Foreign Direct Investment impact on economic growth:

A GVAR analysis of international linkages

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Academic Year:
2021/2022

Introduction

- *FDI definition and technical forms*

- *Accepted contributions to be tested*

- *Global framework*

GVAR models

- Utility for the analysis and main characteristics

GIRF dynamic analysis

- Main findings and relevant literature

Conclusions

FDI is defined as a **lasting interest** in an enterprise resident in another economy.
Initial equity investments should represent at least **10%** of the foreign affiliate's voting power to be classified as direct investment.

[*OECD Benchmark Definition and IMF BPM*]

FDI technical forms are defined depending on **business creation** and **business line**.

- ‣ Greenfield
- ‣ Brownfield (M&As)

- ‣ Horizontal
- ‣ Vertical
- ‣ Conglomerate
- ‣ Platform

The common goal is the exploitation of **locational advantages**.

Why should host countries benefit from FDI ?

Innovation

[Huang *et.al.*, 2022]

Trade relationships
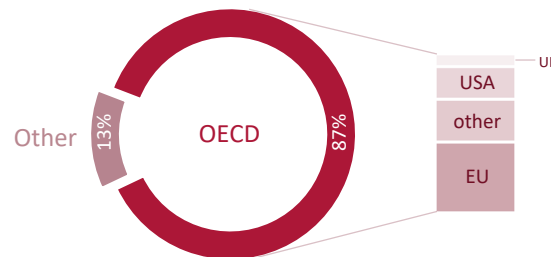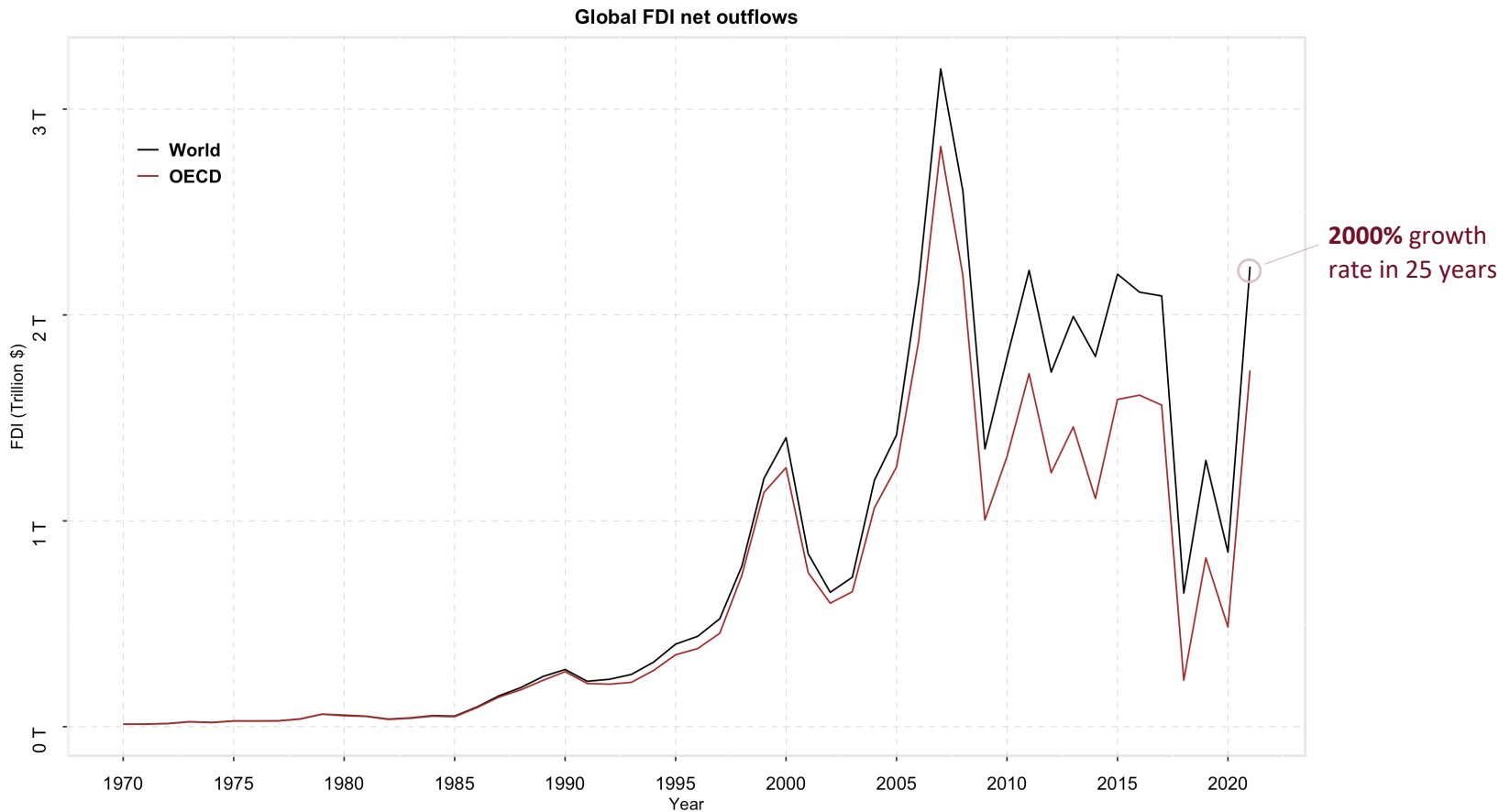
[Fontagné, 1999]

