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The role of FDI in geographical disparities and in regional growth -The case of the Hungarian regions



UNIVERSITY OF PÉCS
FACULTY OF BUSINESS
AND ECONOMICS



Zoltán Gál,
Full- professor
&

András Gyimesi, PhD candidate



Outline

- Objective of the research
- Role of Foreign Direct Investment (FDI) in economic growth in transition economies
- Regional implications of FDI in Hungary
- Empirical tests
- Results
- Conclusions



Objectives and motivations of the research

- Few studies address regional differentiating effects of FDI
- Our reference point is
 - Bermejo Carbonell and Werner (2018): Not the FDI but domestic credit drives economic growth in Spain
 - Lengyel-Varga (2018): manufacturing FDI is driving Hungary's regional GDP growth.

H1: Predominant role of FDI in economic transformation of CEE, which **ONLY short term** contributed to economic development (productivity and competitiveness).

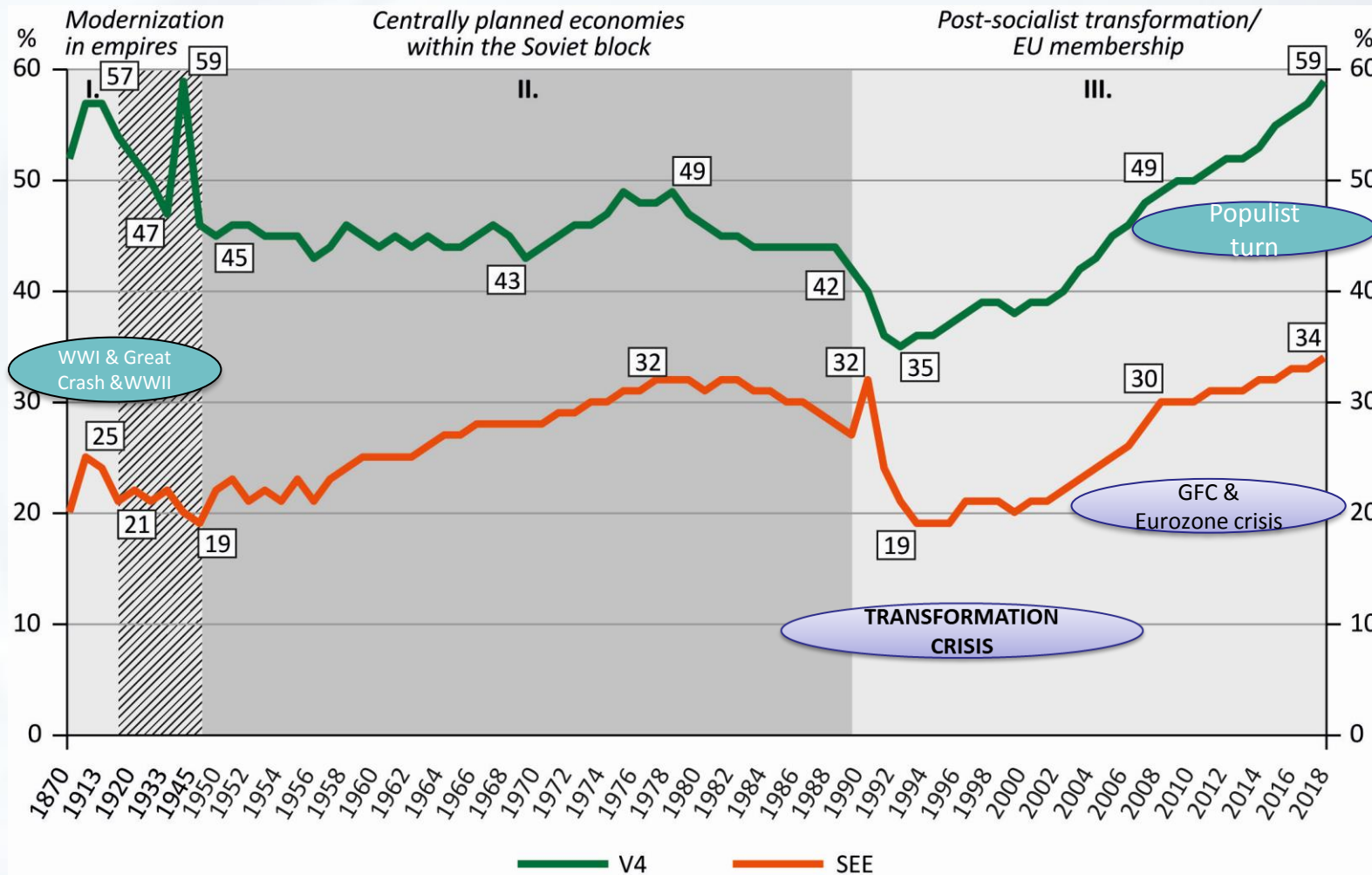
H2: Our presumption is that the impact of FDI on GDP growth and in fixed capital investment is much less pronounced than other factors in the long run.

