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# Does FDI crowd out domestic investment in transition countries?

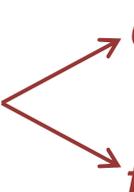
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# Motivation

- Neoclassical growth theory (Solow, 1956): capital accumulation

- FDI  *capital flow* : complement to domestic savings  
*technology flow* : productivity gains through spillovers

- CEE countries:
  - need to replace an obsolete capital stock
  - engaged in a competition to attract FDI

“FDI’s role in capital accumulation equally important for CEEC as the introduction of new technologies in early transition?”

- Some theoretical arguments, very few empirical evidence

## Research question

Does FDI stimulate or displace domestic investment in transition countries of CEE?

- Are the different types of FDI important ?
- Does financial development play a role?

# Agenda of the presentation

- Literature review
- Data and methodology
- Results
  - Interaction of FDI with domestic investment
  - Types of FDI
  - Financial development
- Conclusion

## 2 mechanisms

Real market



FDI affects the demand addressed to local firms

(competition, use of local inputs)

Financial market



FDI improves access to finance for local firms

(financial resources, interest rates)

Substitution (crowding-out) effect  
Complementarity (crowding-in) effect

“Collateral benefits” associated with FDI (Kose, 2006)

# Theoretical literature

- **Markusen and Venables (1999)** and **Barrios (2005)**:  
MNE in downstream sectors => within sector crowding out (-) and  
upstream externalities (+)
- **Backer (2002)** : behavior of local entrepreneurs following MNE entry (-)
- **Agosin and Machado (2005)** : new products and vertical externalities (+),  
conditional on the sectoral pattern of FDI inflows

# Empirical literature : mitigated results

- Marginally addressed in studies dealing with FDI-growth
  - Bosworth and Collins (1999) : short term crowding-out effect
  - Mody and Murshid (2005) : long-run crowding-in effect
  - Bloningen and Wang (2004) : crowding-out significant only in developed countries
- Specific role of FDI in capital accumulation
  - Agosin and Machado (2005) : inconclusive results for developing countries
  - Adams (2009) and Morrissey&Udomkerdmongkol (2012) : FDI crowds-out DI
  - Wang (2010) : the crowding-out disappears after 3 years
  - Mišun and Tomšík (2002): PL: crowding-out 1990-2000  
CZ, HU: crowding-in 1993-2000

## Improvements compared to previous studies

- *Extension of the empirical framework*
- *Focus on Central and Eastern Europe*
- *Separate greenfield FDI and M&A*
- *Tackle two interaction mechanisms : real and financial market*

# Empirical framework (1)

- Augmented investment function :

$$GFCF_{it} = \alpha GFCF_{it-1} + \beta_1 GDP_{it-1} + \beta_2 INT_{it} + \beta_3 FDI_{it} + \beta_4 K_{it} + \beta_5 X_{it} + v_i + \varepsilon_{it}$$

## Main variables :

- Gross fixed capital formation
- GDP growth
- Interest rate
- FDI flows

## Capital flows $K_{it}$ :

- Portfolio flows
- Other K flows

## Controls $X_{it}$ :

- Terms of trade
- Inflation volatility
- Financial liquidity
- Trade openness
- Labor productivity

- **GMM** Arellano and Bover (1995): lagged dependent variable and endogeneity between local investment and capital flows
- **External instruments** for capital flows : (i) regional capital flows as % of regional GDP; (ii) financial openness; (iii) U.S. interest rate; (iv) **exchange rate volatility**.