Additional funding

[Meguerian-Faria, 2021]

Stimulus to domestic competition

[Farhan *et.al.*, 2014]

Global FDI net outflows

[Data from World Bank]

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GVAR [2] → combination of small-scale **VAR** models with exogenous variables (**VARX*** [1]).

TWO STEPS PROCEDURE

$$Y_t = \sum_{i=1}^{p} \boldsymbol{\Pi}_p \boldsymbol{y}_{i,t-p} + \boldsymbol{\Theta}_0 \boldsymbol{y}_t^* + \sum_{j=1}^{q} \boldsymbol{\Theta}_q \boldsymbol{y}_{j,t-q}^* + \boldsymbol{\varepsilon}_t \qquad [1]$$

$$\boldsymbol{y}_{jt}^* = \overline{\boldsymbol{W}'}_i \, \boldsymbol{y}_{it} \, , \sum_{j=1}^{q} w_i = 1 \qquad [1.1]$$

$$\boldsymbol{y}_t = (\boldsymbol{y}_{1,t} \, , \boldsymbol{y}_{2,t} \, , \dots , \boldsymbol{y}_{N,t}) \qquad [1.2]$$

$$\boldsymbol{y}_t = \sum_{i=1}^{p} \boldsymbol{F}_l \boldsymbol{y}_{t-l} + \boldsymbol{G}_0^{-1} \, \boldsymbol{\varepsilon}_t \qquad [2]$$

Main feature → solve _curse of dimensionality_.

[Pesaran _et.al._, 2004]

