

XXI APRIL INTERNATIONAL ACADEMIC CONFERENCE
ON ECONOMIC AND SOCIAL DEVELOPMENT

**The influence of foreign direct investment on domestic investment in the
Russian economy**

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2020.04.06-10

Structure of presentation

- Motivation
- Literature review
- Econometric model
- Hypotheses
- Database
- Estimation results and discussion
- Conclusion

Motivation: effects of FDI in the host economy

Direct effects:

- productivity growth
- GDP growth
- increase in the available variety of goods
- increase in budget revenues, etc.

Indirect effects (spillovers):

Intra-industry (horizontal):

- knowledge diffusion
- competition effects
- increase in employee's skills

Inter-industry (vertical):

- demand increase for production of local suppliers
- new technologies for local consumers
- feedback effects

Negative effects

- crowding out national companies

Motivation: effects of FDI in the host economy

Direct effects:

- productivity growth
- GDP growth
- increase in the available variety of goods
- increase in budget revenues (true?), etc.

Indirect effects (spillovers):

Intra-industry (horizontal):

- knowledge diffusion (true?)
- competition effects (positive or negative?)
- increase in employee's skills

Inter-industry (vertical):

- demand increase for production of local suppliers (true?)
- new technologies for local consumers (true?)
- feedback effects (true?)

Negative effects

- crowding out national companies
- crowding out domestic investment

Literature review: studies on FDI spillovers

- hundreds of papers (dozens on the Russian economy)
- different
 - effects
 - countries
 - level (industry/firm)
 - time periods
 - factors that influence effects
- (of course) mixed results

Literature review: studies on FDI influence on domestic investment

Study	Country	Period	Influence
Agrawal (2000)	South Asia	1965–1996	positive
Mileva (2008)	Transition economies	1995–2005	positive
Ndikumana and Verick (2008)	Sub-Sahara Africa	1970–2005	positive
Ang (2009)	Malaysia	1960–2003	positive
Amadou (2011)	Togo	1970–2008	positive
Kamaly (2014)	16 developing countries	1978–2010	mainly positive
Acar et al (2002)	MENA countries	1980–2008	negative
Kim and Seo (2003)	S. Korea	1985–1999	neutral
Wang (2010)	50 countries	1970–2004	neutral or positive
Agosin and Machado (2005)	12 countries in Africa, Asia & Latin America	1970–2000	neutral or negative
Musin and Tomsik (2002)	Poland, Czech, Hungary	end 90 th and early 2000 th	positive or negative
Akmed et al (2015)	Uganda	1992–2012	neutral
Jude (2019)	10 CEEC	1995–2015	neutral or negative

!!! All studies are on country level (=> large T, small N => little observations)

⇒ **measure “average temperature”**

⇒ **impossible to examine effect of FDI on DI of different types of firms**

⇒ **impossible to study the effects depending on FDI share in industry/region**

Literature review: studies on determinants of domestic investment

Study	Determinant
<i>Firm-level characteristics</i>	
Koo and Maeng (2006)	Revenue
Ngyyen Don (2013)	Revenue growth
Bond <i>et al</i> (1999)	Net profit
Mileva (2008)	Short-term liabilities
Aivazian <i>et al</i> (2005)	Leverage
Farla (2014)	Age
Abazi and Kalaj (2015)	Liquidity
Farla (2014)	Number of employees
Koo and Maeng (2006)	Foreign partner presence
Jangili (2010)	Volume of dividends
<i>External factors</i>	
Ngyyen Don (2013), Nihn <i>et al</i> (2004)	Risks of doing business
Fuss and Vermeulen (2008)	Macroeconomic shocks
Daude and Stein (2007), Everhart <i>et al</i> (2009)	Quality of institutions
Jangili (2010)	Inflation and exchange rate risks

Literature review: to sum up

- in general this research is in the large field of FDI spillovers
- particularly in the field of FDI influence on DI,
but implement panel data on the firm level
- and also in the field of determinants of DI
but consider FDI as a determinant of DI

Econometric model

$$INV_{ijrt} = \alpha_0 + \alpha_1 NP_K_{ijrt} + \alpha_2 Lev_{ijrt} + \alpha_3 FATA_{ijrt} + \alpha_4 RevGR_{ijrt} + \alpha_5 HHI_{jt} + \alpha_6 FDI_R_{rt} + \alpha_7 FDI_I_{jt} + \alpha_8 FDI_IR_{Jrt} + \varepsilon_{ijrt},$$

where:

