

# Fixed Costs and FDI: The Conflicting effects of Productivity Shocks

by

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## Marginal Profitability Versus Total Profitability

Consider a representative industry in a given

host country (H),

in a world of free capital mobility

which fixes the world rate of interest, denoted by

$r$ .

There is a single good which serves both for consumption and

investment. For simplicity, suppose

that firms in this industry, all identical, last for

two periods.

The initial stock of capital is denoted by  $K_H^0$ . If the firm invests  $I$

in the first period, it augments its

capital stock to  $K_H^0 + I$  and its gross output

in the second period will be  $A_H F(K, L)$ , where  $F(\cdot)$  is a concave

production function,  $L$  is the labor input,

and  $A_H$  is a productivity factor.

We assume that this fixed cost is generated by a fixed input ( $L_H^C$ )

of domestic labor.

Thus, the fixed cost is equal to  $w_H L_H^C$ , where  $w_H$  is the wage rate in

the host country.

In order for the firm to be able to incur such a setup cost, we

assume that, due to a (suppressed)

fixed factor,  $F(\cdot)$  exhibits diminishing returns to scale in  $K$  and  $L$ .

That is  $F$  is strictly concave. Thus, the implied average cost

curve is U-shaped, which is consistent

with perfect competition that we assume.

Consider a representative firm which does invest in the first

period an amount  $I = K - K_H^0$  in order to

augment its stock of capital to  $K$ . Its present value becomes

$$V^+(A_H, w_H, L_H^C) = \underset{\{K, L\}}{\text{Max}} \left\{ \frac{A_H F(K, L) - w_H L + K}{1 + r} - [(K - K_H^0) + w_H L_H^C] \right\} \quad \#$$

The demand of such a firm for  $K$  and  $L$  are denoted by

$$K^+(A_H, W_H, L_H^C)$$

and

$$L^+(A_H, W_H, L_H^C),$$

respectively, they are

defined by the marginal productivity conditions

$$A_H F_K(K, L) = r \quad \#$$

and

$$A_H F_L(K, L) = w \quad \#$$

Note, however, that the firm may choose not to invest at all (that is, to

stick to its existing stock of capital  $K_H^0$ )

and avoid the lumpy setup cost  $w_H L_H^C$ . In this case its labor input,

denoted by

$$L^-(A_H, w_H, L_H^C)$$

is defined by:

$$A_H F_L(K_H^0, L) = w_H. \quad \#$$

In this case its present value is:

$$V^-(A_H, K, w_H) = \underset{L}{\text{Max}} \left\{ \frac{A_H F(K_H^0, L) - w_H L + K_H^0}{(1+r)} \right\}. \quad \#$$

The firm will make a new investment if, and only if,

$$\begin{aligned} & V^+(A_H, w_H, L_H^C) \\ & \geq V^-(A_H, w_H). \end{aligned} \quad \#$$

That is, the firm makes the amount of investment that is called for by

the marginal productivity

conditions (2) and (3), if and only if some global [condition (6)] is

met. We assume that labor is

confined within national borders. Denoting the country's endowment

of labor by  $L_H^0$ , we have the

following labor market clearance equation:

$$\left. \begin{aligned} L_H^C + L^+(A_H, w_H, L_H^C) &= L_H^0 & \text{if } V^+(A_H, w_H, L_H^C) &\geq V^-(A_H, w_H) \\ L^-(A_H, w_H) &= L_H^0 & \text{if } V^+(A_H, w_H, L_H^C) &< V^-(A_H, w_H) \end{aligned} \right\} \#$$

We model this comparative advantage by assuming that the lumpy

setup cost of investment in the host

country, when investment is done by the source country entrepreneurs

(FDI investors) is only  $L_H^{*C}$  which is

below  $L_H^C$ , the lumpy setup cost of investment when carried out by the

host country direct investors. This

means that the foreign direct investors can bid up the direct investors

of the host country in the purchase

of the investing firms in the host country. The representative firm is

purchased at its value which is

$$V^+[A_H, (w_H), L_H^{*C}].$$

This essentially assumes that competition among the foreign direct

investors pushes the price

of the acquired firm to its maximized value. Thus, the FDI investors

shift all the gains from their lower

setup cost to the host-country original owners of the firm. The new

owners also invest an amount

$$K^+[A_H, w_H(A_H), L_H^{*C}, K_H^0]$$

to expand the capital stock of the acquired the firm. On the other

hand, if condition (6)

does not hold then there will be no FDI flows from  $s$  to  $H$ . Thus,

aggregate foreign direct investment is

equal to:

$$FDI = \begin{cases} V^+[A_H, w_H(A_H), L_H^{*C}] + K^+[A_H, w_H(A_H), L_H^{*C}] = K_H^0 + w_H L_H^{*C} & \text{if } V^+[A_H, w_H(A_H), L_H^{*C}] \geq V^-[A_H, w_H(A_H)] \\ 0 & \text{if } V^+[A_H, w_H(A_H), L_H^{*C}] < V^-[A_H, w_H(A_H)] \end{cases} \quad \#$$

The model thus suggests that if the productivity factor  $(A_H)$  is

sufficiently high, and/or the wage rate  $(w_H)$

is sufficiently low, and/or the setup cost  $(w_H L_H^{*C})$  is sufficiently low,

then FDI flows from country  $s$  to

country  $H$  are positive. Otherwise, the flow of FDI from  $s$  to  $H$  is

zero.

The hallmark of our empirical approach is based on the two

equations (conditions) that govern these

decisions. First, ignoring the setup cost, the FDI flows from

Country  $s$  to country  $H$  (denoted by  $FDI_{No}$ )

is governed by a “flow” equation:

$$FDI_{NO}^* = V^+[A_H, w_H(A_H), L_H^{*C}] + K^+[A_H, w_H(A_H), L_H^{*C}] - K_H^0 + w_H(A_H)L_H^{*C} \quad \#$$

That is, the quantity of investment ( $K^+$ ) and the acquisition price

( $V^+$ ) are governed by the marginal

productivity conditions (2) and (3). Second, the question

whether FDI flows from  $s$  to  $H$  are at all

positive, is governed by a “participation” equation (condition):

$$V^+[A_H, w_H, (A_H)L_H^{*C}] - V^-[A_H, w_H(A_H)] \geq 0. \quad \#$$

Consider now the effect of an increase in the host country’s

productivity factor  $A_H$ . Suppose initially

that the wage rate in the host country ( $w_H$ ) is fixed [that is, ignore

the labor market clearance condition

in equation (7)]. An increase in  $A_H$  raises the quantity of new

investment ( $K^+$ ), if investment is at all

carried out, the acquisition price ( $V^+$ ) that FDI investors pay, and

the amount of FDI;

It also raises the demand for labor in the host country:

*For a fixed wage rate  $w_H$ , it follows from equation (8), for the case of positive FDI flows, that*

$$\frac{\partial(FDI)}{\partial A_H} = \frac{\partial V^+}{\partial A_H} + \frac{\partial K^+}{\partial A_H}. \quad A1$$

*Using the envelope theorem, it follows from equation (1) that*

$$\frac{\partial V^+}{\partial A_H} = \frac{F(K,L)}{1+r} > 0. \quad A2$$

Total differentiation of equations (2) and (3) with respect to  $A_H$  (while still

maintaining  $w_H$  constant) yields:

$$\frac{\partial K^+}{\partial A_H} = \frac{-F_K F_{LL} + F_L F_{KL}}{A_H(F_{KK} F_{LL} - F_{KL}^2)} > 0 \quad A3$$

and

$$\frac{\partial L^+}{\partial A} = \frac{-F_L F_{KK} + F_K F_{KL}}{A_H(F_{KK} F_{LL} - F_{KL}^2)} > 0, \quad A4$$

In equations (A3) and (A4) we assume that capital and labor are substitute to each

other in the production function, namely that  $F_{KL} > 0$ . (Recall also that

$F_{KK} F_{LL} - F_{KL}^2 > 0$ ,  $F_{KK} < 0$ , and  $F_{LL} < 0$ , by the concavity of  $F$ .) Equations (A1) -

(A3) imply that  $\partial(FDI)/\partial A_H > 0$ .

Thus, for a given  $w_H$ , an increase in  $A_H$  raises FDI, and  $K^+$  and  $V^+$ .

However, when new investment is made, equation (A4) implies that a rise in  $A_H$

increases the demand for labor. When no new investment is made, it follows from

equation (4), for a given  $w_H$ , that

$$\frac{\partial L^-}{\partial A_H} = -\frac{F_L}{AF_{LL}} > 0.$$

This will raise the wage rate  $w_H$  in the host country (and the fixed setup cost  $w_H L_H^{*c}$ ), thereby countering the above effects on  $K^+$ ,  $V^+$ , and FDI. With a unique equilibrium, the initial effects of the increase in  $A_H$  are likely to dominate the subsequent counter effects of the rise in  $w_H$ , so that FDI still rises.

