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FDI Inflows and Educational Attainment: Evidence from China

Yi Duan
Marshall University, YiDuan@marshall.edu

Lei Li

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Yi Duan [1]   Lei Li [2]

[1]Marshall University

[2]Nankai Univeristy

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Background

- FDI (Foreign Direct Investment) tend to have an effect on the local labor market in host countries.
- Changes in labor market conditions can affect individual education choice.
  - Education depressing channel: Additional job opportunities brought by FDI can increase the opportunity costs of education, and work as an incentive for local residents (especially the youth) to quit school and join the labor force.
  - Education enhancing channel: FDI can increase the demand for high-skilled labor, and increase the returns to education, especially in developing countries.
- We want to test the overall effect.

1. Labor market and education attainment.
   - Changes in labor market conditions can change the costs and benefits of education, and affect individual education choice.
   - Betts and McFarland (1995), Jensen (2012), Attanasio and Kaufmann (2014), Tumen (2015), Shah and Steinberg (2015), Flinn and Mullins (2015), Adukia and Novosad (2017).

Literature

2. International economic activities can affect local labor market conditions and education attainment.
   - Findlay and Kierzkowski (1983), Edmonds et al (2010), Le Brun et al (2011), Atkin (2016), Blanchard and Willmann (2016), Greenland and Lopresti (2016), Xu (2017), Blanchard and Olney, (2017), Li (2018).

3. FDI can affect education attainment through changing labor market conditions.
   - Gittens (2006), Asali et al (2016), Mughal and Vechiu (2018).
   - Most use macro data.

This Paper

- Investigates the impact of FDI on education attainment through labor market conditions in China.

- Uses micro data.

- China has attracted substantial amount of FDI in the past years, and has made education advancement as its priority. However, attracting FDI can have unintended consequences to depress educational attainment and human capital formation.

Empirical Model

$$edu_{ij} = \beta_0 + \beta_1 lnfdir_j + X_i'\gamma + M_j'\eta + \varepsilon_{ij}$$

edu_{ij}: individual i's education attainment in city j.
$lnfdir_j$: logged ratio of FDI to GDP in city j.
X_i: individual characteristics.
M_j: city characteristics.

- Endogeneity problem: Education can cause FDI; both education and FDI can be driven by a third variable.
- Instrumental variable: the inverse distance of the city from the coastline.

- Individual level: China Institute For Income Distribution (CHIP) 2013.
- FDI and other city level characteristics: China City Statistical Yearbook.
- Trade: China Customs Statistics.

Baseline IV Regression Results

	(1) iv	(2) ivhigh	(3) iv3college	(4) iv4college
lnfdir	-0.983*	-0.139**	-0.133**	-0.0896**
	(-1.86)	(-2.03)	(-2.22)	(-2.35)
province FE	Yes	Yes	Yes	Yes
N	16468	17435	17435	17435
Adjusted R2	0.289	0.125	0.086	0.0746

- FDI tends to reduce education attainment at all levels.
- The negative effect concentrates on high-school and vocational education.

FDI and Education Attainment by Gender

	(1) male	(2) female	(3) ivmale	(4) ivfemale
A: overall				
lnfdir	-0.317**	-0.294***	-1.112**	-0.879
	(-2.48)	(-2.69)	(-1.97)	(-1.64)
province FE	Yes	Yes	Yes	Yes
N	8216	8252	8216	8252
Adjusted R2	0.275	0.332	0.261	0.325
B: high school				
lnfdir	-0.0360**	-0.0389***	-0.155**	-0.127*
	(-2.29)	(-3.07)	(-1.99)	(-1.86)
province FE	Yes	Yes	Yes	Yes
N	8680	8755	8680	8755
Adjusted R2	0.113	0.166	0.0938	0.156
C: 3-year college				
lnfdir	-0.0444**	-0.0383**	-0.154**	-0.116**
	(-2.44)	(-2.59)	(-2.17)	(-2.05)
province FE	Yes	Yes	Yes	Yes
N	8680	8755	8680	8755
Adjusted R2	0.0764	0.126	0.0575	0.116
D: 4-year college				
lnfdir	-0.0285**	-0.0281**	-0.107**	-0.0743**
	(-2.08)	(-2.05)	(-2.21)	(-2.22)
province FE	Yes	Yes	Yes	Yes
N	8680	8755	8680	8755
Adjusted R2	0.0661	0.105	0.0517	0.1

- FDI tends to affect the education attainment of males more than females.

FDI and Education Attainment by Age

	(1) iv30	(2) iv30-40	(3) iv40-50	(4) iv50
lnfdir	-0.494	-1.247*	-2.258**	-0.78
	(-1.55)	(-1.85)	(-2.31)	(-1.13)
province FE	Yes	Yes	Yes	Yes
N	4383	2701	3525	5859
Adjusted R2	0.773	0.138	0.0416	0.16

- The negative impact of FDI on education is the largest for those who were 30-50, who had the largest opportunity costs of education.

FDI and City-Level Probability to Work

	(1)	(2)	(3)
	fdiwork	fdiwork1	fdiwork2
lnfdir	0.0154**	0.0175**	0.0160*
	(2.08)	(2.05)	(1.75)
province FE	Yes	Yes	Yes
N	18303	17535	17535
Adjusted R2	0.366	0.431	0.438

- We use the share of individual working (the probability to work) at city level as the dependent variable.
- FDI tends to increase the probability to work.

	(1)	(2)	(3)	(4)
	return	returnhigh	return3college	return4college
lnfdir	-0.0000725	-0.00608	0.00792	0.0443***
	(-0.05)	(-0.42)	(-0.54)	(-2.87)
province FE	Yes	Yes	Yes	Yes
N	9056	9108	9108	9108
Adjusted R2	0.246	0.218	0.225	0.219

- We use wage as the measure of the returns.
- FDI tends to increase the returns to college education, but not high-school or vocational education.

	(1)	(2)	(3)
	skillprehigh	skillpre3college	skillpre4college
lnfdir	-0.0706*	0.0312	0.104***
	(-1.89)	-0.87	-2.82
province FE	Yes	Yes	Yes
N	9092	9106	8909
Adjusted R2	0.273	0.122	0.223

- The skill premium is usually defined as the ratio of the wages of skilled to unskilled workers.
- We also follow Mincer (1974) to calculate skill premium at city level.
- FDI tends to reduce the high-school skill premium and increase college skill premium.

FDI and Education Attainment, Age 16

	(1) edu	(2) eduhigh	(3) edu3college	(4) edu4college
lnfdir	-0.903	-0.437*	-0.242	-0.237
	(-1.18)	(-1.80)	(-1.06)	(-1.05)
province FE	Yes	Yes	Yes	Yes
N	9056	9108	9108	9108
Adjusted R2	0.246	0.218	0.225	0.219

- 16 is the minimum legal age to work in China.
- 16 is also a typical age to be in high schools.
- Those who were 16 (the "key exposure age") tended to finish high school less likely.

Conclusion

- FDI tends to increase the opportunity cost of education.
- FDI tends to increase the returns to college education and decrease the returns to high-school education.
- Overall, FDI tends to reduce education attainment at all levels, especially high school education.
- The negative effects are the biggest among the male, and those who were between age 30 and 50.
- FDI tends to reduce individual education attainment at their age 16.
- FDI can bring benefits (such as increased job opportunities) to the host country, but it tends to hinder human capital accumulation, especially for those who are at the critical ages.
- China has focused on FDI attractiveness and education advancement. More specific policies are needed to balance the trade-off between the two and possibly increase both.