



DYNREG



CITIZENS AND GOVERNANCE IN A
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**Dynamic Regions in a Knowledge-Driven Global Economy:
Lessons and Implications for the European Union - DYNREG**

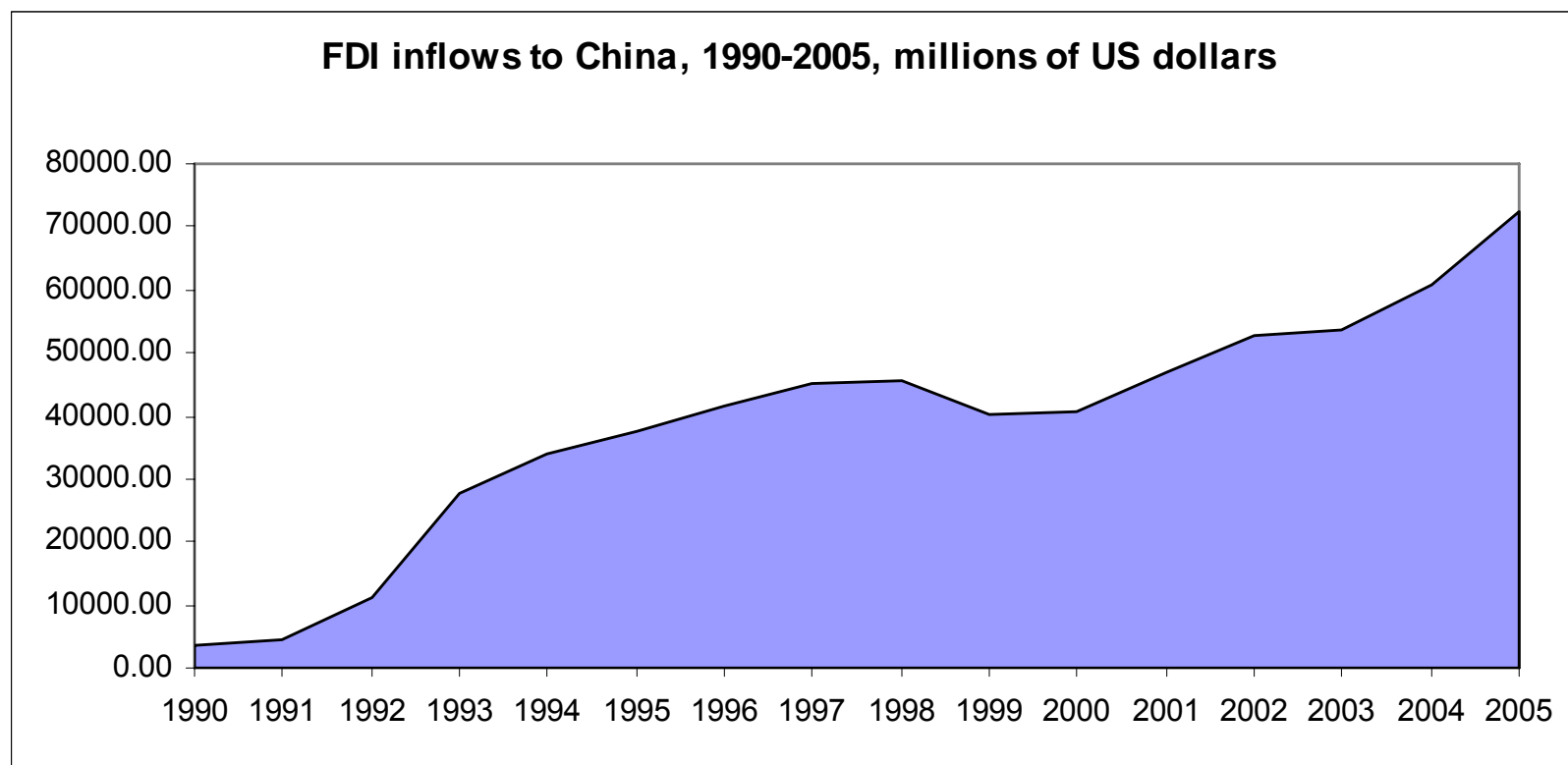
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**Is FDI into China crowding out the FDI into the
European Union?**

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FDI inflows into China have surged since 1990...



Source: Own calculations based on WIR, UNCTAD, 2006

Research Questions

- Has the surge in the FDI inflows into China in recent years come at the expense of FDI inflows into EU and other countries?
- Has this impact changed over time?
- Are spillover effects different for horizontal and vertical FDI?