Thus, an increase in the host country's productivity factor  $A_H$  raises the flow volume of FDI from  $S$  to  $H$

that is governed by the flow equation. But at the same time, the rise in  $A_H$  increases also the value of the lumpy setup cost  $w_H(A_H)L_H^{*C}$ . Thus, it may weaken the advantage of carrying out positive FDI flows from  $s$  to  $H$  at all. In other words, the gap between  $v^+$  and  $v^-$  in the participation equation narrows down. Thus, a positive productivity shock (unobserved in the data) raises the observed FDI flows in the flow equation and, at the same time, may lower the likelihood of observing positive FDI flows at all. In other words, the model may generate a

negative correlation in the data between the residuals of the flow and participation equations.

## The Econometric Approach

Denote by  $Y_{i,j,t}$  the flow of FDI from source country  $i$  to host country  $j$  in period  $t$ . The corresponding FDI flows from source country  $j$  to host country  $i$  are denoted by  $Y_{j,i,t}$ . Note that with this notation,  $Y_{i,j,t}$  is always non-negative. But, it may well be zero, because typically, in a global economy, there are only a few countries which

significantly export FDI to all, or most countries.

The existence of a setup cost of investment makes investment “lumpy”. This means that the conventional determinants of FDI flows (such as standard marginal productivity conditions) have to generate a sufficiently large infra-marginal profits, so as to surpass a certain unobserved threshold.

Otherwise, the observed FDI flows are practically zero. We argue that the sub-sample of FDI source

countries is not a random sample of the countries in the global economy, if setup costs play a significant role in the determination of FDI flows. We now develop a simple econometric approach to study the effect of setup costs and correct for selection bias in the analysis of FDI flows.

### **The Participation Equation**

$$Y_{i,j,t} = X_{F,i,j,t}\beta + U_{F,i,j,t}, \quad \#$$

where  $X_{F,i,j,t}$  stands for a vector of observed variables that potentially explain the pattern of FDI flows. This equation is the analogue of equation (9) in the preceding section.

Let  $Z_{i,j,t}$  be a latent variable, which represents profits from the direct investment made in host country  $j$ ,

by the firms in the source country  $i$ ,

in period  $t$ . To simplify, we assume that

profits are a linear function of the flow of

FDI, which takes the form  $\tilde{Z}_{i,j,t} \equiv Y_{i,j,t} - C_{i,j,t}$ ,

where  $C_{i,j,t}$  is the setup cost. Define

$$Z_{i,j,t} = \tilde{Z}_{i,j,t} / \sigma_{\tilde{Z}},$$

where  $\sigma_{\tilde{Z}}$  is the standard deviation of  $\tilde{Z}$ . We

further assume that  $Z_{i,j,t}$  exhibits the following

linear form:

$$Z_{i,j,t} = X_{2,i,j,t} \gamma + V_{i,j,t},$$

#

where  $x_{2,ij,t}$  and  $\gamma$  are a regressor row vector and a coefficient vector, which affect the normalized profits, respectively, and  $v_{ij,t}$  is the error term respectively. Note that the variables in the vector for  $x_1$  are all included in the vector  $x_2$ . But vector  $x_2$  includes also fixed-cost variables. In a random sample, we assume that the classical assumptions, regarding the error term, hold. We further assume that the error terms are normally distributed:

$$U_{ij,t} \sim N(0, \sigma_U^2),$$

$$V_{ij,t} \sim N(0, 1).$$

#

We also assume that the error terms  $U_{ij,t}$  and  $V_{ij,t}$

follow a bivariate normal distribution:

$$(U_{i,j,t}, V_{i,j,t}) \sim N(0, \Omega),$$

with variances  $\sigma_U^2$  and  $\sigma_V^2$ , respectively.

$$\Omega = \begin{vmatrix} \sigma_U^2 & \rho \cdot \sigma_U \\ \rho \cdot \sigma_U & 1 \end{vmatrix}, \quad \#$$

where  $\rho$  is the correlation coefficient between the cross-equation error terms.

### **Setup Costs and Selection Bias**

The (statistical) population-regression function for equation (11) is:

$$E(Y_{i,j,t} \mid X_{F,i,j,t}) = X_{F,i,j,t}\beta. \quad \#$$

Define a binary variable  $D_{i,j,t}$ , by

$$D_{i,j,t} = \left\{ \begin{array}{ll} 1 & \text{if } Z_{i,j,t} = X_{z,i,j,t} + V_{i,j,t} \geq 0 \\ 0 & \text{otherwise} \end{array} \right\}. \quad \#$$

The regression function for the sub-sample of countries for which we do indeed observe positive FDI flows is:

$$E(Y_{i,j,t} \mid X_{i,j,t}, D_{i,j,t} = 1) = X_{i,j,t}\beta + E(U_{i,j,t} \mid X_{i,j,t}, D_{i,j,t} = 1) \quad \#$$

Note that the last term, the conditional expectation of  $U_{i,j,t}$  does no longer equal to zero. Furthermore, it depends on  $X_{i,j,t}$ , thus upsetting the classical assumptions concerning regression functions when applied to random samples.

To see this, one can substitute equations (12)

and (16) into equation (17) to get:

$$E(Y_{ij,t} | X_{ij,t}, D_{ij,t} = 1) = X_{ij,t}\beta + E(U_{ij,t} | V_{ij,t} \geq -X_{ij,t}\gamma). \quad \#$$

Because  $U_{ij,t}$  and  $V_{ij,t}$  follow a bivariate normal distribution with correlation  $\rho$  and with variances  $\sigma_U^2$  and  $\sigma_V^2$ , respectively, it follows that the expected volume of FDI flows from the source country  $i$  into the host country  $j$  in equation (18) is equal to:

$$E(Y_{ij,t} | X_{ij,t}, D_{ij,t} = 1) = X_{ij,t}\beta + \rho \cdot \sigma_U \cdot \lambda_{ij,t}, \quad \#$$

where the inverse Mill's ratio,  $\lambda_{ij,t}$ , is defined

by:

$$\lambda_{i,j,t} \equiv E(V_{i,j,t} \mid V_{i,j,t} \geq -X_{i,j,t}\gamma) = \frac{\phi(-X_{i,j,t}\gamma)}{1 - \Phi(-X_{i,j,t}\gamma)} = \frac{\phi(X_{i,j,t}\gamma)}{\Phi(x_{i,j,t}\gamma)}, \quad \#$$

and where  $\phi$  and  $\Phi$  are the unit normal density and the cumulative distribution functions, respectively.

The bias (in the population ) term is equal to the partial derivative of the conditional expectations of  $U$  with respect to  $x$ . That is:

$$bias = -\gamma \cdot \rho \cdot \sigma_U \cdot \delta_{i,j,t}, \quad \#$$

where  $\delta_{i,j,t}$  is a positive number.

### **Tobit and Setup Costs**

The Tobit model [see Tobin (1958)] has been

often used in the empirical international trade literature . The model ignores setup costs.

Let  $Y_{i,j,t}^*$  denote the desired FDI flows from  $i$  to  $j$  in period  $t$ :

$$Y_{i,j,t}^* = X_{i,j,t} \beta + U_{i,j,t}, \quad \#$$

Note that  $Y_{i,j,t}^*$  could be negative (for instance, when the rate of return differential works in favor of country  $i$ ). The latent variable  $Y_{i,j,t}^*$  is observed only if it is positive. Thus, the actual dependent variable  $Y_{i,j,t}$

is by the way the data is constructed,

$$Y_{i,j,t} = \max(0, Y_{i,j,t}^*) \quad \#$$

The population regression function for equation (11) is:

$$E(Y_{i,j,t} \mid X_{i,j,t}, D_{i,j,t} = 1) = X_{i,j,t}\beta + 1 \cdot \sigma_{U_F} \cdot \tilde{\lambda}_{i,j,t}. \quad \#$$

where

$$\tilde{\lambda}_{i,j,t} = \frac{\phi\left(\frac{X_{F,i,j,t}}{\sigma_{U_F}}\right)}{\Phi\left(\frac{X_{F,i,j,t}}{\sigma_{U_F}}\right)}. \quad \#$$

Comparing the set of equations (9) - (10) and the set of equations (240 - (25), the Tobit model can be viewed as a special case of the Heckman model for the particular case where  $\rho = 1$ . In this case, the flow equation serves also as the participation equation (up to a scale). Because the only difference between the participation and the

flow equations is in the role played by the setup costs, the Tobit model is the correct model under the null hypothesis of no setup costs. See Figure 1 for a discussion of the bias Tobit generates when there exist set up costs.

