 (+0.2pp.)

Child Test Scores

School Location	Predicted Vocabulary Test Scores, Z-Score		
	Age Group		
	Age [6,12)	Age [12,15)	Age [15,18]
<i>A. Baseline</i>			
Rural	0.026	0.03	0.024
Town	0.019	0.018	0.016
City	0.019	0.017	0.015
<i>B. Edu. Expenses Subsidy in Rural Areas (20%)</i>			
Rural	0.026 (-0.1%)	0.027 (-8.4%)	0.026 (+9.0%)
Town	0.019 (-0.2%)	0.018 (+2.6%)	0.015 (-3.6%)
City	0.019 (+0.4%)	0.019 (+9.3%)	0.014 (-5.5%)
<i>C. Edu. Expenses Subsidy at Destination (10%)</i>			
Rural	0.019 (-25.3%)	0.03 (+1.0%)	0.023 (-0.6%)
Town	0.019 (-0.4%)	0.018 (-0.2%)	0.016 (+0.3%)
City	0.024 (+25.9%)	0.017 (-1.2%)	0.015 (+0.3%)
<i>D. House Price Drop (Town: 15%, City: 10%)</i>			
Rural	0.026 (+0.6%)	0.03 (+0.0%)	0.024 (+0.0%)
Town	0.019 (0.0%)	0.018 (-0.1%)	0.016 (0.0%)
City	0.019 (-0.5%)	0.017 (+0.1%)	0.015 (0.0%)

Conclusion

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- Household migration involves both parental and child location choices, which raises more issues of selectivity and endogeneity.
- Sending children to different locations determines the quality of schooling and parent-child separation.
- A nested discrete choice model is developed that incorporates the expected returns to children's education as part of the parents' migration decision.
- Estimation results using panel data of Chinese rural households show that the impact of parental internal migration on children's education differs by children's stage of education.
 - Policies on the destination side of migration have the greatest impact on households with primary school-age children,
 - while parents of middle school-age children are the group most motivated to migrate for better educational opportunities for their children.
 - And high school-age children are the group most sensitive to budget constraints, with parents having the lowest substitution between education and migration resources within the household budget.
- The results also suggest that migration frictions are not effective in controlling rural-urban migration flows as intended.