H3: Despite its decreasing beneficial role FDI contributes more to regional disparities than to regional development!



Relative development gap between V4 & SEE and Western Europe-12: , %

[GDP per capita as WE-12=100%, %], 1870-2018 (USD, 211 prices)



Mind the Covid crisis!

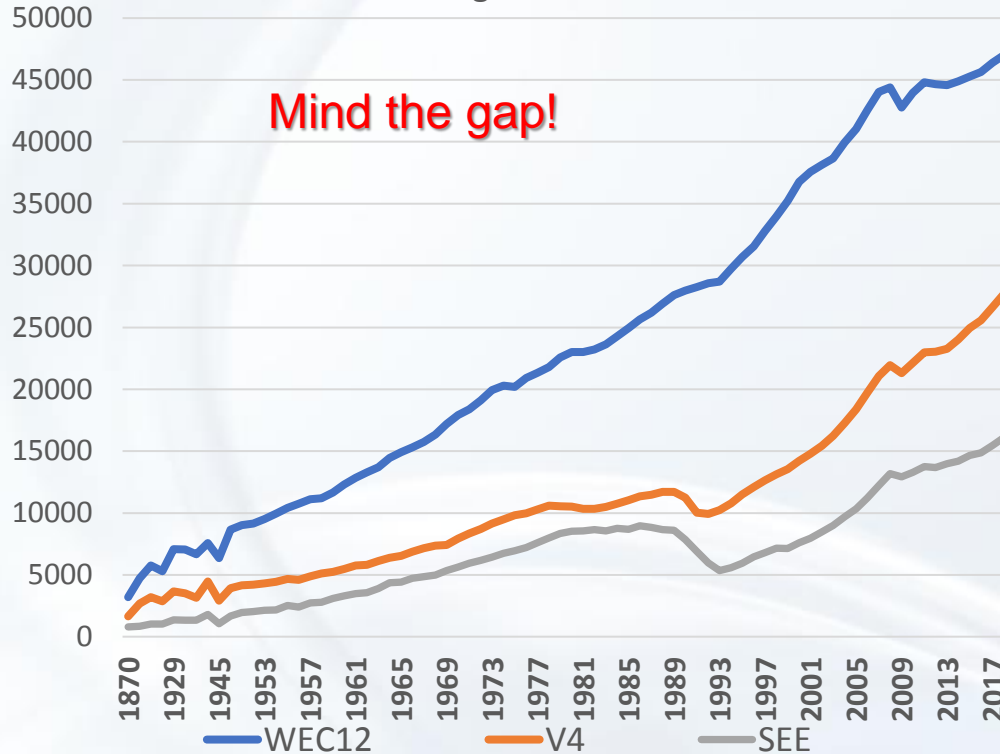
Due to the Romanian ,miracle'



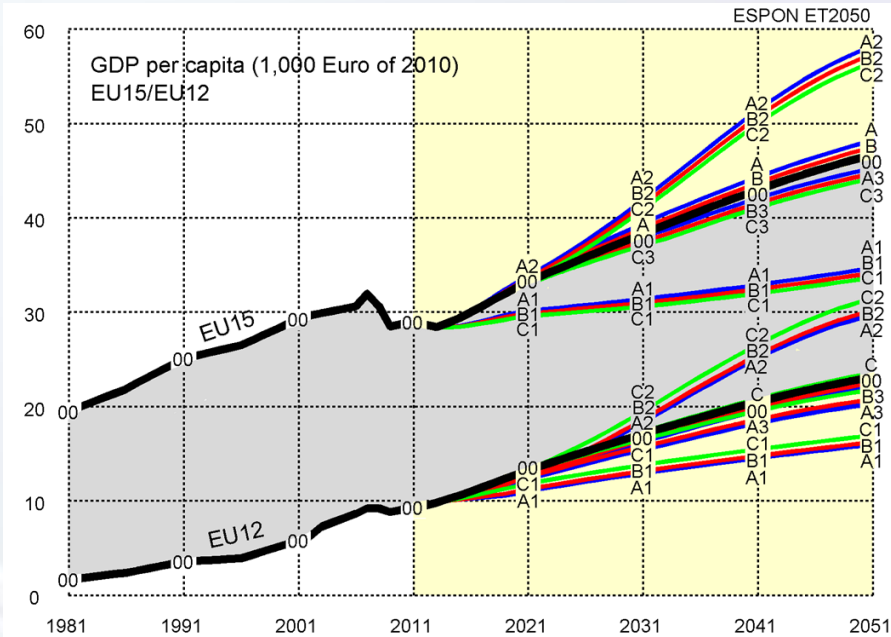
Development gap between Western Europe-12 and V4 & SEE countries (GDP per capita, USD 2011prices)