## 8 Appendix A: A Productivity Shock

For a fixed wage rate  $w_H$ , it follows from equation (8), for the case of positive FDI flows, that

$$\frac{\partial(FDI)}{\partial A_H} = \frac{\partial V^+}{\partial A_H} + \frac{\partial K^+}{\partial A_H}. \quad (\text{A1})$$

Using the envelope theorem, it follows from equation (1) that

$$\frac{\partial V^+}{\partial A_H} = \frac{F(K, L)}{1+r} > 0. \quad (\text{A2})$$

Total differentiation of equations (2) and (3) with respect to  $A_H$  (while still maintaining  $w_H$  constant) yields:

$$\frac{\partial K^+}{\partial A_H} = \frac{-F_K F_{LL} + F_L F_{KL}}{A_H(F_{KK} F_{LL} - F_{KL}^2)} > 0 \quad (\text{A3})$$

and

$$\frac{\partial L^+}{\partial A} = \frac{-F_L F_{KK} + F_K F_{KL}}{A_H(F_{KK} F_{LL} - F_{KL}^2)} > 0, \quad (\text{A4})$$

In equations (A3) and (A4) we assume that capital and labor are substitute to each other in the production function, namely that  $F_{KL} > 0$ . (Recall also that  $F_{KK} F_{LL} - F_{KL}^2 > 0$ ,  $F_{KK} < 0$ , and  $F_{LL} < 0$ , by the concavity of  $F$ .) Equations (A1) - (A3) imply that  $\partial(FDI)/\partial A_H > 0$ .

Thus, for a given  $w_H$ , an increase in  $A_H$  raises FDI, and  $K^+$  and  $V^+$ .

However, when new investment is made, equation (A4) implies that a rise in  $A_H$  increases the demand for labor. When no new investment is made, it follows from equation (4), for a given  $w_H$ , that

$$\frac{\partial L^-}{\partial A_H} = -\frac{F_L}{A F_{LL}} > 0.$$

Thus, the demand for labor rises in this case as well.

## 9 Appendix B: Data Description

TABLE B1: FREQUENCY OF SOURCE-HOST INTERACTIONS BY COUNTRIES

<b>Country</b>	<b>Source</b>	<b>Host</b>	<b>Country</b>	<b>Source</b>	<b>Host</b>
Australia	0.43	0.41	Korea	0.09	0.39
Austria	0.66	0.38	Mexico	0.00	0.33
Belgium	0.03	0.56	Netherlands	0.68	0.54
Canada	0.62	0.41	New Zealand	0.00	0.34
Denmark	0.35	0.46	Norway	0.64	0.33
Finland	0.65	0.34	Portugal	0.00	0.49
France	0.94	0.52	Spain	0.02	0.51
Germany	0.98	0.54	Sweden	0.84	0.45
Greece	0.00	0.36	Switzerland	0.27	0.47
Ireland	0.00	0.49	Turkey	0.02	0.36
Italy	0.81	0.46	United Kingdom	0.91	0.58
Japan	0.96	0.41	United States	0.87	0.64

TABLE B.2: DATA SOURCE

<b>Variables:</b>	<b>Source:</b>
Import of Goods	<i>Direction of Trade Statistics</i> , IMF
FDI Inflows	<i>International Direct Investment Database</i> , OECD
Unit Value of Manufactured Exports	<i>World Economic Outlook</i> , IMF
Population	<i>International Financial Statistics</i> , IMF
Distance	Shang Jin Wei's Website: <a href="http://www.nber.org/~wei">www.nber.org/~wei</a>
Bilateral Telephone Traffic	<i>Direction of Traffic:</i> <i>Trends in International Telephone Tariffs</i> , International Communication Union International Telecommunications Union
Education Attainment	Barro-Lee Dataset: <a href="http://www.nber.org/N...">www.nber.org/N...</a>
	....
Language	....
	....
ICRG index of financially sound rating (inverse of financial risk)	Ashoka Mody, IMF

## 10 Appendix C: OECD Countries - extensions

Insert Table C.1

## 11 Appendix D: OECD and Non-OECD Countries

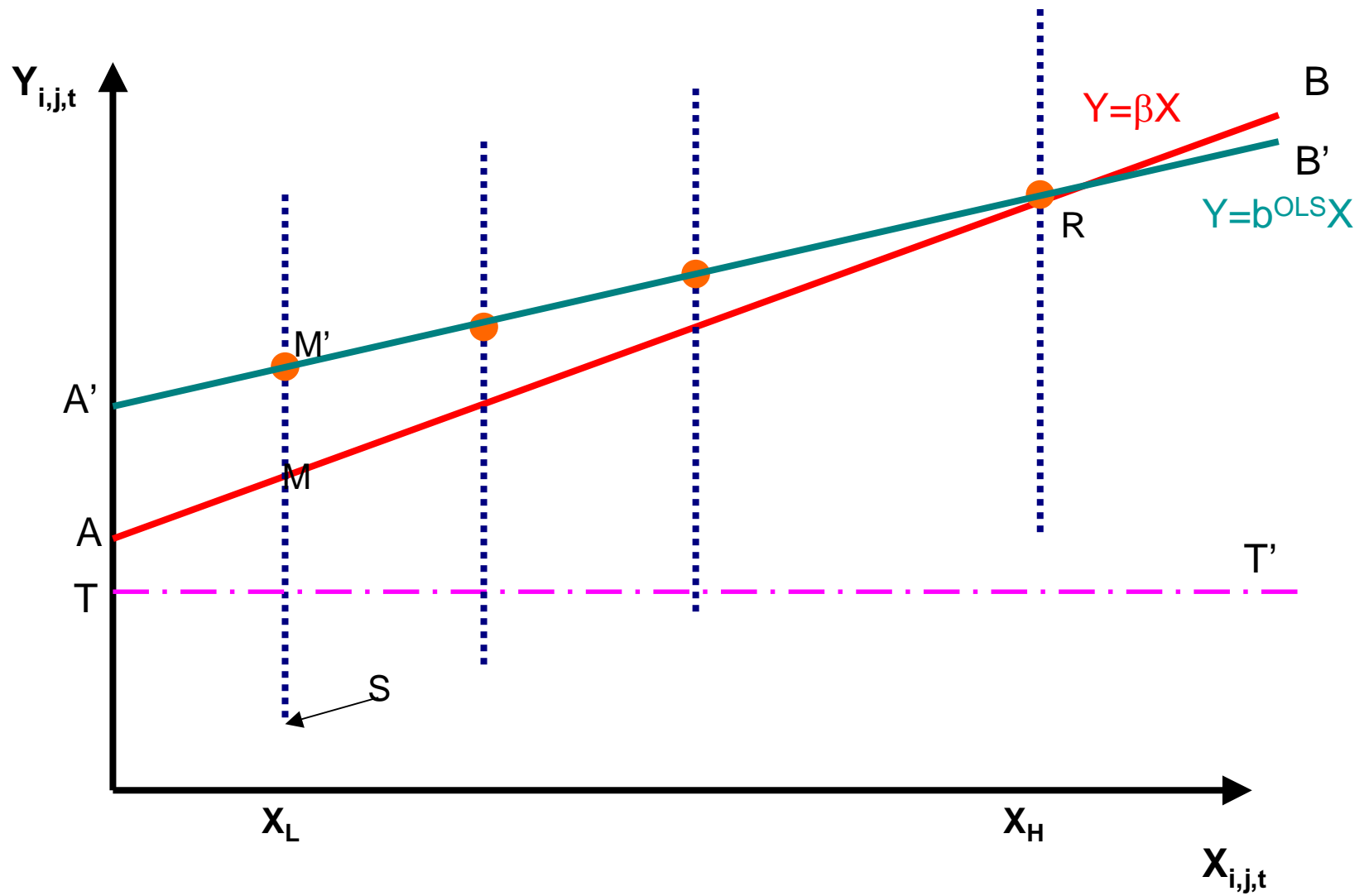
TABLE D1: LIST OF COUNTRIES, BY OBSERVED SOURCE/HOST STATUS

Country	Country
Argentina	Kuwait
Australia	Malaysia
Austria	Mexico
Belgium	Netherlands
Brazil	New Zealand
Canada	Nigeria
Chile	Norway
China	Peru
Columbia	Philippines
Denmark	Portugal
Ecuador	Saudi Arabia
Egypt	Singapore
Finland	South Africa
France	Spain
Germany	Sweden
Greece	Switzerland
Hong Kong	Taiwan
India	Thailand
Ireland	Turkey
Israel	United Kingdom
Italy	United States
Japan	Venezuela
Korea	

