

# Incentivos temporários investimento e o desinvestimento de empresas estrangeiras

**NOVA**  
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Shaping  
powerful  
minds

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# Policies for attracting investment

- Targeted for domestic and (above all) foreign
- Often temporary
  - Subsidies, tax exemptions (tax holidays)

# Effectiveness of policy measures

- Can policies attract investment?
- Are these policies able to retain investment?

# Why tax holidays?

- Signaling (Bond and Samuelson (1986))
- Agglomerations (Konrad and Kovenock 2009)
- Sunk costs (Doyle and van Wijnbergen 1994)

# Evidence is mostly anecdotal

- “it was profitable for many investors, both foreign and domestic, to establish companies for the duration of the employment subsidy (five years), and to close them down once the subsidy expired.” (UNCTAD 2003 p.10)

- “the example of a manufacturer of computer microprocessors, which enjoyed an eight-year tax holiday in an Asian developing country. At the end of the tax holiday, the manufacturer simply packed up and set up a new operation in a neighboring country, which offered a new tax holiday” (UNCTAD 2000 p. 25).

# Systematic evidence

- Bond (1981)
  - Data on 152 firms in Puerto Rico
  - Tax exempt firms in 1974 are more likely to survive to 1975

# This paper

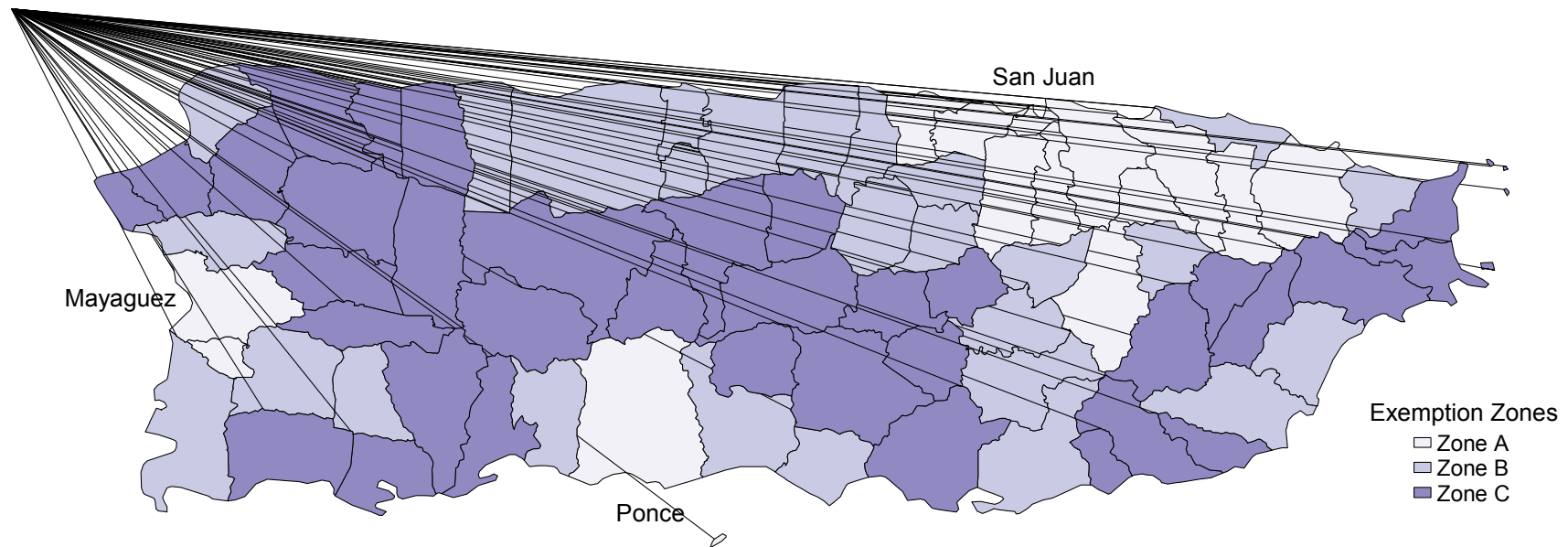
- Tax holidays in Puerto Rico
  - Do changes in the tax breaks lead to increased exit of firms?
  - Do investment characteristics affect the impact of changes in the tax breaks?