Diagramcím

Mind the gap!

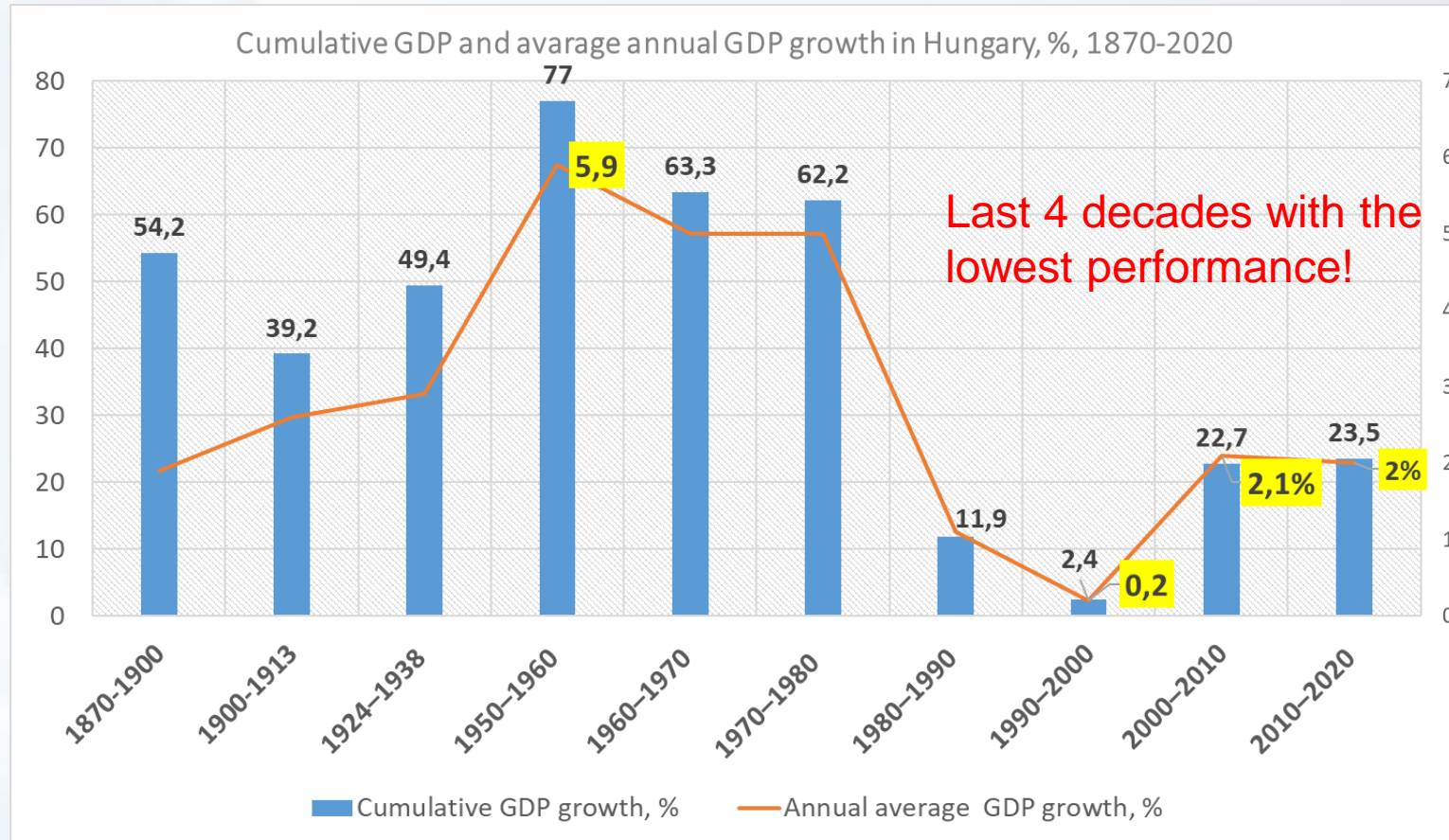


ESPON FORECAST UPTO 2050





Cumulative GDP growth and average annual growth (right) in Hungary, 1870-2018, %



(edited by Gál Z. , data from KSH, Fellner 1916; Matolcsy–Varga, 1936, Pozsonyi-Szőkéné, 2020)





Theories on economic growth

- Neoclassical: domestic savings-led capital accumulation (Solow, 1956, Rostow, 1957)
 - **FDI: external savings** (*,borrowed savings'*), external indebtedness, (high implicit interest rate, loans of parents companies, increasing import)
 - Investment-led (FDI) growth (competitive growth theory) unable to fully catch up
- Exogenous growth (Blomström-Kokko, 1998): technology transfer from abroad via FDI
- Endogenous growth (Lucas 1988, Romer 1990):
 - Role of *domestic technology in productivity growth* ;
 - Also *FDI can transmit technology (?)*
 - However, there is only a few proofs for FDI-led technology transfer and TFP growth, (Young-Lan 1997, Ashraf et al 2016)
- Credit generation by domestic banks in real economy (Bermejo Carbonell-Werner, 2018)



FDI as the driving force of economic development of host economies- inconclusive evidence

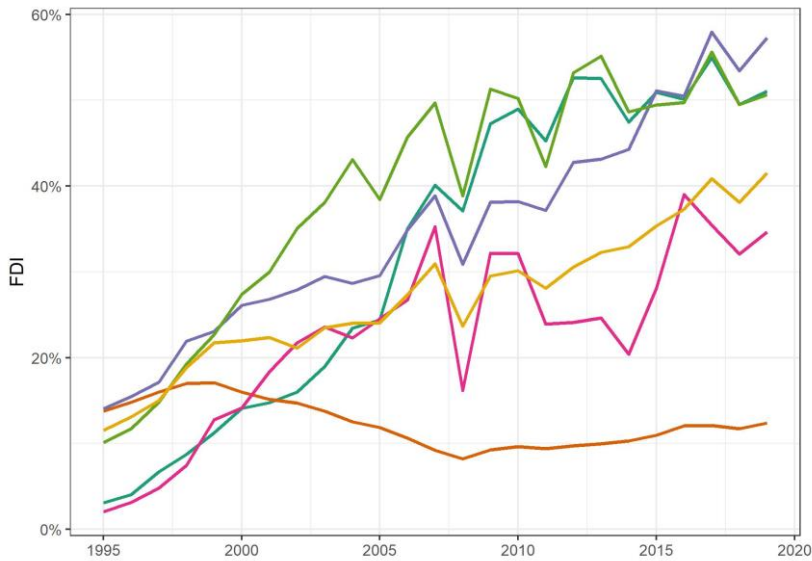
- **PROs:** *Kose et al (2006)* FDI a *long-term strategical type of investment*, less volatile, and less footloose
 - *Grossman-Helpman (1991)* FDI increases domestic capital stock, generates **technological/managerial spillovers** (modernization).
 - *Alfaro et al. (2004)*: *only developed financial markets* are able to exploit benefits of FDI.
- **CONs:** *Singer (1950) and Prebisch (1968)*: *target countries of FDI receive very few benefits*, because most benefits are transferred to the sender country.
 - Small fraction of income from FDI-projects is captured by domestic residents (Lane-Milesi-Feretti, 2006)
 - *Balogh (1982)*: Foreign firms crowd out domestic enterprises (dual economy).
 - *Menchinger (2003)* finds **negative correlation between FDI and growth! FDI generates high current account deficit** due to increasing profit outflows and import
 - *Prasad, Rajan, Subramanian (2007)*: those developing countries **relying on external capital grow much slower** than those who used their own savings.
 - *Barmejo Carbonell-Werner (2018)* **no evidence for FDI-driven growth vs. domestic bank credit drives GDP growth** in Spain
 - *Bailey D. (2016) et al.* **Reliance of FDI does not guarantee sustainable growth in CEE without building domestic industrial capabilities and own MNCs**