**Insert Table D.2**

**Insert Table D.3**

Figure 1: Selection Bias in theand Setup costs Presence of Setup Costs



**Table 1: Source-Host country pairs by GDP per capita**

Country	T u r k e y	M e x i c o	K o r e a	P o r t u g a l	G r e e c e	S p a i n	N e w Z e a l a n d	I r e l a n d	I t a l y	U K	C a n a d a	A u s t r a l i a	F i n l a n d	F r a n c e	G e r m a n y	N e t h e r l a n d s	S w e d e n	B e l g i u m	U S	A u s t r i a	N o r w a y	D e n m a r k	J a p a n	S w i t z e r l a n d	
Turkey		0	0	0	0	0	0	0	0	0.17	0	0	0	0	0.33	0	0	0	0	0	0	0	0	0	0
Mexico	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Korea	0	0		0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0.83	0	0	0	0.67	0
Portugal	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0
New Zealand	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0.83	0.17	0.5	1	1	1	0.33	1		1	1	0.67	0.5	1	1	1	0.83	1	0.83	0.67	0.83	0.83	1	0.67	0.67
UK	1	1	1	1	1	1	1	0.83	1		1	0.83	0.83	1	1	0.83	1	0.83	1	1	0.5	0.83	1	0.5	0.5
Canada	0	0.83	0.83	0.5	0.33	0.5	0.5	1	0.67	0.83		0.67	0	0.67	1	0.83	0.67	0.67	1	0.67	0.33	0.33	0.67	0.67	0.67
Australia	0.17	0	0.83	0	0	0	0.83	0.5	0.83	1	0.83		0	0.5	0.5	0.83	0	0.67	1	0	0	0	0.5	0.83	0.83
Finland	0.17	0	0	0.67	0	1	0	0.83	1	1	0.83	0.33		1	1	0.83	1	1	1	0.5	1	0.83	0.17	0.83	0.83
France	0.83	1	1	0.83	0.83	1	1	0.83	1	1	1	1	0.83		1	1	1	1	1	1	0.5	1	1	1	1
Germany	1	1	1	1	1	1	1	0.83	1	1	1	1	0.83	1		1	1	1	1	1	1	1	1	1	1
Netherlands	0.33	0.5	0.5	0.83	0.83	0.83	0	0.83	0.83	1	0.5	0.5	0.33	1	0.83		0.5	1	1	0.5	0.5	0.83	0.67	1	1
Sweden	1	0.67	0.67	0.83	0.83	0.83	0.5	0.83	0.67	1	0.67	0.83	1	1	0.83	1		0.83	1	0.83	1	0.83	1	0.67	0.67
Belgium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.67	0	0	0	0	0	0
US	0.83	0.67	0.83	0.83	0.5	1	1	1	1	1	0.83	1	0.83	1	1	0.83	0.83	1		0.5	0.67	0.83	1	1	1
Austria	0.67	0.67	0.5	0.67	0.5	0.67	0.17	0.67	0.83	0.83	0.83	0.67	0.5	0.83	1	1	0.5	1	1		0.33	0.33	0.17	1	1
Norway	0.33	0.17	0.33	0.83	0.17	0.67	0.5	0.83	0.5	0.83	0.67	0.5	0.83	0.83	0.5	0.83	0.83	0.67	0.83	0.83		0.83	0.5	0.83	0.83
Denmark	0	0	0	0.83	0	1	0	0	0	0.83	0	0	0	0.83	1	1	0.83	0.83	0.83	0	0		0	0	0
Japan	0.83	1	1	1	0.83	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.67		0.83
Switzerland	0.33	0	0	0.33	0.33	0.33	0	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0	0.33	0.17
Average	0.36	0.33	0.39	0.49	0.36	0.51	0.34	0.49	0.46	0.58	0.46	0.41	0.34	0.52	0.54	0.54	0.45	0.56	0.64	0.38	0.33	0.41	0.41	0.47	0.47

**Table 2: Source-Host country Pairs by GDP per capita: FDI Flows in Percentage of GDP**

Country	T u r k e y	M e x i c o	K o r e a	P o r t u g a l	G r e c e	S p a i n	N e w Z e a l a n d	I r e l a n d	I t a l y	U K	C a n a d a	A u s t r a l i a	F i n l a n d	F r a n c e	G e r m a n y	N e t h e r l a n d s	S w e d e n	B e l g i u m	U S	A u s t r i a	N o r w a y	D e n m a r k	J a p a n	S w i t z e r l a n d	
Turkey		0	0	0	0	0	0	0	0	0.03	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0
Mexico	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Korea	0	0		0	0	0	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0.32	0	0	0	0.03	0
Portugal	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.09	0	0	0	0	0
New Zealand	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0.66	0.29	0.13	3.64	1.53	2.51	0.05	5.73		2.7	0.49	0.19	0.26	2.24	0.42	12.2	0.75	20.1	0.41	1.15	0.15	0.27	0.08	7.82	
UK	4.45	3.55	0.67	12	7.97	8.76	32.3	52.1	3.47		9.63	27.1	0.99	6.91	2.4	62.7	8.66	15.8	10.7	2.12	15.6	3.6	0.36	17.3	
Canada	0	1.65	0.15	0.36	0.31	0.38	7.8	32.1	0.2	3.83		2.2	0	0.69	0.22	1.65	1.28	3.1	4	0.61	0.45	0.09	0.1	0.96	
Australia	0	0	0.14	0	0	0	43.7	4.44	0.21	5.79	1.02		0	0.05	0.04	1.18	0	0.2	1.23	0	0	0	0.03	0.03	
Finland	0.01	0	0	0.78	0	0.42	0	3.03	0.12	1.21	0.51	0.09		0.4	0.5	4.48	32.7	1.93	0.27	0.32	3.1	3.96	0.01	0.67	
France	3.27	1.19	0.99	8.42	2.75	12.1	1.42	7.91	6.57	11	4.35	3.56	0.53		3.36	27.2	6.71	44.5	3.83	2.1	2.41	1.84	0.07	16.6	
Germany	4.68	3.36	1.81	9.29	4.03	8.99	0.67	69	6.19	16.6	4.66	2.88	2.07	8.02		19.9	6.12	39.6	4.69	22.7	4.3	4.73	0.37	18.3	
Netherlands	0.98	1.49	0.48	5.77	3.8	5.48	0	35.1	1.24	13.1	1.35	2.24	0.46	3.34	1.25		6.5	40	3.25	1.31	2.84	5.65	0.09	9.97	
Sweden	0.18	0.46	0.27	0.78	0.11	0.79	0.14	21.1	0.52	4.31	0.31	0.43	35.4	1.56	0.56	9.93		2.73	0.99	0.6	15.4	6	0.02	3.34	
Belgium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.49	0	0	0	0	0	
US	3.42	36.2	4.78	6.84	1.22	6.54	26.1	127	6.35	57	47	27.4	4.06	8	4.29	60.3	5.65	35.7		4.24	16.8	3.85	1.26	39.9	
Austria	0.18	0.02	0.01	0.46	0.13	0.22	0.05	2.14	0.26	0.82	0.22	0.28	0.02	0.12	0.42	0.42	0.19	0.92	0.09		0.04	0.67	0	1.25	
Norway	0.02	0	0	1.14	0.01	0.42	0.18	4.08	0.1	1.56	0.88	0.06	1.81	0.35	0.08	1.63	8.37	0.92	0.2	0.66		7.11	0	0.18	
Denmark	0	0	0	0.81	0	1	0	0	0	3.1	0	0	0	0.39	0.21	2.37	7.52	0.9	0.21	0	0	0	0	0	
Japan	1.75	4.15	7.71	1.2	0.54	2.69	16.7	19.1	0.82	19.1	7.66	34.2	0.64	2.65	1.29	28.3	0.26	18.2	15.7	0.97	3.32	0.16		4.48	
Switzerland	0.68	0	0	0.88	1.39	0.44	0	5.5	0.51	4.88	1.3	1.43	1.64	0.63	1.02	3.23	2.84	3.3	1.01	1.42	0	0.51	0.01		
Average	0.88	2.28	0.75	2.28	1.03	2.21	5.62	16.9	1.15	6.32	3.45	4.44	2.08	1.54	0.7	10.2	3.81	9.9	2.07	1.66	2.8	1.67	0.11	5.26	

Table 3:  
Bilateral FDI Flows and Selection into Source-Host Pairs:  
OLS, Tobit Heckman Maximum Likelihood,  
Controlling for Country Fixed Effects,  
OECD Countries only