Application → *Generalised Impulse Response Functions (GIRF)*

A shock «δ» is introduced in the vector of random components
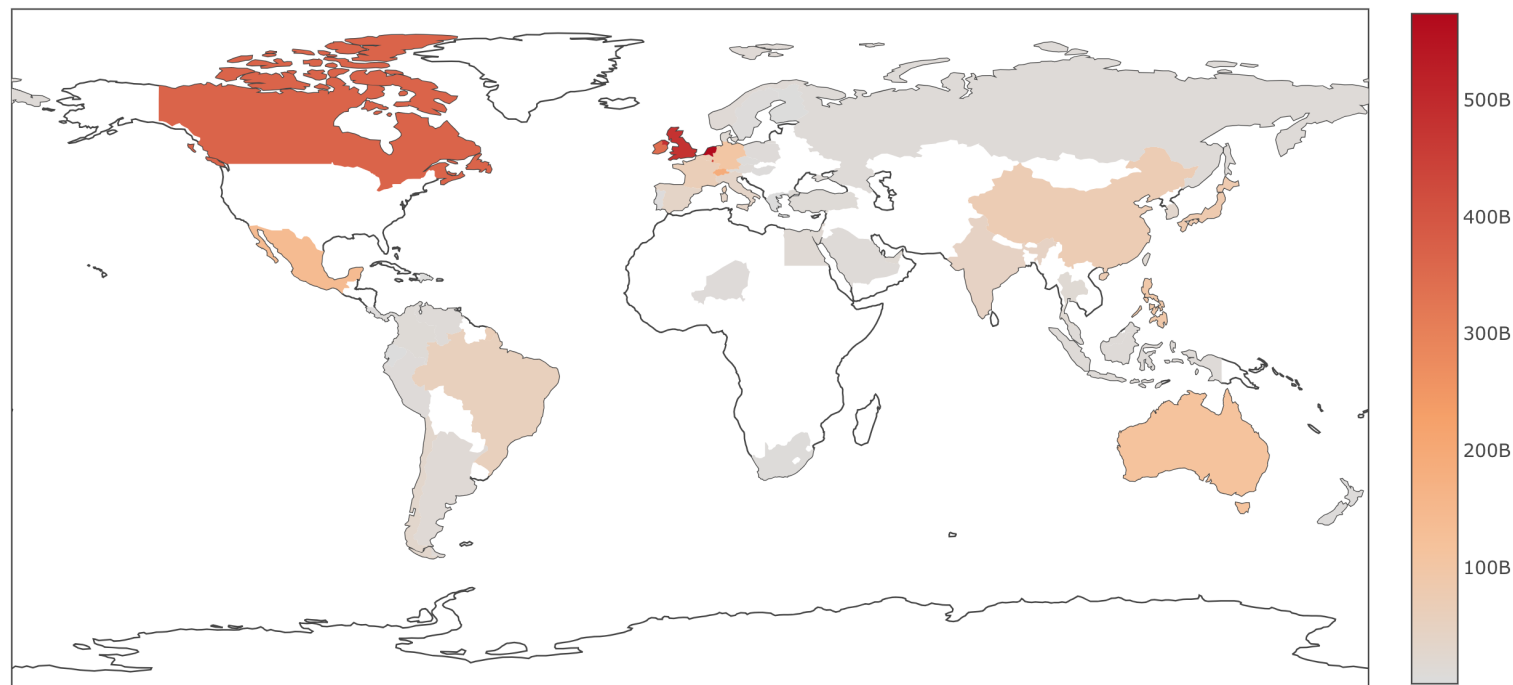
$$y_t = \sum_{i=1}^{p} F_l y_{t-l} + G_0^{-1} \varepsilon_t$$

$$I_y(n, \delta, \omega_{t-1}) = E[Y_{t+n} | V_{i,t} = \delta, \omega_{t-1}] - E[Y_{t+n} | V_{i,t} = 0, \omega_{t-1}]$$

$$[Kook, 1996]$$

Analysis

Positive shock on **bilateral FDI outward flows** from the U.S. to 16 target countries

[Data from BEA]

Australia, Brazil, Canada, China, France, Germany, India, Italy, Japan, Korea, Mexico, Netherlands, Norway, Sweden, Switzerland, United Kingdom.