FDI-Growth-GFCF nexus:

FDI to GDP is the highest in V4 except offshores

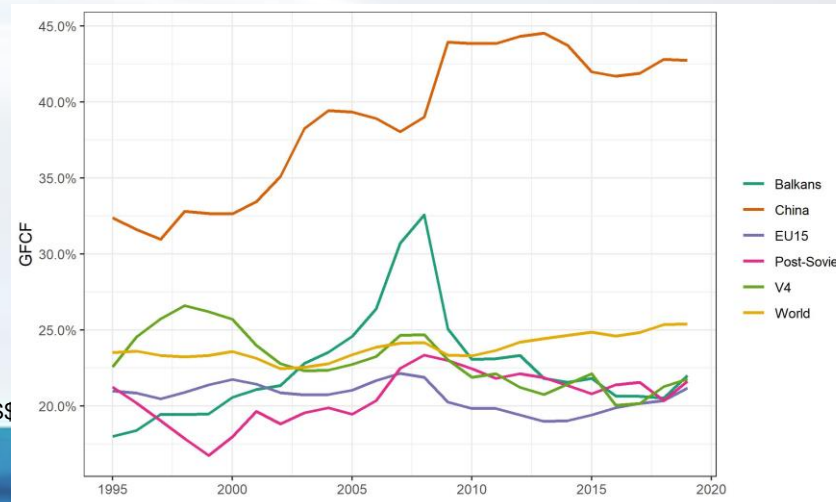
FDI stock as % of GDP



Annual GDP growth rate, %



Gross Fixed Capital Formation (as a % of GDP)





Economic dependencies: non-autonomous growth led by mainly external factors

- World System Models: CEEs a semi-periphery
- Dependent Market Economies (Nölke-Vlieghart, 2009)



Types of external economic dependencies

1. Capital dependency
2. Technology dependency
3. Export dependency
4. External corporate control and surveillance
5. Energy dependency





Implications of regional development





Role of FDI in regional economies

- Productivity-enhancing effects of *FDI the engines of regional economic growth* (Bajo-Rubio et al., 2010).
- FDI gives the appearance of nationally positive results but it actually *benefits already-developed regions* (Menghinello et al. 2010).
- Potential of *FDI spillovers* in the Italian regions is dependent on the *absorption capacity of regional institutions and businesses*. (Casi and Resmini, 2010).
- *Agglomeration may magnify the spillovers from FDI*, only when foreign firms complement existing local industries (**related varieties**) (Menghinello et al. 2010).
- Elekes's et al. (2019) *foreign-owned firms deviate from the region's average capability match* and this deviation is stronger in the reindustrialized manufacturing regions (**unrelated diversification**) *low indirect spillover* effects on domestic firms.
- Pavlinek (2009) *limited regional spillover effects of foreign companies* in terms of their supply chain and R&D.



Role of FDI in regional growth: research questions

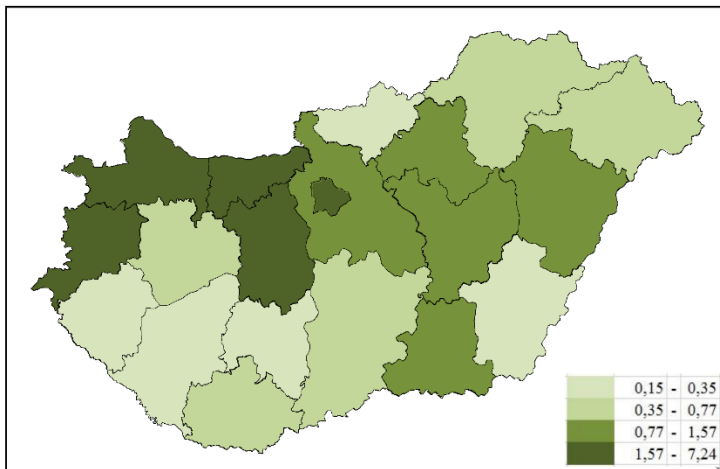
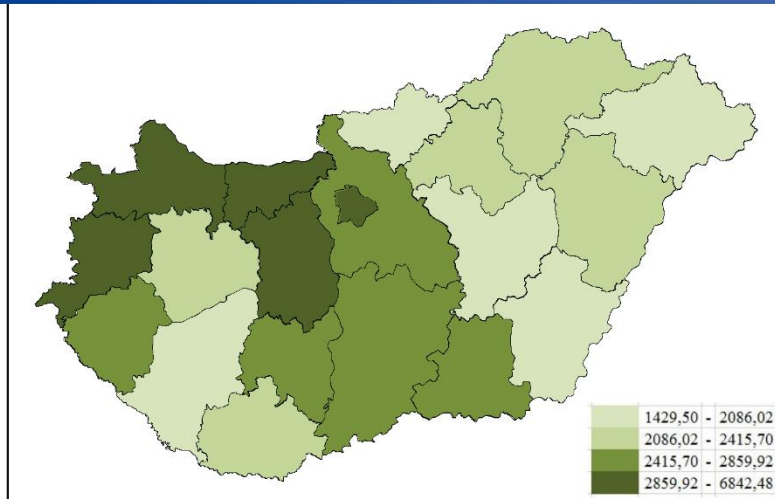
- Role of FDI in spatial disparity: reinforce uneven patterns of regional development
- Spatial concentration of FDI (Regional and sectoral distribution of foreign subsidiaries by equity capital)
- Scope: V4 NUTS 3 level