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored (in logs)			Equation:	
	All^^	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host^	0.260 (0.997)	0.445 (0.689)	-0.151 (2.294)	-0.040 (1.172)	0.107 (1.016)	0.330 (0.683)	-0.421 (0.769)
GDP per capita - source^	-0.653 (0.797)	0.640 (0.576)	-0.861 (2.421)	-0.174 (1.231)	-0.211 (1.059)	0.648 (0.558)	-0.338 (0.841)
Difference between source and host years of schooling	<b>0.367</b> <b>(0.146)*</b>	<b>0.018</b> <b>(0.096)</b>	<b>0.855</b> <b>(0.282)**</b>	<b>0.413</b> <b>(0.145)**</b>	<b>0.321</b> <b>(0.126)*</b>	<b>-0.020</b> <b>(0.101)</b>	<b>0.273</b> <b>(0.099)**</b>
Common language	<b>0.749</b> <b>(0.250)**</b>	<b>1.021</b> <b>(0.146)**</b>	<b>1.599</b> <b>(0.319)**</b>	<b>1.193</b> <b>(0.162)**</b>	<b>1.146</b> <b>(0.139)**</b>	<b>0.975</b> <b>(0.130)**</b>	<b>0.303</b> <b>(0.133)*</b>
Distance (in logs)	<b>-0.830</b> <b>(0.138)**</b>	<b>-0.677</b> <b>(0.095)**</b>	<b>-1.547</b> <b>(0.188)**</b>	<b>-1.003</b> <b>(0.095)**</b>	<b>-0.902</b> <b>(0.082)**</b>	<b>-0.633</b> <b>(0.092)**</b>	<b>-0.382</b> <b>(0.088)**</b>
Population - host^	6.825 (3.888)	-1.943 (2.369)	15.543 (7.776)*	5.511 (3.959)	3.269 (3.417)	-2.973 (2.373)	7.232 (2.592)**
Population - source^	5.023 (3.232)	-0.492 (3.029)	10.322 (9.094)	5.310 (4.648)	5.442 (4.040)	-1.289 (2.938)	2.013 (2.669)
Financial risk rating - host	<b>-0.029</b> <b>(0.027)</b>	<b>0.045</b> <b>(0.017)**</b>	<b>-0.048</b> <b>(0.062)</b>	<b>-0.006</b> <b>(0.032)</b>	<b>0.006</b> <b>(0.027)</b>	<b>0.050</b> <b>(0.017)**</b>	<b>-0.029</b> <b>(0.021)</b>
Financial risk rating - source	<b>-0.098</b> <b>(0.025)**</b>	<b>-0.035</b> <b>(0.026)</b>	<b>-0.235</b> <b>(0.081)**</b>	<b>-0.137</b> <b>(0.042)**</b>	<b>-0.118</b> <b>(0.036)**</b>	<b>-0.027</b> <b>(0.026)</b>	<b>-0.066</b> <b>(0.025)**</b>
Export of FDI flows from i to j six years ago (=1 if yes)							0.838 (0.124)**
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )							<b>-0.429</b> <b>(0.196)</b>
Inverse Mills ratio							<b>-0.429</b> <b>(0.240)</b>
Observations	2116	995	2116	2116	2116	2116	2116
Left-censored observations	--	--	1121	1141	1174	--	--
Uncensored observations	--	--	995	975	942		

Note:

^ in logs

^^ Replacing the zeros by the lowest observed flow between any s-h country pair in the sample.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Table 4  
 Bilateral FDI Flows and Selection into Source-Host Pairs:  
 OLS, Tobit Heckman Maximum Likelihood,  
 Controlling for Country Fixed Effects and Past Liquidations  
 OECD Countries only

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored (in logs)			Equation:	
	All^^	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host^	0.219 (0.987)	0.440 (0.690)	-0.287 (2.288)	-0.104 (1.171)	0.064 (1.016)	0.350 (0.682)	-0.475 (0.759)
GDP per capita - source^	-0.543 (0.796)	0.584 (0.580)	-0.460 (2.418)	-0.017 (1.232)	-0.104 (1.060)	0.581 (0.562)	-0.202 (0.845)
Difference between source and host years of schooling	<b>0.386</b> <b>(0.148)**</b>	<b>0.012</b> <b>(0.097)</b>	<b>0.917</b> <b>(0.282)**</b>	<b>0.438</b> <b>(0.145)**</b>	<b>0.338</b> <b>(0.126)**</b>	<b>-0.029</b> <b>(0.103)</b>	<b>0.288</b> <b>(0.102)**</b>
Common language	<b>0.762</b> <b>(0.254)**</b>	<b>1.014</b> <b>(0.146)**</b>	<b>1.655</b> <b>(0.319)**</b>	<b>1.217</b> <b>(0.162)**</b>	<b>1.162</b> <b>(0.139)**</b>	<b>0.965</b> <b>(0.129)**</b>	<b>0.315</b> <b>(0.138)*</b>
Distance (in logs)	<b>-0.836</b> <b>(0.139)**</b>	<b>-0.674</b> <b>(0.095)**</b>	<b>-1.572</b> <b>(0.187)**</b>	<b>-1.013</b> <b>(0.095)**</b>	<b>-0.909</b> <b>(0.082)**</b>	<b>-0.629</b> <b>(0.092)**</b>	<b>-0.393</b> <b>(0.091)**</b>
Population - host^	6.794 (3.894)	-1.967 (2.384)	15.401 (7.756)*	5.460 (3.956)	3.237 (3.417)	-2.960 (2.393)	7.232 (2.626)**
Population - source^	5.395 (3.220)	-0.703 (3.032)	12.083 (9.102)	6.000 (4.659)	5.892 (4.050)	-1.536 (2.933)	2.828 (2.724)
Financial risk rating - host	-0.028 (0.027)	0.045 (0.017)**	-0.045 (0.061)	-0.005 (0.032)	0.007 (0.027)	0.050 (0.017)**	-0.029 (0.021)
Financial risk rating - source	-0.098 (0.024)**	-0.034 (0.026)	-0.245 (0.081)**	-0.141 (0.042)**	-0.120 (0.036)**	-0.025 (0.026)	-0.071 (0.025)**
Negative flows from I to j three years ago (=1 if yes)^^^	<b>0.661</b> <b>(0.423)</b>	<b>-0.169</b> <b>(0.152)</b>	<b>1.592</b> <b>(0.508)**</b>	<b>0.610</b> <b>(0.257)*</b>	<b>0.418</b> <b>(0.222)</b>	<b>-0.243</b> <b>(0.155)</b>	<b>0.505</b> <b>(0.164)**</b>
Export of FDI flows from i to j six years ago (=1 if yes)						<b>0.841</b> <b>(0.127)**</b>	
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )						<b>-0.425</b> <b>(0.206)</b>	
Inverse Mills ratio						<b>-0.486</b> <b>(0.252)</b>	
Observations	2116	995	2116	2116	2116	2116	2116
Left-censored observations	--	--	1121	1141	1174	--	--
Uncensored observations	--	--	995	975	942		

Note:

^ in logs

^^ Replacing the zeros by the lowest observed flow between any s-h country pair in the sample.

^^^ FDI flows from country i to country j being negative.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Table C.1

## Bilateral FDI Flows and Selection into Source-Host Pairs:

OLS, Tobit Heckman Maximum Likelihood,

Without Country Fixed Effects,

OECD Countries only

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored (in logs)			Equation:	
	All^^	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host^	0.164 (0.313)	0.366 (0.212)	0.084 (0.455)	0.232 (0.238)	0.192 (0.208)	0.365 (0.213)	-0.232 (0.119)
GDP per capita - source^	3.923 (0.265)**	0.905 (0.357)*	9.034 (0.571)**	4.611 (0.298)**	3.857 (0.259)**	0.630 (0.346)	1.166 (0.152)**
Difference between source and host years of schooling	-0.036 (0.052)	-0.050 (0.031)	-0.020 (0.080)	-0.040 (0.042)	-0.037 (0.037)	-0.053 (0.031)	0.012 (0.020)
Common language	0.522 (0.387)	1.146 (0.241)**	0.905 (0.405)*	0.847 (0.210)**	0.873 (0.181)**	1.097 (0.231)**	-0.038 (0.110)
Distance (in logs)	-0.780 (0.129)**	-0.532 (0.078)**	-1.482 (0.147)**	-0.888 (0.077)**	-0.802 (0.067)**	-0.474 (0.078)**	-0.128 (0.041)**
Population - host^	0.720 (0.129)**	0.662 (0.077)**	1.348 (0.150)**	0.882 (0.079)**	0.812 (0.068)**	0.614 (0.079)**	0.089 (0.040)*
Population - source^	2.117 (0.089)**	0.799 (0.066)**	3.278 (0.155)**	1.908 (0.082)**	1.686 (0.071)**	0.680 (0.072)**	0.378 (0.045)**
Financial risk rating - host	0.115 (0.031)**	0.109 (0.020)**	0.220 (0.051)**	0.145 (0.027)**	0.141 (0.024)**	0.103 (0.020)**	0.028 (0.013)*
Financial risk rating - source	0.050 (0.027)	0.086 (0.027)**	0.262 (0.066)**	0.144 (0.035)**	0.132 (0.031)**	0.077 (0.027)**	0.026 (0.015)
Export of FDI flows from i to j six years ago (=1 if yes)							1.613 (0.091)**
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )							<b>-0.383</b> <b>(0.089)</b>
Inverse Mills ratio							<b>-0.383</b> <b>(0.089)</b>
Observations	2116	995	2116	2116	2116	2116	2116
Left-censored observations	--	--	1121	1141	1174	--	--
Uncensored observations	--	--	995	975	942		

Note:

^ in logs

^^ Replacing the zeros by the lowest observed flow between any s-h country pair in the sample.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Table D.2:  
Bilateral FDI Flows and Selection into Source-Host Pairs:  
OLS, Tobit Heckman Maximum Likelihood,  
Controlling for Country Fixed Effects,  
OECD and Non-OECD Countries.