FDI impact has been studied as **Bilateral** and **Third-country** reaction in 4 variables:

Balance on Goods   [OECD International Trade Statistics]

R&D intensity rate   [World Bank]

Unemployment rate   [OECD Labor Market Statistics]
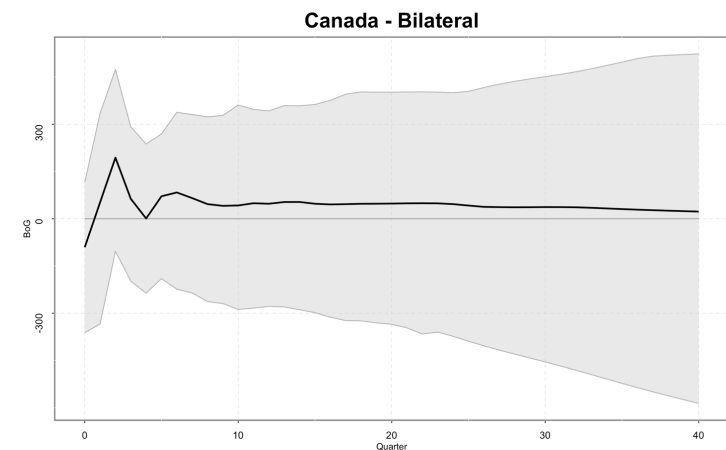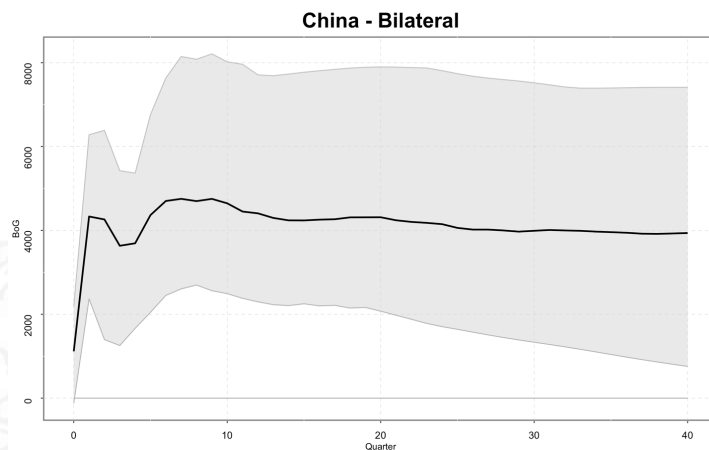
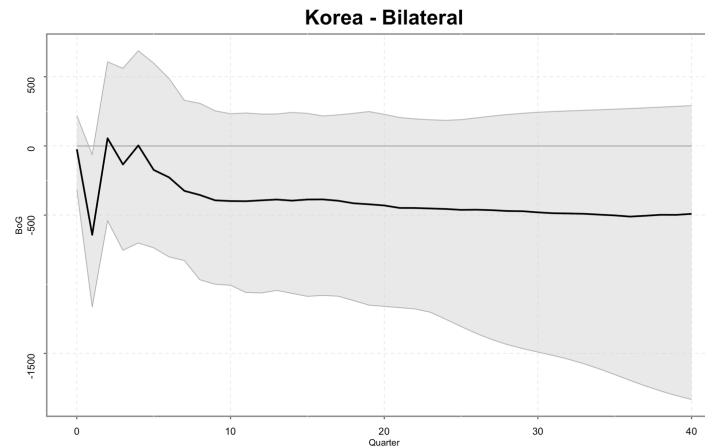Real GDP   [OECD and FRED]

Resulting in 766 GIRFs.

[Sun et.al., 2013] [Dees et.al., 2007] → short term response
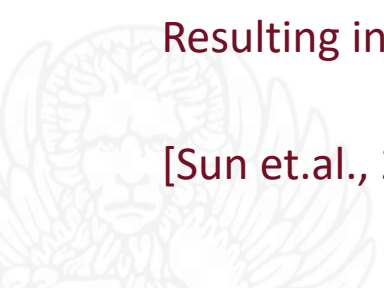
[Fontagné, 1999] [Tran and Dihn, 2014] → Import expansion of intermediate and capital goods

[Tseng and Zebregs, 2002] → Manufacturing capacities and Special Economic Zones

[Qin *et.al.*, 2022] → Economic growth, human capital and scientific clusters in 262 Chinese cities