Q1 Does FDI have strong impact on regional GDP growth?

Q2 Can GDP growth and fixed capital investment generating effect be examined at the regional level as well?

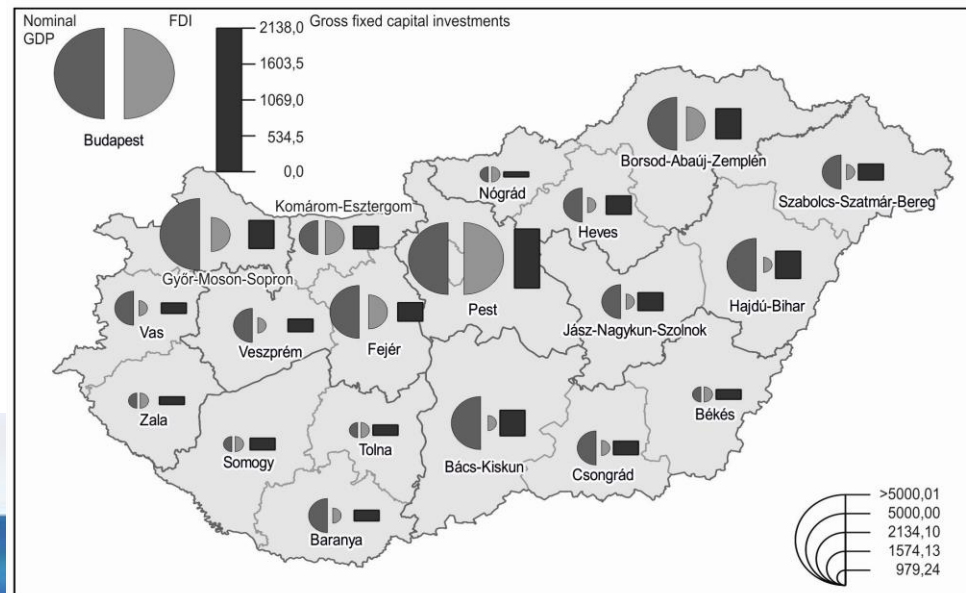
FDI, implications of regional development in Hungary:

(1) GDP per capita (1000 HUF) vs. (2) FDI per capita (mn HUF), 2017



Forrás: A KSH adatai alapján saját szerkesztés

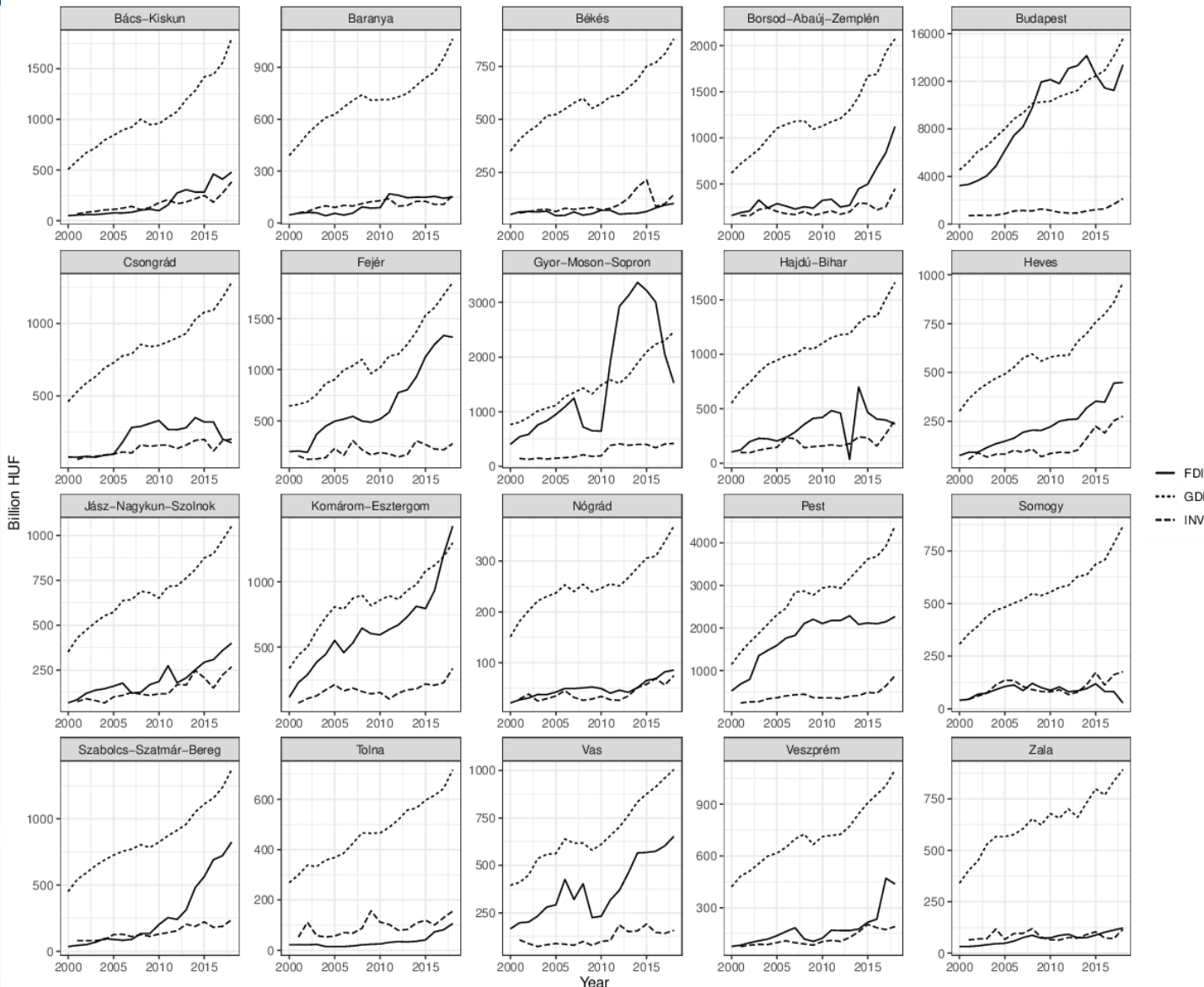
- Matching territorial coverage of GDP and FDI (**territorial duality**)
- **FDI the strongest territorial differentiating force**
- Agglomeration effect: Central HU concentrates ca. 2/3 of FDI firms and 59% of equity capital, although the **equity capital per FDI firm** is higher in Western/Central Transdanubia





Hyphothesis

1. The impact of FDI on regional economic growth is limited: the relationship between the per capita GDP growth of the regions and FDI is only apparent.
2. The causal relationship between FDI inflow and economic development is not a uni-directional relationship (and relatively more developed regions are attract more FDI).
3. The role of FDI in fixed capital investments (GFCF) in the regions is smaller than other sources.



- **High concentration of FDI in the more developed northwestern counties.**
- **Nominal GDP show a more balanced picture, despite inferior values for less developed and rural counties.**
- **At 1st glance at the annual evolution of county-level GDP and FDI values reveals a strong correlation between the two indicators.**



Correlation between FDI and GDP

- Correlation coefficient is 0.97 between GDP and FDI
- However, this does not indicate any causality between the two variables for 3 reasons.
 1. We assume that GDP (as a measure of economic performance) also has an effect on FDI.
 2. The correlation is caused by a third factor of development (eg. infrastructure, financial, technological, economic environment), which affects both GDP and FDI.
 3. GDP and FDI time series in the regions include time trends and therefore they are not stationary.