INV_{ijrt} – fixed assets growth of firm i industry j region r in year t comparing to previous year;

NP_K_{ijrt} – net profit to total assets ratio of firm i in year t ;

Lev_{ijrt} – debt to total liabilities of firm i in year t ;

$FATA_{ijrt}$ – fixed assets to total assets ratio of firm i in year t ;

$RevGR_{ijrt}$ – revenue growth of firm i in year t ;

HHI_{jt} – Herfindahl–Hirshmann index in industry j in year t ;

FDI_R_{rt} – FDI share at regional level in year t ;

FDI_I_{jt} – FDI share at industry level in year t ;

FDI_IR_{Jrt} – FDI share at industry in region level in year t ;

ε_{ijrt} – error term.

Hypotheses

- FDI crowd out domestic investment
- Distance matter: FDI crowd out DI in the same industry in region
- Crowding out effect on private companies is stronger than on state-owned
- National companies adopt to FDI, i.e. \uparrow FDI share \Rightarrow \downarrow crowding out effects

Database

- Source: Spark-Interfax
- Processing sector of the Russian economy
- Period: 2008–2017
- 38217 companies
- 82 regions
- 104 industries (3 digit OKVED classification)
- 2886 companies with FDI (7,5 %)

Regions and industries with largest and smallest FDI share in the database, 2017

Region	FDI share	Industry	FDI share
<i>Largest FDI share</i>			
Lipetsk region	78 %	Tobacco products	90 %
Yevreyskaya AR	63 %	Household equipment	88 %
Kaluga region	59 %	Vehicles	66 %
Komi Republic	59 %	Paper and paperboard	64 %
Krasnoyarsk Krai	59 %	Consumer electronics	63 %
Novgorod region	58 %	Beverages	56 %
Vladimir region	48 %	Components for vehicles	55 %
Saint-Petersburg	43 %	Glass and glassware	54 %
Moscow region	39 %	Adhesives	53 %
Leningrad region	38 %	Processing and storage of fruits and vegetables	51 %
<i>Smallest FDI share</i>			
Chechnya	0 %	Pesticides and other agrochemical products	0 %
Khakasiya	0 %	Coke	0 %
N. Osetiya – Alaniya	0 %	Knitted and crocheted goods	0 %
Magadan region	0 %	Sports goods	0 %
Kamchatka Krai	0 %	Steam boilers	0 %

Influence of FDI on domestic investment of the Russian companies

	All companies	Only private	Only state-owned
Net profit/Total Assets	0,196*** (0,009)	0,190*** (0,010)	0,289*** (0,034)
Leverage	0,264*** (0,015)	0,251*** (0,015)	0,410*** (0,046)
Fixed assets/Total Assets	0,949*** (0,018)	0,954*** (0,019)	0,931*** (0,056)
Revenue growth	0,067*** (0,005)	0,072*** (0,005)	0,013 (0,013)
HHI	0,187*** (0,053)	0,236*** (0,059)	– 0,043 (0,111)
FDI in region	– 0,081** (0,042)	– 0,071 (0,045)	– 0,010* (0,078)
FDI in industry	– 0,013 (0,042)	– 0,009 (0,044)	– 0,054 (0,121)
FDI in industry in region	– 0,055** (0,024)	– 0,058** (0,025)	– 0,010 (0,078)
Constant	– 0,314*** (0,017)	– 0,309*** (0,018)	– 0,397*** (0,048)
R-sq.	0,42	0,42	0,34
N obs.	58809	54543	4166