[Julie, 2007] → Relocation phenomena of R&D activities in 71 Swiss tech-MNEs
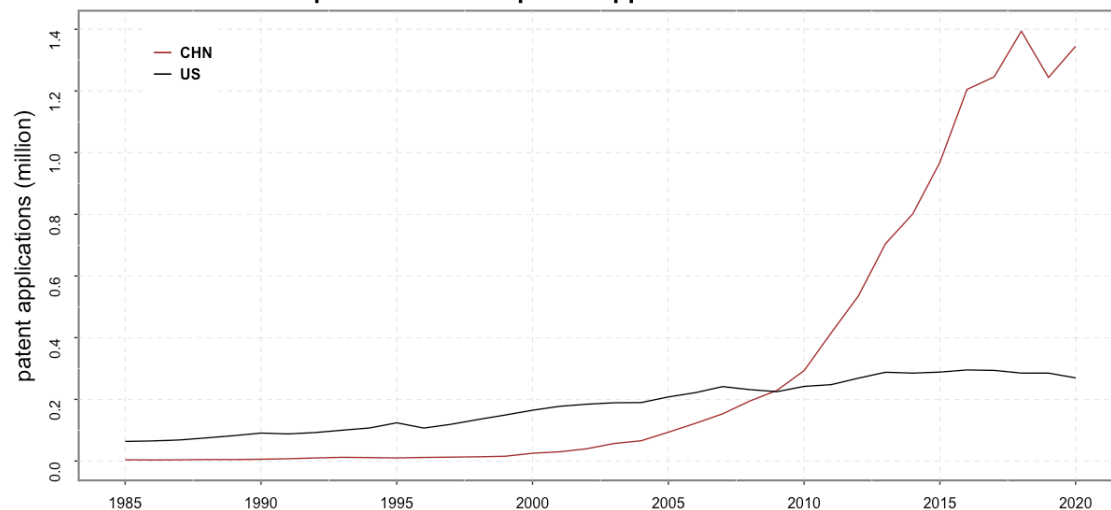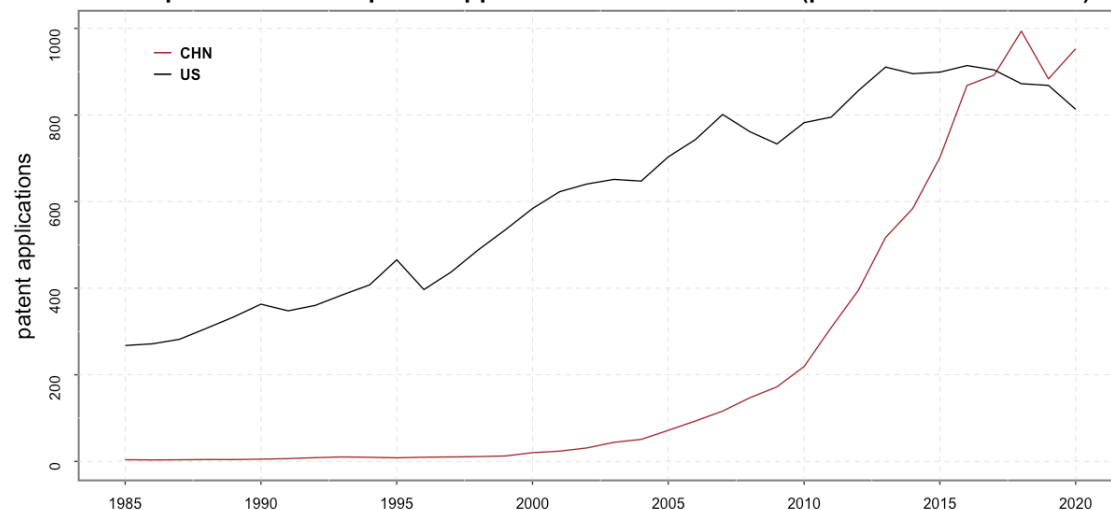