Theoretical Framework

The theory of multinational enterprises

Markusen (1984), Helpman (1984), Markusen and Venables (1996, 1997, 1998)

Bilateral FDI flows: a function of countries' characteristics
(size, relative endowments) and transaction costs

Horizontal FDI (market-seeking):

same goods and services in multiple locations
concentrated in large countries and with similar relative
endowments

Vertical FDI (efficiency-seeking):

geographical fragmentation of production by stages
concentrated in relatively labour abundant countries

The Impact of FDI Inflows into China on FDI Inflows into Other Countries

- **FDI inflows to China and other Asian countries**
 - positively correlated (Zou and Lall, 2005; Eichengreen and Tong, 2006; Wang, Wei and Liu, 2007)
 - negatively correlated (Mercereau, 2005)
- **FDI inflows into China and Latin America**
 - no significant effect (Cravino, Lederman, and Olarreaga, 2007)
- **FDI inflows into China and OECD countries**
 - negative effect (Eichengreen and Tong, 2006)

Value Added

- The impact of FDI into China on EU countries, 1990-2004
- Spillover effects to horizontal and vertical FDI, 1990-2004
- Estimate a theory-based model, control for unobserved heterogeneity and simultaneity effects

Model Specifications

Determinants of bilateral FDI

$$\ln(FDI_{ij,t+1}) = a_0 + a_1 \ln\left(\frac{GDP_{it} * GDP_{jt}}{DIST_{ij}}\right) + a_2 |\ln GDP_{CAP_{it}} - \ln GDP_{CAP_{jt}}| + a_3 INST_{jt} + \alpha_i + \beta_j + \tau_t + \varepsilon_{ijt}$$

The impact of FDI into China on the FDI into other countries

$$\ln(FDI_{ij,t+1}) = b_0 + b_1 \ln\left(\frac{GDP_{it} * GDP_{jt}}{DIST_{ij}}\right) + b_2 |\ln GDP_{CAP_{it}} - \ln GDP_{CAP_{jt}}| + b_3 INST_{jt} + b_4 \ln FDICN_{it} + \alpha_i + \beta_j + \tau_t + \varepsilon_{ijt}$$

$$\ln FDICN_{it} = c_0 + c_1 \ln\left(\frac{GDP_{it} * GDP_{CNt}}{DIST_{iCN}}\right) + c_2 |\ln GDP_{CAP_{it}} - \ln GDP_{CAP_{CNt}}| + \psi_{it}$$

The “China effect” on horizontal and vertical FDI

$$\ln(FDI_{ijt}) = d_0 + d_1 \ln\left(\frac{GDP_{it} * GDP_{jt}}{DIST_{ij}}\right) + d_2 |\ln GDP_{CAP_{it}} - \ln GDP_{CAP_{jt}}| + d_3 INST_{jt} + d_4 \ln FDICN_{it} +$$
$$+ d_5 \ln FDICN_{it} * \ln\left(\frac{GDP_{it} * GDP_{jt}}{DIST_{ij}}\right) + d_6 \ln FDICN_{it} * |\ln GDP_{CAP_{it}} - \ln GDP_{CAP_{jt}}| + \mu_i + \nu_j + \lambda_t + \xi_{ijt}$$

$$\ln FDICN_{it} = e_0 + e_1 \ln\left(\frac{GDP_{it} * GDP_{CNt}}{DIST_{iCN}}\right) + e_2 |GDP_{CAP_{it}} - GDP_{CAP_{CNt}}| + \psi_{it}$$

Data and Variables

Panel of cross-country annual observations over the period 1990-2004
23 OECD home (origin) countries: EU15, CZ, PL, HU, SK, US, CH, JP, MX
35 host (destination) countries: EU15, 10CEE,
CY, MT, US, CH, JP, MX, IN, BZ, RU, CN

- Real bilateral FDI flows (FDI_{ijt}): OECD
- Real FDI flows from country i to China ($FDICN_{it}$) OECD
- Real GDP (GDP_{it} , GDP_{jt}): WDI, World Bank
- Real GDP per capita: ($GDPCAP_{it}$, $GDPCAP_{jt}$): WDI, World Bank
- Quality of institutions: ($INST_{jt}$): Henisz (2000)
- Distance (great circle distance, $DIST_{ij}$): CEPII
- Home and host country dummies (α_i , β_j)
- Time dummies (τ_t)