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored			Equation:	
	All <sup>^^</sup>	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host <sup>^</sup>	0.239 (0.175)	0.116 (0.450)	-1.463 (1.189)	-0.892 (0.636)	-0.367 (0.468)	0.148 (0.446)	-0.370 (0.383)
GDP per capita - source <sup>^</sup>	0.066 (0.083)	0.437 (0.457)	0.637 (1.993)	0.577 (0.982)	0.619 (0.624)	0.388 (0.446)	0.399 (0.707)
Difference between source and host years of schooling	<b>0.211</b> <b>(0.064)**</b>	<b>0.116</b> <b>(0.086)</b>	<b>0.708</b> <b>(0.237)**</b>	<b>0.388</b> <b>(0.120)**</b>	<b>0.188</b> <b>(0.084)*</b>	<b>0.083</b> <b>(0.088)</b>	<b>0.227</b> <b>(0.075)**</b>
Common language	<b>0.383</b> <b>(0.133)**</b>	<b>0.846</b> <b>(0.123)**</b>	<b>1.647</b> <b>(0.257)**</b>	<b>1.094</b> <b>(0.126)**</b>	<b>0.879</b> <b>(0.080)**</b>	<b>0.792</b> <b>(0.111)**</b>	<b>0.301</b> <b>(0.099)**</b>
Distance (in logs)	<b>-0.633</b> <b>(0.068)**</b>	<b>-0.800</b> <b>(0.077)**</b>	<b>-1.716</b> <b>(0.149)**</b>	<b>-1.113</b> <b>(0.073)**</b>	<b>-0.803</b> <b>(0.046)**</b>	<b>-0.745</b> <b>(0.074)**</b>	<b>-0.413</b> <b>(0.073)**</b>
Population - host <sup>^</sup>	2.961 (0.768)**	1.585 (1.355)	17.966 (3.704)**	7.797 (1.872)**	3.452 (1.298)**	0.577 (1.359)	5.396 (1.229)**
Population - source <sup>^</sup>	-2.338 (0.459)**	1.012 (2.561)	-8.367 (7.509)	-1.779 (3.736)	2.949 (2.532)	1.352 (2.480)	-5.542 (2.305)*
Financial risk rating - host	<b>-0.014</b> <b>(0.008)</b>	<b>0.036</b> <b>(0.011)**</b>	<b>-0.027</b> <b>(0.037)</b>	<b>0.001</b> <b>(0.019)</b>	<b>0.019</b> <b>(0.013)</b>	<b>0.038</b> <b>(0.011)**</b>	<b>-0.020</b> <b>(0.012)</b>
Financial risk rating - source	<b>-0.058</b> <b>(0.007)**</b>	<b>-0.056</b> <b>(0.025)*</b>	<b>-0.261</b> <b>(0.070)**</b>	<b>-0.162</b> <b>(0.035)**</b>	<b>-0.120</b> <b>(0.024)**</b>	<b>-0.044</b> <b>(0.025)</b>	<b>-0.070</b> <b>(0.021)**</b>
Export of FDI flows from i to j six years ago (=1 if yes)							0.721 (0.099)**
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )							<b>-0.471</b> <b>(0.148)</b>
Inverse Mills ratio							<b>-0.559</b> <b>(0.192)</b>
Observations	6724	1482	6724	6724	6724	6724	6724
Left-censored observations	--	--	5242	5301	5605	--	--
Uncensored observations	--	--	1482	1423	1119		

Note:

<sup>^</sup> in logs

<sup>^^</sup> Replacing the zeros by the lowest observed flow between any s-h country pair in the sample.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Table D.3:  
Bilateral FDI Flows and Selection into Source-Host Pairs:  
OLS, Tobit Heckman Maximum Likelihood,  
Without Country Fixed Effects,  
OECD and Non-OECD Countries.

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored			Equation:	
	All <sup>^^</sup>	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host <sup>^</sup>	0.602 (0.089)**	0.811 (0.095)**	1.479 (0.213)**	0.990 (0.107)**	0.774 (0.073)**	0.757 (0.095)**	0.040 (0.050)
GDP per capita - source <sup>^</sup>	1.965 (0.084)**	0.764 (0.306)*	9.615 (0.453)**	4.736 (0.225)**	2.573 (0.146)**	0.478 (0.298)	1.203 (0.099)**
Difference between source and host years of schooling	-0.131 (0.027)**	-0.087 (0.027)**	-0.153 (0.064)*	-0.113 (0.032)**	-0.079 (0.022)**	-0.085 (0.026)**	-0.001 (0.016)
Common language	0.348 (0.149)*	1.057 (0.172)**	1.224 (0.320)**	0.967 (0.159)**	0.951 (0.104)**	1.006 (0.165)**	0.021 (0.079)
Distance (in logs)	-0.621 (0.085)**	-0.496 (0.066)**	-1.660 (0.133)**	-0.933 (0.066)**	-0.625 (0.043)**	-0.426 (0.066)**	-0.136 (0.034)**
Population - host <sup>^</sup>	0.470 (0.063)**	0.681 (0.063)**	1.680 (0.119)**	1.005 (0.060)**	0.729 (0.040)**	0.616 (0.064)**	0.151 (0.030)**
Population - source <sup>^</sup>	1.483 (0.058)**	0.857 (0.054)**	3.859 (0.125)**	2.125 (0.063)**	1.364 (0.043)**	0.707 (0.062)**	0.433 (0.035)**
Financial risk rating - host	0.047 (0.009)**	0.063 (0.010)**	0.202 (0.028)**	0.116 (0.014)**	0.084 (0.010)**	0.055 (0.010)**	0.021 (0.007)**
Financial risk rating - source	0.037 (0.007)**	0.106 (0.024)**	0.339 (0.050)**	0.172 (0.026)**	0.127 (0.018)**	0.093 (0.024)**	0.035 (0.008)**
Export of FDI flows from i to j six years ago (=1 if yes)							1.663 (0.075)**
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )						<b>-0.382</b> <b>(0.062)</b>	
Inverse Mills ratio						<b>-0.618</b> <b>(0.111)</b>	
Observations	6724	1482	6724	6724	6724	6724	6724
Left-censored observations	--	--	5242	5301	5605	--	--
Uncensored observations	--	--	1482	1423	1119		

Note:

<sup>^</sup> in logs

<sup>^^</sup> Replacing the zeros by the lowest observed flow between any s-h country pair in the sample.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

## 9 Appendix B: Data Description

TABLE B1: LIST OF COUNTRIES BY SOURCE-HOST STATUS

Country	Source	Host	Country	Source	Host
Australia	+	+			
Austria	+	+	Mexico		+
Belgium		+	Netherlands	+	+
			New Zealand		+
Canada	+	+	Norway	+	+
Denmark	+	+	Portugal		+
Finland	+	+			
France	+	+	Spain		+
Germany	+	+	Sweden	+	+
Greece		+	Switzerland*		+
Ireland		+	Turkey	+	+
			United Kingdom	+	+
Italy	+	+	United States	+	+
Japan	+	+			
Korea	+	+			

*Notes:*

\* OECD countries

TABLE A1.2: DATA SOURCE

<b>Variables:</b>	<b>Source:</b>
Import of Goods	<i>Direction of Trade Statistics</i> , IMF
FDI Inflows	<i>International Direct Investment Database</i> , OECD
Unit Value of Manufactured Exports	<i>World Economic Outlook</i> , IMF
Population	<i>International Financial Statistics</i> , IMF
Distance	Shang Jin Wei's Website: <a href="http://www.nber.org/~wei">www.nber.org/~wei</a>
Bilateral Telephone Traffic	<i>Direction of Traffic:</i> <i>Trends in International Telephone Tariffs</i> , International Communication Union International Telecommunications Union
Education Attainment	Barro-Lee Dataset: <a href="http://www.nber.org/N...">www.nber.org/N...</a> ....
Language	.... ....
ICRG index of financially sound rating (inverse of financial risk)	Ashoka Mody, IMF