China - Bilateral

United States - Spillover from China
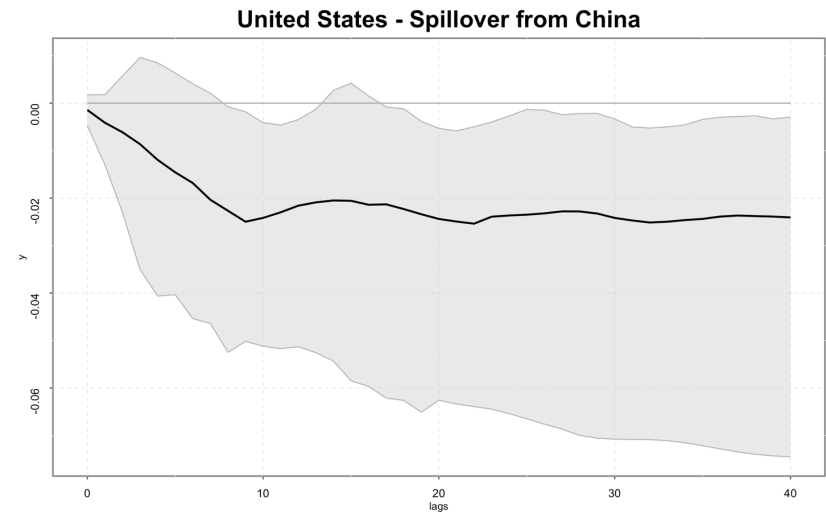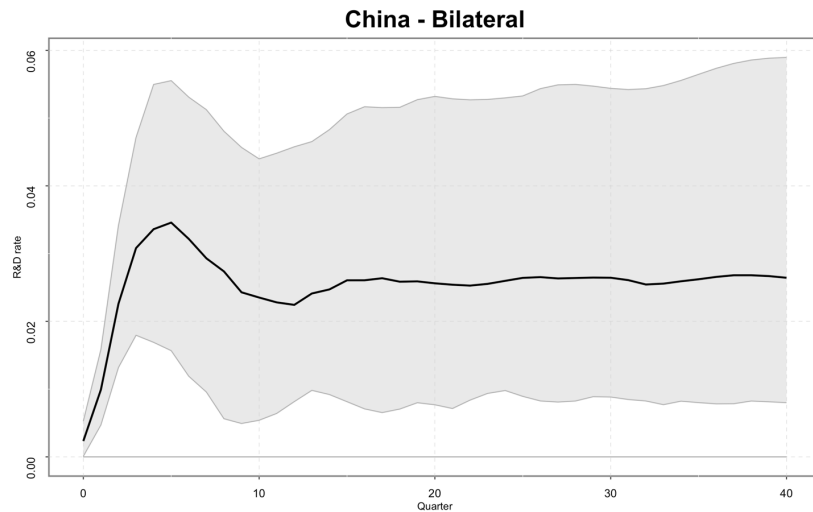
R&D intensity rate

	China	USA
2000 Q1	0.89 %	2.63 %
2019 Q4	2.24 %	3.17 %
	152 %	20 %

[Data from World Bank]

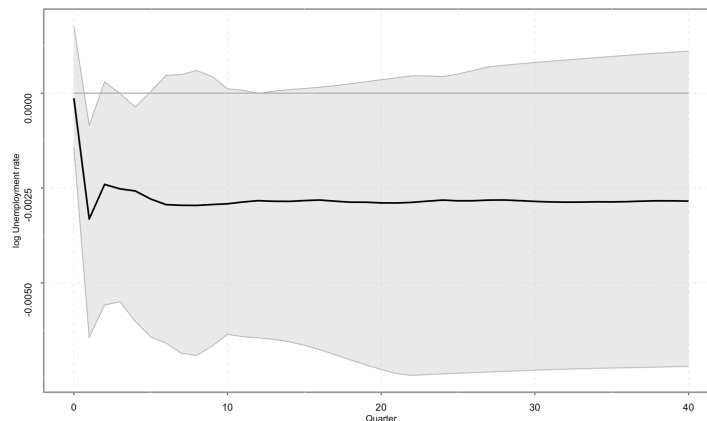**Comparison between patent applications in China and US**

