UNIVERSITY OF NOTTINGHAM

APPLIED MICROECONOMETRICS

GROUP PROJECT A

The effect of FDI on Total Factor Productivity and Wages

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Supervisor
Professor Sourafel GIRMA

Authors
Yonesse PARIS (stud. n)
Nelly LEHN (stud. n)
Thea ZOELLNER (stud. n)
Georg SCHNEIDER (stud. n)
Emilie BECHTOLD (20214031)

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1 Theoretical Background/Literature Review

1.1 FDI

1.2 PSM

Since (I guess) we will be focussing on ATE rather than ATT, we need to satisfy the following two assumptions:

1. Assumption: **Unconfoundedness (CIA)**
   "*[G]iven a set of observable covariates X which are not affected by treatment, potential outcomes are independent of treatment assignment*" (Caliendo & Kopeinig, 2008: 35).

2. Assumption: **Overlap**
   "*persons with the same X values have a positive probability of being both participants and nonparticipants*"(Caliendo & Kopeinig, 2008: 35).

$->$ if Assumption 1 holds, all biases due to observable components can be removed by conditioning on the propensity score (Imbens, 2004).

Binary Treatment

Difference between logit and probit lies in the link function. Logit assumes a log-distribution of residuals, probit assumes a normal distribution. Heteroskedastic probit models can account for non-constant error variances $->$ Check for heteroskedasticity?

Multiple Treatments

The multinomial probit model is the preferable option compared to logit. Alternatively, just run several binary ones (more complicated but also more robust to errors).

Variable selection

- outcome variable must be independent of treatment conditional on the pscore (CIA)

- Only variables that influence simultaneously the participation decision and the outcome variable should be included (based on theory and empirical findings)

- variables should either be fixed over time or measured before participation (include only variables unaffected by participation)

- choice of variables should be based on economic theory and previous empirical findings

Tests for variable selection

Strategies for the selection of variables to be used in estimating the propensity score:

2 Data and Descriptive Analysis

3 Empirical Specification

3.1 Econometric approach

Reminder of a thought we had
We could drop all the state-owned enterprises, because wages are likely not to change just because the firm received foreign investment.

3.2 Main Results

comment: delete table 1? I made two separate tables for wages and TFP. Putting the results in one table makes the table too long. However, if we decide to delete e.g. ATET for NN1 we could merge the tables again.

QUESTION: NN1 is equal to psmatch?–> so in the command nn1 does not have to be specified, unlike nn5

TEST TEST TEST

Table 1: logWages and Total Factor Productivity

VARIABLES	NN1 logWages2017	NN1 TFP2017
r1vs0.FDI2016	0.139**	0.287***
	(0.067)	(0.040)
Observations	11,323	11,323

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: logWages 2017

VARIABLES	NN1 ATE	NN1 ATET	NN5 ATE	NN5 ATET
r1vs0.FDI2016	0.139**	0.037	0.187***	0.137
	(0.067)	(0.125)	(0.054)	(0.085)
Observations	11,323	11,323	11,317	11,317

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: TFP 2017

VARIABLES	NN1 ATE	NN1 ATET	NN5 ATE	NN5 ATET
r1vs0.FDI2016	0.287***	0.312***	0.279***	0.318***
	(0.040)	(0.057)	(0.033)	(0.045)
Observations	11,323	11,323	11,317	11,317

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4 shows parameter estimates for FDI on Total Factor Productivity when using different estimators for the treatment effects. First we use an inverse-probability estimator. We estimate the effect of FDI on TFP by using a logit model to predict the effect of FDI as a function of port, logwages 2015, TFP 2015 logemployment 2015, debts 2015, export 2015 and research and development 2015. The estimated ATET of FDI on TFP is .308. Thus the average company in the treated population will increase its TFP by 0.308 more than it would if no FDI had taken place. The ATE is slightly lower. The average company will increase its TFP by 0.285 when it receives FDI. Here the ATE is slightly lower than the ATET. It can be suspected that the treatment assignment mechanism was potentially non random, in which case the ATE should not be the major estimator. ????check theory. This could be the case in this data as the probability of getting an FDI differs depending on???

Second, we model the outcome as a linear function of before defined control variables. Again we use a logit model, where the covariates are also explanatory variables.

Table 4: Total Factor Productivity 2017

VARIABLES	IPW ATE	IPW ATET	AIWP ATE
r1vs0.FDI2016	0.285***	0.308***	0.306***
	(0.029)	(0.045)	(0.010)
0.FDI2016			
P0mean	3.537***	3.307***	3.537***
	(0.026)	(0.053)	(0.020)
Observations	11,323	11,323	11,323

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

4 FDI by type

5 Summary/ Conclusion

Appendix