The Effects of FDI into China on FDI into Other Countries

	Bilateral FDI flows	The impact of FDI to China on FDI to other countries	The impact of FDI to China on FDI to EU countries
	(OLS)	(IV, second stage)	(IV, second stage)
Ln (product of GDP _{ij})	1.0912*** (0.042)	1.097*** (0.045)	0.869*** (0.090)
Abs diff GDPCAP _{i,j}	-0.208*** (0.021)	-0.158*** (0.025)	-0.086*** (0.027)
INST _{jt}	1.525*** (0.304)	1.772*** (0.480)	1.500*** (0.369)
Ln FDICN _{it}		0.461*** (0.090)	0.326*** (0.072)
Ln FDICN _{it} *EU15			-0.113*** (0.030)
Ln FDICN _{it} *CEE			-0.274*** (0.036)
EU15			-0.366 (0.354)
CEE			2.213*** (0.300)
Home country fixed effects	F(21, 4863) = 109.58***	$\chi^2(19) = 1018.06***$	F(20, 4241) = 5.79***
Host country fixed effects	F(32,4863)=55.14 ***	$\chi^2(32)=1384.82 ***$	F(31,4241)=4.42***
Time specific fixed effects	F(13,4863) = 46.48***	$\chi^2(12) = 88.49***$	F(13,4241) = 6.12***
Hansen J test		0.91 (Prob > $\chi^2 = 0.340$)	
Obs.	4935	4234	4197
R ²	0.7349	0.7258	0.7141

Robust standard errors in parenthesis. ***, **, * indicates significance at levels 1%, 5%, and 10%, respectively.

The “China Effect” over Time

	1990-1994	1995-1999	2000-2004
Ln (product of GDP _{ij})	0.835*** (0.196)	1.005*** (0.157)	0.842*** (0.226)
Abs diff GDPCAP _{ij}	0.208*** (0.069)	-0.035 (0.041)	-0.140*** (0.051)
INST _{jt}	1.913*** (0.638)	-0.157 (0.660)	0.343 (1.391)
Ln FDICN _{it}	0.343*** (0.160)	0.247** (0.127)	0.328* (0.196)
Ln FDICN _{it} *EU15	-0.232*** (0.067)	-0.134** (0.049)	-0.076 (0.048)
Ln FDICN _{it} *CEE	-0.317*** (0.111)	-0.287*** (0.059)	-0.274*** (0.056)
EU15	-0.669 (0.728)	-0.288 (0.602)	-2.585** (1.019)
CEE	-0.529 (0.728)	1.214** (0.515)	-0.907 (0.650)
Home country fixed effects	F(14, 844) = 5.67***	F (16, 1488) = 5.59***	F(20, 1436) = 3.88***
Host country fixed effects	F(31,844)=4.48***	F (31, 1488)=3.26***	F(31,1436)=2.56***
Time specific fixed effects	F(3,844) = 3.24**	F (4,1488) =5.48***	F(3,1436) = 0.74
Obs.	901	1548	1499
R ²	0.7746	0.7844	0.7412

Robust standard errors in parenthesis. ***, **, * indicates significance at levels 1%, 5%, and 10%, respectively.

Spillover Effects on Vertical and Horizontal FDI

	all countries	EU countries
Ln (product of GDP _{ij})	0.831*** (0.094)	0.907*** (0.095)
Abs diff GDPCAPI _j	-0.510*** (0.043)	-0.406*** (0.042)
INST _{jt}	1.200*** (0.356)	1.336*** (0.360)
Ln FDICN _{it}	-1.640*** (0.260)	-1.017*** (0.313)
FDICN*HOR	0.022*** (0.005)	0.028*** (0.006)
FDICN*VER	0.093*** (0.007)	0.000 (0.011)
FDICN*HOR*EU15		-0.019*** (0.002)
FDICN*VER*EU15		0.095*** (0.010)
FDICN*HOR*CEE		-0.011 (0.007)
FDICN*VER*CEE		0.044 (0.032)
EU15		-2.785*** (0.563)
CEE		-1.018** (0.404)
Home country fixed effects	F(20,4241)=7.48***	F(20,4237)=8.38***
Host country fixed effects	F(32,4241)=4.26***	F(31,4237)=5.32***
Time specific fixed effects	F(13,4241)=5.80***	F(13,4237)=5.66***
Obs.	4314	4314
R2	0.7447	0.7497

