

# **Foreign Direct Investment spillovers and the absorption capabilities of domestic firms in the Argentine manufacturing sector in the 90s**

**Daniel Chudnovsky, Andrés López  
and Gastón Rossi**

**Universidad de San Andrés – Universidad de Buenos Aires -  
CENIT**

**Paper prepared for the 1<sup>st</sup> GLOBELICS  
conference “Innovation Systems and  
Development Strategies for the Third Millennium”,  
Rio de Janeiro, 3-6 November 2003**

# The economic policy framework in Argentina during the 90s

- ◆ Convertibility Plan: stabilization cum growth until 1998
- ◆ Structural reforms
  - Trade and capital accounts liberalization
  - Deregulation of most economic activities
  - Privatizations
  - Mercosur

***The rapid transition to a more competitive economic environment meant a great challenge for domestic firms (options: restructure, sell or go bust)***

# The FDI boom

- ◆ The main “winners” of the restructuring process were TNCs affiliates. Between 1990-2001:
  - The FDI stock went from 6% to 26% of the country’s GDP
  - The TNCs share in the sales of the 1000 largest Argentine firms increased from 39 to 67%
  - The number of TNCs among the 1000 largest firms augmented from 199 to 472
  - M&As were the main form of entry

***Were domestic firms restructuring processes helped or hindered by the growing TNCs presence?***

# FDI Spillovers (I)

TNCs usually have “ownership advantages” (Dunning):

- Access to state of the art technologies and financial resources
- Superior organizational and marketing systems
- Innovative capabilities

***...but they are not always able to reap all the benefits associated with those advantages, so different kinds of positive spillovers for domestic firms may arise, including***

- a) Human capital spillovers
- b) *Intra-industry spillovers*
- c) *Inter-industry spillovers*

## FDI Spillovers (II)

- ◆ TNCs may have an incentive to help their clients and/or suppliers to take advantage of their knowledge assets
- ◆ In contrast, it is in their interest to prevent knowledge leakages to their competitors

***Hence, inter-industry spillovers are more probable than intra-industry spillovers***

- ◆ TNCs may also lead to negative spillovers when, for instance, domestic firms are forced to reduce their production or even to exit the market, as a result of the increasing presence of foreign firms

# How to reap the benefits from FDI presence?

- ◆ Some characteristics of the National Innovation System (NIS) of host countries may be key determinants regarding the possibility of positive spillovers to arise (i.e. *absorption capabilities*)
  - ◆ Previous analysis show that domestic firms in Argentina, especially SMEs, often have relatively low absorption capabilities, due to:
    - The lack of access to skilled personnel
    - The use of outdated management, productive and quality routines
    - The limited resources assigned to in house innovative activities
    - The lack of interactions with other firms and institutions
    - The scant access to information about technological options, etc.
- ...***This is aggravated in a context of pervasive failures in the domestic financial market.***

# FDI spillovers in Argentina: our previous hypothesis

- ◆ Given that SMEs have low absorption capabilities and that during the period under analysis there were almost no policies aimed at improving domestic firms absorption capabilities
  - ***We would not expect to find general positive spillovers from TNCs presence***
- ◆ However, in the 90s many domestic firms could improve their previously accumulated absorption capabilities to meet the challenge of the sudden change in the rules of the game
  - ***Hence, this group of firms may have reaped positive spillovers from TNCs presence***

# Research questions

- i. Have TNCs affiliates achieved higher levels of productivity than their domestic counterparts?
- ii. Has the growing presence of TNCs generated positive or negative spillovers for domestic firms?
- iii. Do domestic firms with high absorption capabilities have better chances of receiving positive spillovers from TNCs presence than firms with low absorption capabilities?
- iv. Are TNCs affiliates with strong innovative activities in host countries more likely to generate positive spillovers than those affiliates with a weak innovative behavior?



# FDI spillovers: The received literature (I)

- ◆ Studies on FDI spillovers have been made:
  - with different techniques and methodologies,
  - covering both developed as well as developing countries,
  - covering both countries that have and have not received substantial FDI,
  - considering very heterogeneous time periods,
  - using different endogenous as well as exogenous variables

# FDI spillovers: The received literature (II)

- ◆ Pioneer works (70s and 80s) usually found evidence of positive intra-industry spillovers, but they:
  - Used cross sectional data (sometimes aggregated at the sectoral level)
  - Failed to control for time-invariant differences in productivity across sectors which might be correlated with, but not caused by, foreign presence.