# Puerto Rican foreign investment policy

- Income is tax exempt during the first years
- Tax exemption is gradually reduced over time
  - Depending on location

# Tax Exemption Zones in Puerto Rico



Small changes in the zones occurred over time

# Key Economic Indicators by Zones

	Unemployment Rate	Per Capita Income	Literacy Rate
Zone A	14.9%	\$2,454.2	92.5%
Zone B	25.1%	\$1,659.9	87.6%
Zone C	30.8%	\$1,438.1	86.3%

# Percent of Investment Income Exempt

Years	1-5	6-10	11-15	16 - 20
Zone A	90%	75%	0%	0%
Zone B	90%	75%	65%	0%
Zone C	90%	75%	65%	55%

# Data

- Firms in Puerto Rico (1979-2007)
  - Entry and exit dates
  - Location
  - Tax exemption (beginning, changes, end)
  - Scale (Investment, employment, payroll)
  - Country of origin
- 786 firms established 1979 - 1997.
  - 651 U.S. based

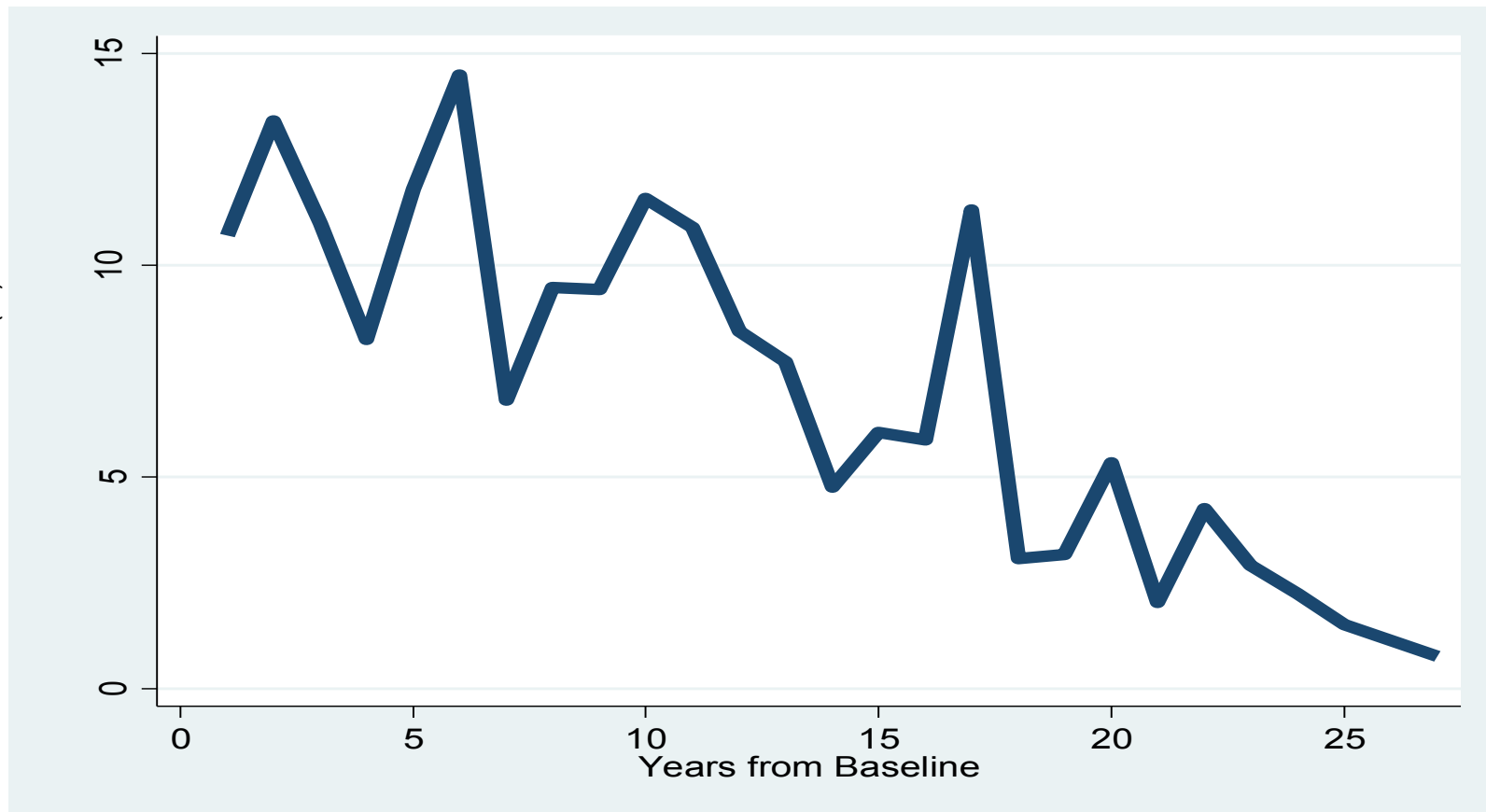
# Foreign investment in geographic zones