Figure 1: Selection Bias in theand Setup costs Presence of Setup Costs

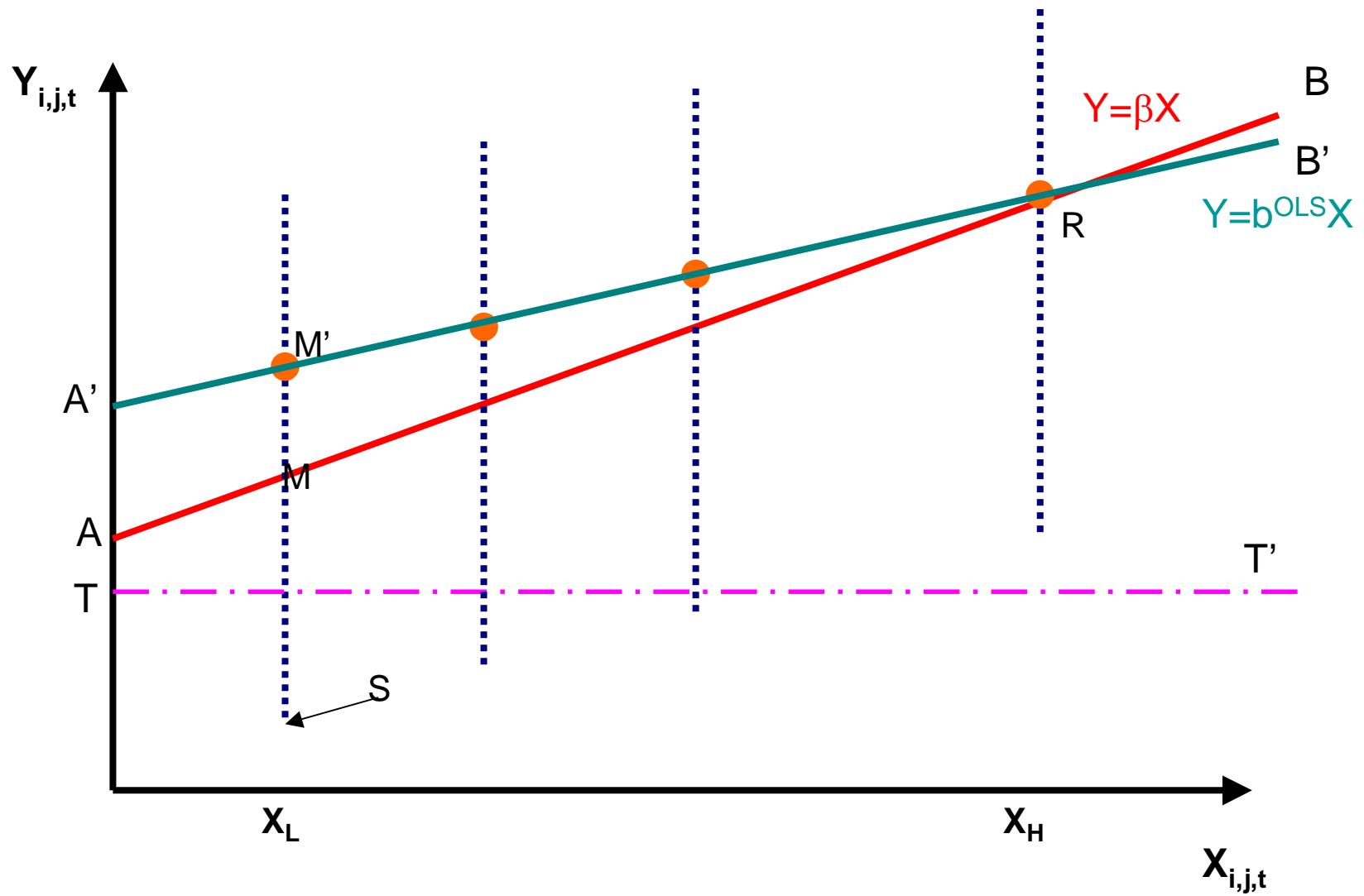


Table 1: Source-Host country pairs by GDP per capita

Country	Turkey	Mexico	Korea	Portugal	Greece	Spain	Netherlands	Ireland	UK	Canada	Australia	Finland	France	Germany	Sweden	Belgium	US	Austria	Norway	Denmark	Japan	Switzerland	
Turkey		0	0	0	0	0	0	0	0.17	0	0	0	0	0.33	0	0	0	0	0	0	0	0	0
Mexico	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Korea	0	0		0	0	0	0	0	0.5	0	0	0	0	0	0	0.83	0	0	0	0	0.67	0	0
Portugal	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0
New Zealand	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0.83	0.17	0.5	1	1	1	0.33	1	1	1	0.67	0.5	1	1	1	0.83	1	0.83	0.67	0.83	0.83	1	0.67
UK	1	1	1	1	1	1	1	0.83	1	1	0.83	0.83	1	1	1	0.83	1	0.83	1	0.5	0.83	1	0.5
Canada	0	0.83	0.83	0.5	0.33	0.5	0.5	1	0.67	0.83	0.67	0	0.67	1	0.83	0.67	0.67	1	0.67	0.33	0.33	0.67	0.67
Australia	0.17	0	0.83	0	0	0	0.83	0.5	0.83	1	0.83	0	0.5	0.5	0.83	0	0.67	1	0	0	0	0.5	0.83
Finland	0.17	0	0	0.67	0	1	0	0.83	1	1	0.83	0.33	1	1	0.83	1	1	1	0.5	1	0.83	0.17	0.83
France	0.83	1	1	0.83	0.83	1	1	0.83	1	1	1	1	0.83	1	1	1	1	1	1	0.5	1	1	1
Germany	1	1	1	1	1	1	1	0.83	1	1	1	1	0.83	1	1	1	1	1	1	1	1	1	1
Netherlands	0.33	0.5	0.5	0.83	0.83	0.83	0	0.83	0.83	1	0.5	0.5	0.33	1	0.83	0.5	1	1	0.5	0.5	0.83	0.67	1
Sweden	1	0.67	0.67	0.83	0.83	0.83	0.5	0.83	0.67	1	0.67	0.83	1	1	0.83	1	0.83	1	0.83	1	0.83	1	0.67
Belgium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
US	0.83	0.67	0.83	0.83	0.5	1	1	1	1	1	0.83	1	0.83	1	1	0.83	0.83	1	0.5	0.67	0.83	1	1
Austria	0.67	0.67	0.5	0.67	0.5	0.67	0.17	0.67	0.83	0.83	0.83	0.67	0.5	0.83	1	1	0.5	1	1	0.33	0.33	0.17	1
Norway	0.33	0.17	0.33	0.83	0.17	0.67	0.5	0.83	0.5	0.83	0.67	0.5	0.83	0.83	0.5	0.83	0.83	0.67	0.83	0.83	0.83	0.5	0.83
Denmark	0	0	0	0.83	0	1	0	0	0.83	0	0	0	0.83	1	1	0.83	0.83	0.83	0	0	0	0	0
Japan	0.83	1	1	1	0.83	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.67	0.83
Switzerland	0.33	0	0	0.33	0.33	0.33	0	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.17	0.33
Average	0.36	0.33	0.39	0.49	0.36	0.51	0.34	0.49	0.46	0.58	0.46	0.41	0.34	0.52	0.54	0.54	0.45	0.56	0.64	0.38	0.33	0.41	0.41

**Table 2: Source-Host country Pairs by GDP per capita: FDI Flows in Percentage of GDP**

Country	T u r k e y	M e x i c o	K o r e a	P o r t u g a l	G r e c e	S p a i n	N e w Z e a l a n d	I r e l a n d	I t a l y	U K	C a n a d a	A u s t r a l i a	F i n l a n d	F r a n c e	G e r m a n y	N e t h e r l a n d s	S w e d e n	B e l g i u m	U S	A u s t r i a	
Turkey		0	0	0	0	0	0	0	0	0.03	0	0	0	0	0.02	0	0	0	0	0	0
Mexico	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Korea	0	0		0	0	0	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0.32	0
Portugal	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0.09	0
New Zealand	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0.66	0.29	0.13	3.64	1.53	2.51	0.05	5.73		2.7	0.49	0.19	0.26	2.24	0.42	12.2	0.75	20.1	0.41	1.15	
UK	4.45	3.55	0.67	12	7.97	8.76	32.3	52.1	3.47		9.63	27.1	0.99	6.91	2.4	62.7	8.66	15.8	10.7	2.12	
Canada	0	1.65	0.15	0.36	0.31	0.38	7.8	32.1	0.2	3.83		2.2	0	0.69	0.22	1.65	1.28	3.1	4	0.61	
Australia	0	0	0.14	0	0	0	43.7	4.44	0.21	5.79	1.02		0	0.05	0.04	1.18	0	0.2	1.23	0	
Finland	0.01	0	0	0.78	0	0.42	0	3.03	0.12	1.21	0.51	0.09		0.4	0.5	4.48	32.7	1.93	0.27	0.32	
France	3.27	1.19	0.99	8.42	2.75	12.1	1.42	7.91	6.57	11	4.35	3.56	0.53		3.36	27.2	6.71	44.5	3.83	2.1	
Germany	4.68	3.36	1.81	9.29	4.03	8.99	0.67	69	6.19	16.6	4.66	2.88	2.07	8.02		19.9	6.12	39.6	4.69	22.7	
Netherlands	0.98	1.49	0.48	5.77	3.8	5.48	0	35.1	1.24	13.1	1.35	2.24	0.46	3.34	1.25		6.5	40	3.25	1.31	
Sweden	0.18	0.46	0.27	0.78	0.11	0.79	0.14	21.1	0.52	4.31	0.31	0.43	35.4	1.56	0.56	9.93		2.73	0.99	0.6	
Belgium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.49	0
US	3.42	36.2	4.78	6.84	1.22	6.54	26.1	127	6.35	57	47	27.4	4.06	8	4.29	60.3	5.65	35.7		4.24	
Austria	0.18	0.02	0.01	0.46	0.13	0.22	0.05	2.14	0.26	0.82	0.22	0.28	0.02	0.12	0.42	0.42	0.19	0.92	0.09		
Norway	0.02	0	0	1.14	0.01	0.42	0.18	4.08	0.1	1.56	0.88	0.06	1.81	0.35	0.08	1.63	8.37	0.92	0.2	0.66	
Denmark	0	0	0	0.81	0	1	0	0	0	3.1	0	0	0	0.39	0.21	2.37	7.52	0.9	0.21	0	
Japan	1.75	4.15	7.71	1.2	0.54	2.69	16.7	19.1	0.82	19.1	7.66	34.2	0.64	2.65	1.29	28.3	0.26	18.2	15.7	0.97	
Switzerland	0.68	0	0	0.88	1.39	0.44	0	5.5	0.51	4.88	1.3	1.43	1.64	0.63	1.02	3.23	2.84	3.3	1.01	1.42	
Average	0.88	2.28	0.75	2.28	1.03	2.21	5.62	16.9	1.15	6.32	3.45	4.44	2.08	1.54	0.7	10.2	3.81	9.9	2.07	1.66	