Robust standard errors in parenthesis. ***, **, * indicates significance at levels 1%, 5%, and 10%, respectively. Estimates for constant terms are omitted

The impact of FDI into China on FDI into other countries

	FDI	Horizontal FDI	Vertical FDI
Ln MP _{ijt}	0.141*** (0.054)	0.222*** (0.055)	0.222*** (0.055)
Abs diff GDP per capita i,j	-0.034 (0.027)	-0.281*** (0.043)	-0.281*** (0.043)
INST _{jt}	0.467* (0.282)	0.671** (0.280)	0.671** (0.280)
Austria	0.439*** (0.131)	-0.034*** (0.013)	0.245*** (0.084)
Belgium	0.669*** (0.065)	0.003 (0.007)	0.053 (0.045)
Denmark	0.627*** (0.067)	0.001 (0.006)	0.053 (0.033)
Finland	0.606*** (0.067)	-0.001 (0.004)	0.062*** (0.019)
France	0.708*** (0.060)	0.001 (0.002)	0.068*** (0.012)
Germany	0.710*** (0.062)	0.003 (0.002)	0.058*** (0.010)
Greece	0.617*** (0.068)	0.012 (0.014)	0.001 (0.065)
Ireland	0.764*** (0.040)	-0.006* (0.003)	0.112*** (0.015)
Italy	0.712*** (0.062)	0.017*** (0.005)	-0.023 (0.027)
Luxembourg	0.760*** (0.052)	-0.060*** (0.017)	0.352*** (0.080)
The Netherlands	0.754*** (0.047)	-0.002 (0.002)	0.095*** (0.010)
Portugal	0.710*** (0.049)	0.029*** (0.008)	-0.071* (0.037)
Spain	0.720*** (0.055)	0.024*** (0.008)	-0.053 (0.040)
Sweden	0.722*** (0.055)	0.019*** (0.006)	-0.030 (0.035)
United Kingdom	0.753*** (0.052)	-0.003 (0.002)	0.103*** (0.013)

The effect of FDI into China on FDI into other countries

(ctd.)

Bulgaria	0.402*** (0.071)	0.120 *** (0.047)	-0.489** (0.206)
Czech Republic	0.652*** (0.061)	0.020 (0.013)	-0.029 (0.062)
Estonia	0.263*** (0.088)	0.028 (0.022)	-0.098 (0.099)
Hungary	0.727*** (0.046)	-0.007 (0.010)	0.102** (0.044)
Latvia	0.262*** (0.092)	-0.003 (0.022)	0.039 (0.101)
Lithuania	0.278*** (0.086)	-0.015 (0.041)	0.093 (0.183)
Poland	0.696*** (0.055)	0.008 (0.008)	0.029 (0.036)
Romania	0.552*** (0.064)	0.081*** (0.023)	-0.308*** (0.104)
Slovakia	0.610*** (0.070)	0.096*** (0.016)	-0.378*** (0.074)
Slovenia	0.448*** (0.081)	0.007 (0.031)	0.008 (0.145)
United States	0.782*** (0.050)	0.018*** (0.003)	-0.016 (0.016)
Switzerland	0.726*** (0.051)	0.010*** (0.003)	0.020 (0.013)
Russia	0.667*** (0.049)	0.016 (0.021)	-0.011 (0.097)
Mexico	0.722*** (0.513)	0.035** (0.016)	-0.097 (0.074)
Malta	0.388*** (0.122)	-0.125*** (0.044)	0.599*** (0.200)
Japan	0.669*** (0.072)	0.023*** (0.005)	-0.058 (0.027)
India	0.605*** (0.067)	0.015 (0.035)	-0.012 (0.159)
Cyprus	0.176 (0.208)	0.139 (0.091)	-0.576 (0.376)
Brazil	0.708*** (0.051)	0.058*** (0.019)	-0.201* (0.085)

Conclusions

- **On average, the FDI into China has fostered FDI into other countries**
 - The effect is weaker in the EU countries than in other host countries
 - Spillover effects have slightly decreased over time
- **FDI into China has fostered both horizontal and vertical FDI into other countries**
 - Complementarity appears stronger in vertical FDI and lower in horizontal FDI in comparison to non-EU host countries
 - FDI into China have diverted horizontal FDI from countries with small markets (AT, IE, LU, MT) and vertical FDI from countries with large cost advantages (PT, BG, RO, SK, BZ)