Data and Methodology

- Annual data for Hungarian counties for the period 2000-2018
- Panel dataset (N=20 counties, T=19 years)

Main Variables:

- GDP (at market prices)
- FDI (foreign capital stock of foreign-owned enterprises)
- INV (investments, GFCF)
- Additional variables: employment, R&D, EU GDP

Methods:

1. Panel time series methods to analyse causality
2. Panel regression analysis



Causality between GDP, investment and FDI

- Panel Granger Causality Test (Dumitrescu and Hurlin, 2012)

	Null-hypothesis			
	Δ FDI does not Granger cause Δ GDP	Δ GDP does not Granger cause Δ FDI	Δ FDI does not Granger cause Δ INV	Δ INV does not Granger cause Δ FDI
p-value	0.7026	0.0002	0.2744	0.3135

- Granger causality tests: *FDI does not have a significant impact on GDP growth.*
- However, *GDP does cause FDI*: FDI flows into the relatively more developed regions with higher growth rates (business environment, infrastructure, proximity matters more)
- Investment does not generated by FDI and even (higher local) fixed capital investment does not attract (more) FDI!
- Overall, the causality tests suggest that the correlation between FDI and GDP is not caused by the FDI inflow and its assumed effects on economic growth is much smaller.
- FDI growth does not cause a rise in local fixed capital investment



Panel regression analysis

- Natural logarithm of the variables are used
- Additional controls:
 - EMP (Total employment)
 - R&D (significant in longer term)
 - EUGDP (Total EU GDP, constant 2010 US\$)
 - D2009i (financial crisis dummy)
- The first-difference (FD) model is more efficient than the fixed effects (FE) model in case of non-stationarity
- No significant effect of FDI, while INV, EMP and R&D (with 1-year lag), and EUGDP D2009i are highly significant
- Internal factors are more important for development than external ones (FDI)!

	<i>Dependent variable:</i>	
	(FE model)	(FD model)
log(FDI)	0.014 (0.015)	0.022 (0.014)
log(FDI _{t-1})	0.028* (0.016)	0.001 (0.012)
log(INV)	0.036** (0.015)	0.043*** (0.011)
log(INV _{t-1})	0.023** (0.010)	0.021* (0.011)
log(EMP)	0.120 (0.108)	0.107* (0.059)
log(EMP _{t-1})	0.398*** (0.099)	0.199*** (0.064)
log(RD)	-0.006 (0.009)	0.005 (0.007)
log(RD _{t-1})	-0.011 (0.008)	0.001 (0.006)
log(RD _{t-2})	0.007 (0.008)	0.015** (0.006)
log(EUGDP)		0.458*** (0.155)
log(EUGDP _{t-1})		-0.078 (0.139)
D2009		-0.064*** (0.011)
Constant		0.041*** (0.005)
Observations	323	304
R ²	0.349	0.427
Adjusted R ²	0.249	0.403

Note: Robust, heteroscedasticity consistent standard errors are displayed in parentheses.

* p<0.1; ** p<0.05; *** p<0.01



Summary of findings

1. FDI has no positive significant effect on the regional (county's) GDP
2. According to the Granger Test, we can not confirm that an increase in FDI causes GDP growth.
 - Thus, most *FDI flows into the already more developed (higher GDP growth) regions.*
 - *These favorable conditions attracting FDI* reinforcing the positive agglomeration externalities, *making developed regions more attractive to foreign capital than other regions,*
 - *Reasons for the territorial concentration of FDI:* past growth, the favorable economic & infrastructural conditions, geographical location, better quality of workforce and business environment,
3. GFC Investment is not generated by FDI, and investments by *government and EU funds*, (and domestic private investments) *play a much larger role in GDP growth than FDI* (no causality).



Conclusions

- The role of FDI in economic growth revisited in ECE
- *There is no significant impact of IFDI on development rather economic development has a stronger impact on IFDI inflows!*
- *Dual economy effect are higher than spillover effects*
- *Territorial duality* of the Hungarian economy is *reinforced by FDI with limited spillovers*, but is actually it is the *result of the cumulative effects* of mutually reinforcing regional disparities.
- Even in the advanced regions there is *a lack of growth factors of endogenous and innovation-driven development*: due to the absence of endogenous growth factors
- *FDI alone will not ensure long-term and sustainable growth in the regions.*
- Failure of domestic policies in promoting domestic industries!



Thank you very much for your attention!



Photo: Gábor Hámori

See you at the next physical Congress of ERSA (European Regional
Science Association) August 23-27. 2022,
(Pécs, Hungary)