# Empirical framework (2)

## Short run effects

- $\beta < 1$  : crowding- out effect
- $\beta > 1$  : crowding-in effect

## Long run effects

- **Long-run elasticities**, based on the dynamic nature of the investment function (Agosin and Machado,2005):

$$\beta_L(FDI) = \frac{\beta_S(FDI)}{1 - \alpha}$$

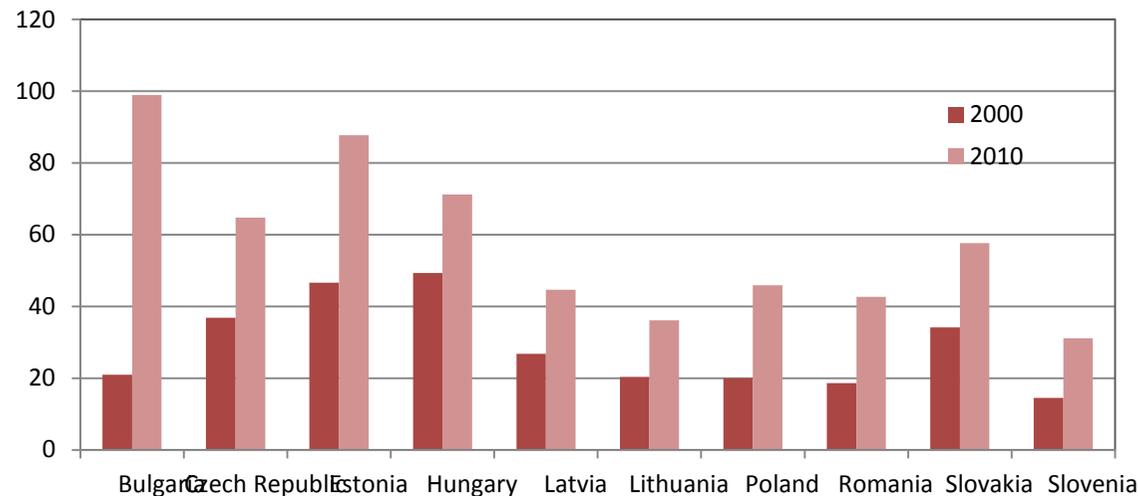
- Long run coefficients tested by a **Wald test**

	Short term	Long term	Impact
H1	$\beta_S < 1$	$\beta_L < 1$	Crowding-out
H2	$\beta_S < 1$	$\beta_L > 1$	Creative destruction
H3	$\beta_S > 1$	$\beta_L < 1$	Temporary crowding-in
H4	$\beta_S > 1$	$\beta_L > 1$	Crowding-in

# Sample description

- Panel of 10 CEEC (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia)
- Annual data for the period 1990-2010
- Sources: WDI, WIIW, IFS, UNCTAD, EBRD transition indicators

**FDI stock in CEEC (% GDP)**



# Results (1)

Dependant variable GFCF	(1)	(2)	(3)	(4)
L.GFCF	0.743*** (0.086)	0.572*** (0.114)	0.563*** (0.117)	0.506*** (0.120)
L.GROWTH	0.077 (0.059)	0.106* (0.052)	0.112* (0.060)	0.174*** (0.063)
INTEREST	0.014 (0.044)	0.003 (0.043)	-0.034 (0.051)	0.031 (0.061)
FDI	0.379*** (0.117)	0.297** (0.121)	0.275** (0.118)	0.285** (0.117)
PORTF	0.046 (0.084)	0.050 (0.079)	0.041 (0.078)	0.102 (0.084)
LOANS	0.340*** (0.122)	0.361*** (0.114)	0.257** (0.125)	0.292** (0.125)
TERMS_TRADE		9.423** (4.584)	13.973*** (5.305)	18.539*** (5.539)
VOLAT		-0.018 (0.026)	-0.019 (0.027)	-0.004 (0.028)
DEV_M2		0.041 (0.076)	0.048 (0.074)	0.040 (0.074)
W			0.098 (0.062)	0.085 (0.063)
TRADE_OPEN				0.020 (0.025)
Observations	139	139	128	128
Instruments	11	11	12	13
Sargan <i>p-value</i>	0.312	0.396	0.507	0.677
AR2 test <i>p-value</i>	0.407	0.474	0.668	0.825
Long run elasticity to FDI	0.802** (0.393)	0.694** (0.345)	0.628* (0.326)	0.578* (0.337)