Table 3:  
Bilateral FDI Flows and Selection into Source-Host Pairs:  
OLS, Tobit Heckman Maximum Likelihood, controlling for Endogeneity and Country Fixed Effects  
OECD Countries only

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored (in logs)			Equation:	
	All <sup>^^</sup>	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host <sup>^</sup>	0.260 (0.997)	0.445 (0.689)	-0.151 (2.294)	-0.040 (1.172)	0.107 (1.016)	0.330 (0.683)	-0.421 (0.769)
GDP per capita - source <sup>^</sup>	-0.653 (0.797)	0.640 (0.576)	-0.861 (2.421)	-0.174 (1.231)	-0.211 (1.059)	0.648 (0.558)	-0.338 (0.841)
Difference between source and host years of schooling	<b>0.367</b> <b>(0.146)*</b>	<b>0.018</b> <b>(0.096)</b>	<b>0.855</b> <b>(0.282)**</b>	<b>0.413</b> <b>(0.145)**</b>	<b>0.321</b> <b>(0.126)*</b>	<b>-0.020</b> <b>(0.101)</b>	<b>0.273</b> <b>(0.099)**</b>
Common language	<b>0.749</b> <b>(0.250)**</b>	<b>1.021</b> <b>(0.146)**</b>	<b>1.599</b> <b>(0.319)**</b>	<b>1.193</b> <b>(0.162)**</b>	<b>1.146</b> <b>(0.139)**</b>	<b>0.975</b> <b>(0.130)**</b>	<b>0.303</b> <b>(0.133)*</b>
Distance (in logs)	<b>-0.830</b> <b>(0.138)**</b>	<b>-0.677</b> <b>(0.095)**</b>	<b>-1.547</b> <b>(0.188)**</b>	<b>-1.003</b> <b>(0.095)**</b>	<b>-0.902</b> <b>(0.082)**</b>	<b>-0.633</b> <b>(0.092)**</b>	<b>-0.382</b> <b>(0.088)**</b>
Population - host <sup>^</sup>	6.825 (3.888)	-1.943 (2.369)	15.543 (7.776)*	5.511 (3.959)	3.269 (3.417)	-2.973 (2.373)	7.232 (2.592)**
Population - source <sup>^</sup>	5.023 (3.232)	-0.492 (3.029)	10.322 (9.094)	5.310 (4.648)	5.442 (4.040)	-1.289 (2.938)	2.013 (2.669)
Financial risk rating - host	<b>-0.029</b> <b>(0.027)</b>	<b>0.045</b> <b>(0.017)**</b>	<b>-0.048</b> <b>(0.062)</b>	<b>-0.006</b> <b>(0.032)</b>	<b>0.006</b> <b>(0.027)</b>	<b>0.050</b> <b>(0.017)**</b>	<b>-0.029</b> <b>(0.021)</b>
Financial risk rating - source	<b>-0.098</b> <b>(0.025)**</b>	<b>-0.035</b> <b>(0.026)</b>	<b>-0.235</b> <b>(0.081)**</b>	<b>-0.137</b> <b>(0.042)**</b>	<b>-0.118</b> <b>(0.036)**</b>	<b>-0.027</b> <b>(0.026)</b>	<b>-0.066</b> <b>(0.025)**</b>
Export of FDI flows from i to j six years ago (=1 if yes)							0.838 (0.124)**
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )							<b>-0.429</b> <b>(0.196)</b>
Inverse Mills ratio							<b>-0.429</b> <b>(0.240)</b>
Observations	2116	995	2116	2116	2116	2116	2116
Left-censored observations	--	--	1121	1141	1174	--	--
Uncensored observations	--	--	995	975	942		

Note:

<sup>^</sup> in logs

<sup>^^</sup> Replacing the zeros by the lowest observe flow between any s-h country pair in the sample.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Table A.3:  
Bilateral FDI Flows and Selection into Source-Host Pairs:  
OLS, Tobit Heckman Maximum Likelihood, controlling for Endogeneity and Country Fixed Effects  
All Countries.

Variables	Panel A: OLS		Panel B: Tobit Correction			Panel C: Heckman selection	
	Sample:		Low censored			Equation:	
	All <sup>^^</sup>	Intensive margin	lowest	0	3	FDI Flows	Selection
GDP per capita - host <sup>^</sup>	0.239 (0.175)	0.116 (0.450)	-1.463 (1.189)	-0.892 (0.636)	-0.367 (0.468)	0.148 (0.446)	-0.370 (0.383)
GDP per capita - source <sup>^</sup>	0.066 (0.083)	0.437 (0.457)	0.637 (1.993)	0.577 (0.982)	0.619 (0.624)	0.388 (0.446)	0.399 (0.707)
Difference between source and host years of schooling	<b>0.211</b> <b>(0.064)**</b>	<b>0.116</b> <b>(0.086)</b>	<b>0.708</b> <b>(0.237)**</b>	<b>0.388</b> <b>(0.120)**</b>	<b>0.188</b> <b>(0.084)*</b>	<b>0.083</b> <b>(0.088)</b>	<b>0.227</b> <b>(0.075)**</b>
Common language	<b>0.383</b> <b>(0.133)**</b>	<b>0.846</b> <b>(0.123)**</b>	<b>1.647</b> <b>(0.257)**</b>	<b>1.094</b> <b>(0.126)**</b>	<b>0.879</b> <b>(0.080)**</b>	<b>0.792</b> <b>(0.111)**</b>	<b>0.301</b> <b>(0.099)**</b>
Distance (in logs)	<b>-0.633</b> <b>(0.068)**</b>	<b>-0.800</b> <b>(0.077)**</b>	<b>-1.716</b> <b>(0.149)**</b>	<b>-1.113</b> <b>(0.073)**</b>	<b>-0.803</b> <b>(0.046)**</b>	<b>-0.745</b> <b>(0.074)**</b>	<b>-0.413</b> <b>(0.073)**</b>
Population - host <sup>^</sup>	2.961 (0.768)**	1.585 (1.355)	17.966 (3.704)**	7.797 (1.872)**	3.452 (1.298)**	0.577 (1.359)	5.396 (1.229)**
Population - source <sup>^</sup>	-2.338 (0.459)**	1.012 (2.561)	-8.367 (7.509)	-1.779 (3.736)	2.949 (2.532)	1.352 (2.480)	-5.542 (2.305)*
Financial risk rating - host	<b>-0.014</b> <b>(0.008)</b>	<b>0.036</b> <b>(0.011)**</b>	<b>-0.027</b> <b>(0.037)</b>	<b>0.001</b> <b>(0.019)</b>	<b>0.019</b> <b>(0.013)</b>	<b>0.038</b> <b>(0.011)**</b>	<b>-0.020</b> <b>(0.012)</b>
Financial risk rating - source	<b>-0.058</b> <b>(0.007)**</b>	<b>-0.056</b> <b>(0.025)*</b>	<b>-0.261</b> <b>(0.070)**</b>	<b>-0.162</b> <b>(0.035)**</b>	<b>-0.120</b> <b>(0.024)**</b>	<b>-0.044</b> <b>(0.025)</b>	<b>-0.070</b> <b>(0.021)**</b>
Export of FDI flows from i to j six years ago (=1 if yes)						0.721 (0.099)**	
Correlation (U <sub>i,j</sub> , V <sub>i,j</sub> )						<b>-0.471</b> <b>(0.148)</b>	
Inverse Mills ratio						<b>-0.559</b> <b>(0.192)</b>	
Observations	6724	1482	6724	6724	6724	6724	6724
Left-censored observations	--	--	5242	5301	5605	--	--
Uncensored observations	--	--	1482	1423	1119		

Note:

<sup>^</sup> in logs

<sup>^^</sup> Replacing the zeros by the lowest observe flow between any s-h country pair in the sample.

All specifications include year fixed-effects.

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%