	Projects (%)	Employment (%)	Payroll (%)	Investment (%)
Zone A	31.0	14.0	13.3	16.4
Zone B	47.5	51.6	53.7	51.2
Zone C	21.5	34.4	33.0	32.4

# Foreign investment per industry

Industry	Proj. (%)	Employ. (%)	Pay (%)	Invest. (%)
28-Chemicals	12	10	14	<b>34</b>
36-Electronic & Electr Equip	14	<b>19</b>	<b>19</b>	12
38-Instruments	9	13	<b>19</b>	<b>17</b>
40-Export Service Industries	<b>16</b>	2	3	2

# Exit over time





# Estimation

- Cloglog regression (also stacked logit)
- All regressions include dummies for:
  - Exemption Zones (2),
  - Municipalities (69),
  - Industry (19),

# Research questions?

- Do firms exit more when tax breaks disappear (or are decreased)?
- Is this effect greater for firms:
  - that are familiar with the country?
  - which invest in activities for which there are no agglomerations?
  - whose projects are less sunk?

# Familiarity with host country

- U.S. firms are more familiar than non-firms
- Immigrant communities
  - Non U.S. firms – size of the immigrant community
    - Dominican Rep, Spain, Colombia (23% of all firms)
  - U.S. firms – size of the Puerto Rican community
    - New York, New Jersey, Connecticut (36% of all firms)
- Hispanic communities; Spanish speaking countries
- Geographic distance to Puerto Rico

# Agglomerations

- Urbanization economies
  - Size of the urban areas; more general services and infrastructures, greater density of workers skills
    - Plants in county; Persons in county
- Localization economies
  - Size of the industry cluster in one location; industry specific knowledge spillovers
    - Employment in industry county
- Development of agglomerations
  - Increase in scale of region/cluster since investment

# Specificity

- Capital intensity
  - Physical (Capital per employee)
  - Human (Wage per employee)

# Results

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Age	0.0055
In Investment	-0.2537 ***
<i>Change of Exemption</i>	0.1954 ***

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Baseline hazard rate 8%

Marginal effect 2 p.p.

# Results (change and interactions)

Change	-2.061**	-2.098**	-1.982**
* In Wage per worker	-0.413*	-0.401*	-0.472**
* Employment industry county	-0.001**	-0.001**	-0.001**
* Plants in county	-0.003	-0.003	-0.002
* USA	0.687**	0.551	0.374
* PR in USA (3 states)		0.394*	
* Immigr in PR (3 countries)		1.123*	
* Hispanics in US (3 s)			-0.056
* Span spk immigrants in PR			-0.811

# Results (change and interactions)

Change	-2.060**	-2.056**
* In Wage per worker		-0.408*
* In Investment per worker	-0.130*	
* Employment industry county	-0.001*	-0.001***
* Plants in county	-0.003	
* Population in county		-0.004
* USA	0.534	0.585
* Puerto Ricans in USA (3 s)	0.376*	0.394*
* Immigrants in PR (3 c)	1.417*	1.125*



# Marginal effects

Overall	0.017**	0.018**
USA=0	-0.018	-0.020
USA=1	0.023***	0.024***
Quintiles	In investment per worker	In wages per worker
q20	0.029***	0.032***
q40	0.021***	0.024***
q60	0.014	0.016**
q80	0.006	0.007

# Conclusions

- Tax holidays attract firms
- Every time tax breaks are reduced firms exit more
  - 2 p.p. for 2 years (compared with 8% baseline)
- Impact of tax breaks upon exit is larger when:
  - Firms are familiar with host country
  - Agglomerations do not develop in the area
  - Projects are more capital intensive

# Implications for policy

- Implications are unclear:
  - How do benefits from FDI spread over time?
  - Spillovers
    - Vertical – via contractual relations with suppliers
      - likely to happen as early as possible
    - Horizontal – via labor flows,
      - likely to increase when foreign firms exit

# Implications for managers

- Upstream firms
  - Exit of foreign firms is bad news
  - Avoid making specific investments, if clients benefit from temporary incentives
- Competitors
  - Exit of foreign firms is good news
  - Scout the horizon in search of exiting firms