*... these problems could lead to upward biased estimates.*

- ◆ Panel data studies (longitudinal data sets that contain information about several firms in different points in time) are able to purge these time invariant effects and give unbiased estimates
- ◆ Recent studies, using firm level panel data, generally find evidence of negative spillovers or “mixed” results

# FDI spillovers: The received literature (III)

- ◆ Some factors that have been studied as conditioning FDI positive spillovers include:
  - Productivity and/or technological gaps between TNCs and domestic firms
  - Domestic firms absorption capabilities
  - TNCs investment sectors
  - TNCs affiliates innovative activities in host countries

# FDI spillovers in Argentina.

## Basic data (I)

- ◆ Information source: a survey to more than 1600 manufacturing firms with detailed data for 1992 and 1996
- ◆ In both years the economy was growing at high rates and by 1996 the effects of the implementation of the structural reforms were clearly visible
- ◆ 70% of the enterprises was founded before 1975, while only 3% of them was created in the 90s. Hence, surveyed firms were mostly born during the ISI process
- ◆ The sales of the surveyed firms grew 38% between 1992 and 1996. Total employment was reduced by 7% and sales per employee increased 45%

# FDI spillovers in Argentina.

## Basic data (II)

- ◆ The foreign presence grew in almost all sectors measured in terms of sales, employment and number of firms
- ◆ The gains in TNCs shares were mostly due to changes of ownership
- ◆ TNCs affiliates, *vis a vis* domestic firms, have:
  - Higher labor productivity levels
  - Higher ratios between skilled and non-skilled employees
  - Higher innovation expenditures relative to sales

# Econometric analysis (I)

In order to identify the sign of the intra-industry spillovers effect, we regress firms' labor productivity on different variables, including

- ◆ **Firm specific variables**

- The foreign share in the equity capital
- Size (proxied by total employees)
- The ratio between skilled and non-skilled employees
- Imports of capital goods
- Investments in domestic capital goods
- Total exports
- Age
- A dummy variable if the firm changed ownership

- ◆ **Sector specific variables**

- TNCs affiliates market share
- Sectoral concentration (Herfindahl Index)
- Trade openness
- A dummy variable reflecting differences in factoral intensity

# Econometric analysis (II)

- ◆ We estimated the model using different panel data techniques (fixed effects and random effects)
- ◆ In a second stage, we used different variables in order to see if the spillovers effects were different whether the national firms had high or low absorption capabilities (we built an Absorption Capabilities Index for each national firm)
- ◆ Then, we analyzed if the effects were dependant on the magnitude of the innovative activities of TNCs affiliates (we built an Index of Technological Behavior for each foreign firm)
- ◆ Finally, we combined both criteria

# Main findings and conclusions (I)

- i. Expectedly, TNCs have higher productivity levels than domestic firms
- ii. The presence of TNCs in Argentina generated negative productivity spillovers for domestic firms

This may be the result of the growth of TNCs market share, that led to production reductions in domestic firms operating with high fixed costs

***...but, by the very nature of the data, we are not able to know to what extent TNCs increasing presence also led domestic firms to go out of the market***



# Main findings and conclusions (II)

- iii. Even in a “market-driven” restructuring scenario, domestic firms with high absorption capabilities were able to reap positive spillovers from TNCs presence, while firms with low absorption capabilities received negative spillovers.
- iv. Higher levels of innovative activities by TNCs affiliates did not generate positive but negative spillovers for domestic firms.

Domestic firms with high absorption capabilities reap positive spillovers, no matter the innovative behavior of TNCs affiliates.

# Policy recommendations

- ◆ Developing countries which attract significant FDI inflows should not take for granted that domestic firms will benefit from TNCs presence, since this will only happen when absorption capabilities are present

***....Hence, policies aimed at fostering those capabilities (i.e. to promote the use of skilled personnel in SMEs, the undertaking of in house innovative activities, the linkages among the agents and institutions of the NIS, etc.) are at the top of the policy agenda in this area***