Comparison between patent applications in China and US (per million of residents)
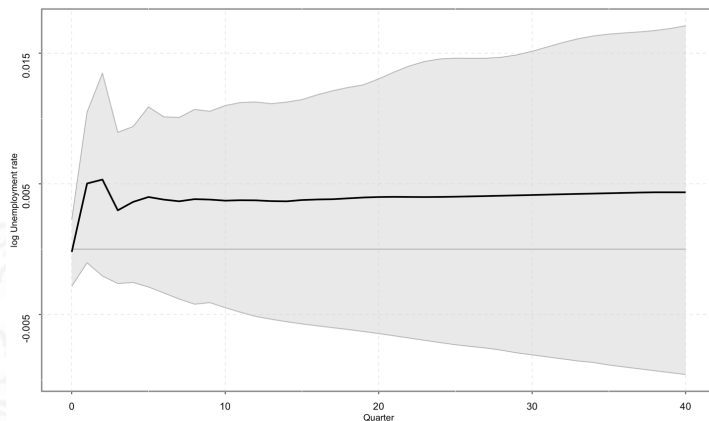
[Lee and Park, 2020] → Greenfield FDI in Korea from developed economies in one industry

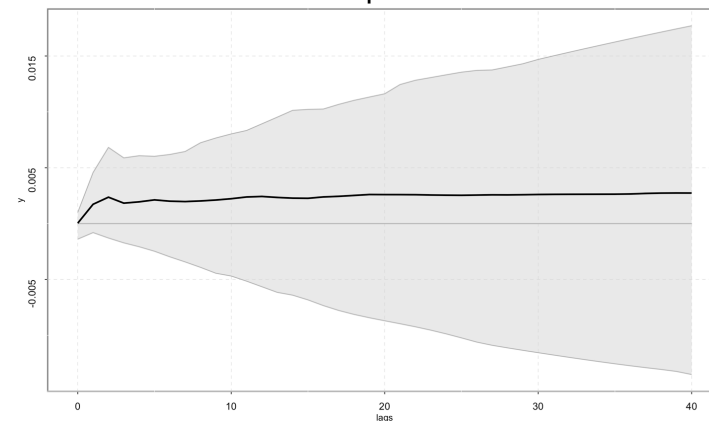[Scott, 2003] [Ernst, 2005] → NAFTA drawbacks and "Maquiladoras" industry

Korea - Bilateral

Mexico - Bilateral

United States - Spillover from Mexico

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- ▸ FDI **largest bilateral impacts** are found in **Balance on Goods** and **Research & Development**, with mixed results in the former and a strong prevalence of positive reactions in the latter.

- ▸ A positive **"neighbouring effect"** has been observed in Europe for the two variables, whereas a negative and more limited one is found in USMCA countries' labor markets.

- ▸ A possible **relocation phenomenom** for R&D activities is observed between China and US; positive spillovers in research activities are found in Asia between Japan and Korea, whereas negative are found from Netherland to Italy and UK.

- ▸ The most significant **Unemployment** GIRFs are observed as **decreasing bilateral impacts** in Korea, Norway, Japan and France; Mexico represents the only contrasting evidence, a result frequently accepted in literature and attributed to NAFTA consequences.

- ▸ **Real GDP is weakly affected by the shock** [Encina and Villegas, 2015], a mild positive reaction is observed in India, coherently with Baiashvili and Gattini (2020) and the World Bank Atlas classification of middle-income countries.

- ▸ **Developed countries**' involvement is sensibly larger, in particular in USMCA countries, Europe and China, with more isolated impacts in Asia for Korea and Japan and exceptions found in Mexico and India.

Thank you for Your attention