## Discussion (1)

- Short term coefficients  $< 1$   $\longrightarrow$  short term crowding-out
  - Long term coefficients  $< 1$   $\longrightarrow$  long term crowding-out
- | H1 hypothesis
- However  $\beta_{FDI}(L) > \beta_{FDI}(S)$ : the intensity of crowding-out *decreases* with time
  - Cautious interpretation, but :
    - *substitution* between FDI and domestic investment
    - *no* long run complementarity identified

# Greenfield FDI and M&A

- FDI usually seen as a homogeneous capital flow
- Greenfield/M&A potentially different implications for K accumulation due to the *motivation* of foreign investors

## Greenfield FDI

- net addition to the K stock
- export oriented
- interaction on the real market

## M&A

- no immediate addition to the K stock
- locally oriented
- Interaction on the financial market

- Greenfield contribution to capital formation **not** 1
- Inexistent empirical literature

## Results (2)

	(1)	(2)
L.GFCF	0.555*** (0.123)	0.441** (0.182)
L.GROWTH	0.102* (0.061)	0.102 (0.086)
INTEREST	0.006 (0.048)	0.005 (0.067)
FDI	0.309** (0.131)	
M&A		0.313 (0.203)
GREEN		0.721*** (0.250)
PORTF	0.066 (0.096)	0.245 (0.154)
LOANS	0.361*** (0.138)	0.196* (0.118)
VOLAT	-0.018 (0.027)	-0.001 (0.039)
TERMS_TRADE	10.448** (4.902)	8.839* (5.021)
Observations	129	124
Instruments	10	11
Sargan <i>p-value</i>	0.860	0.978
AR2 <i>p-value</i>	0.565	0.899

	FDI	M&A	Greenfield
Long run elasticities	0.695* (0.359)	0.560 (0.402)	1.289** (0.582)

## Discussion (2)

- **Greenfield** : short term coefficient  $< 1$   
long term coefficient  $> 1$  | Creative destruction
- **M&A** : short term coefficient  $= 0$   
long term coefficient  $= 0$  | No contribution to K  
accumulation

# What about financial development?

- What *mechanism* is at work? Real market of financial interaction?
- Different policy implications !
- *Hypothesis: financial interaction is all the more present as financial markets are developed*
- **M&A** higher potential for financial interaction ?

## Results (3)

	(1)	(2)	(3)
L.GFCF	0.568*** (0.121)	0.678*** (0.182)	0.446* (0.248)
L.GROWTH	0.123** (0.061)	0.082 (0.068)	0.074 (0.122)
INTEREST	0.012 (0.049)	-0.004 (0.052)	0.152 (0.129)
FIN_DEV	-1.748 (1.763)	-0.464 (1.827)	-2.037 (3.108)
FDI	0.518* (0.293)		
M&A		-0.202 (0.128)	
GREEN			1.492* (0.859)
FDI*FIN_DEV	-0.025 (0.022)		
M&A*FIN_DEV		0.782** (0.389)	
GREEN*FIN_DEV			-2.167 (1.406)
Observations	136	121	126
Instruments	12	12	12
Sargan <i>p-value</i>	0.429	0.912	0.913
AR2 <i>p-value</i>	0.482	0.484	0.519

## Discussion (3)

- M&A interacts with domestic investment only on the financial market, leading to a crowding-in effect
- GREEN interacts with domestic investment essentially on the real market, leading to a short term crowding-out effect
- Net effect ? Depends on the share M&A in total FDI and on the importance of M&A relative to the local supply of foreign currency
- Real market interaction more important than financial interaction?

# Conclusion

- Only FDI and foreign loans have a significant contribution to capital formation, while portfolio investment has not
- FDI has a *crowding-out effect on domestic investment* : stronger on the short run and decreasing over time. No overall crowding-in
- *Greenfield* FDI at the origin of creative destruction
- *M&A* essentially a financial flow
- *Real market* interaction mostly for greenfield investment
- *Financial market* interaction only for M&A

# What policy recommendations ?

- Favor greenfield FDI
- FDI entry in underdeveloped industries
- Promote export oriented FDI, conditional on local content
- Fiscal levers to stimulate reinvestment in the case of crowding-out

Thank you for your attention