Influence of FDI on DI of the Russian companies: different size and efficiency

	Size		Efficiency		
	Small	Large	Least eff-ve	Less eff-ve	More eff-ve
Net profit/Total Assets	0,183*** (0,011)	0,210*** (0,022)	0,231*** (0,016)	0,214*** (0,011)	0,143*** (0,020)
Leverage	0,271*** (0,017)	0,257*** (0,031)	0,301*** (0,023)	0,285*** (0,017)	0,288*** (0,035)
Fixed assets/Total Assets	1,144*** (0,024)	0,664*** (0,037)	0,750*** (0,027)	0,820*** (0,020)	2,189*** (0,092)
Revenue growth	0,075*** (0,005)	0,038*** (0,001)	0,051*** (0,007)	0,062*** (0,005)	0,153*** (0,012)
HHI	0,293*** (0,084)	0,178** (0,079)	0,591*** (0,114)	0,375*** (0,076)	0,149 (0,129)
FDI in region	- 0,027 (0,050)	- 0,162*** (0,045)	- 0,210*** (0,067)	- 0,150*** (0,047)	0,162 (0,045)
FDI in industry	- 0,052 (0,050)	0,116 (0,085)	- 0,055 (0,068)	- 0,046 (0,048)	0,038 (0,106)
FDI in industry in region	- 0,054** (0,027)	- 0,101* (0,060)	- 0,068 (0,037)	- 0,040 (0,028)	- 0,124** (0,060)
R-sq.	0,46	0,42	0,53	0,46	0,58
N obs.	46845	11964	25521	43398	15411

Influence of FDI on domestic investment of the Russian companies

	All companies	Only private	Only state-owned
FDI in region	– 0,081** (0,042)	– 0,071 (0,045)	– 0,010* (0,078)
FDI in industry	– 0,013 (0,042)	– 0,009 (0,044)	– 0,054 (0,121)
FDI in industry in region	– 0,055** (0,024)	– 0,058** (0,025)	– 0,010 (0,078)

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FDI in industry in region	– 0,054** (0,027)	– 0,101* (0,060)	– 0,068 (0,037)	– 0,040 (0,028)	– 0,124** (0,060)

Results:

- crowding out effect in general
- no effect on industry level => distance matter (indirect proof)
- state owned/large/less effective national companies compete for administrative resources at regional level (and suffer from competition with foreign companies)
- private/small/more effective national companies suffer from competition in their region and industry

Influence of FDI share on crowding out effect

		FDI < 10%	10 % ≤ FDI < 25%	FDI ≥ 25%
<i>All companies</i>				
Region level	Coefficient	− 0,974*** (0,272)	0,031 (0,125)	0,230*** (0,074)
	R-sq.	0,44	0,47	0,47
	N obs.	15773	18873	24163
Industry level	Coefficient	− 0,034 (0,272)	0,566*** (0,112)	− 0,287*** (0,074)
	R-sq.	0,52	0,46	0,45
	N obs.	10800	29152	18857
Industry in region level	Coefficient	− 0,399** (0,200)	− 0,040 (0,185)	0,030 (0,054)
	R-sq.	0,43	0,57	0,48
	N obs.	40852	6614	11343
<i>Only private companies</i>				
Region level	Coefficient	− 0,933***(0,286)	0,021 (0,132)	0,252*** (0,073)
	R-sq.	0,44	0,47	0,48
	N obs.	14662	17544	22437
Industry level	Coefficient	0,051 (0,302)	0,574*** (0,119)	− 0,281*** (0,076)
	R-sq.	0,52	0,47	0,45
	N obs.	9708	26871	18064
Industry in region level	Coefficient	− 0,345* (0,210)	− 0,056 (0,194)	0,039 (0,055)
	R-sq.	0,44	0,57	0,48
	N obs.	37574	6214	10855

Influence of FDI share on crowding out effect

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Industry in region level	Coefficient	− 0,345* (0,210)	− 0,056 (0,194)	0,039 (0,055)

Results:

- effects for all companies and only private companies are the same
- infrastructure created to foreign companies can be used by national companies
- additional proof that distance matter (indirect)
- no clear adaptation effect of DI to FDI

Conclusions

contribution to previous research

- first study at firm level (to the best of our knowledge)
- estimate effects depending on FDI share in the region/industry
- study on the Russian economy

results

Hypothesis	Result
FDI crowd out domestic investment	confirmed
Distance matter: FDI crowd out DI in the same industry region	confirmed
Crowding out effect on private companies is stronger than on state-owned	confirmed
National companies adopt to FDI, i.e. \uparrow FDI share \Rightarrow \downarrow crowding out effects	failed

Policy implications

- results do not indicate positive impacts of FDI
- FDI should be attracted to sectors that previously did not exist
- incentives for MNCs to use local inputs should be developed
- export-oriented FDI should be stimulated
- infrastructure created for foreign investors should be shared by national companies also
- maybe future research is needed (e.g. to consider greenfield & brownfield FDI separately etc.)

Thank you for your attention!

