European Funds and Firm Dynamics: Exploring an Exogenous Increase in Access

João Pereira dos Santos [1]   José Tavares [2]

[1]Nova SBE

[2]Nova SBE and CEPR

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Motivation

- The European Union (EU) aims at pursuing economic, social and territorial cohesion among its members.
- The results of this policy are hard to assess, and researchers document **mixed results**.

Research Questions

1. What is the impact of enhanced EU funding access on **business creation** in contiguous Portuguese "convergence" regions?

2. Are there **spillover effects** from neighboring funds or dynamics and do they matter?

- A key element is the fact that we examine the impact of **increased access**, a strategy opposite what most empirical papers have followed thus far.
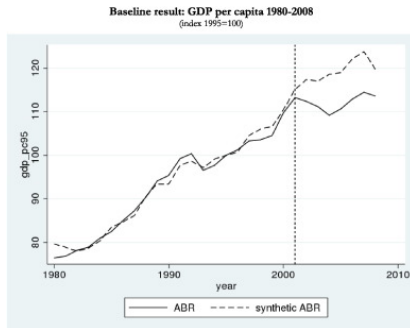
What we do and what we do not do

- We considered European Funds accessed by Portuguese mainland municipalities.
- Other types of Funds would answer a different – yet complementary – question.
- There are several theoretical and practical reasons why we restrict our attention to these resources.

European Funds in the Literature

- The first contributions unveiled non significant effects of EU regional policy on per-capita-income growth (Sala-i-Martin, 1996)

- More sophisticated empirical approaches have been attempted:

  - IVs - Dall'Erba and Le Gallo (2008), Ramajo et al. (2008);
  - (dynamic) panel data - Rodriguez-Pose and Fratesi (2004);
  - a combination of the two - Esposti and Bussoletti (2008); Mohl and Hagen (2010), Bouayad-Agha, Turpin, and Védrine (2013);
  - bayesian methods - Cuaresma, Doppelhofer, and Feldkircher (2012).

- Becker, Egger, and von Ehrlich (2010) used the fact that NUTS2 regions are eligible for funding if their GDP per capita is less than 75% of the EU average.

- Becker et al. (2013) show that the presence of sufficient human capital and well-functioning institutions do benefit the translation of financial transfers into faster growth.
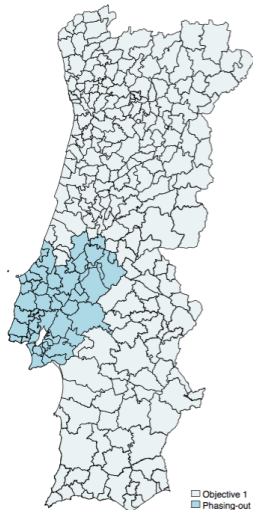
Closer to our methodology

▶ Barone et al. (2016) focuses on the post-expiry period to examine the persistence of the economic boost to "convergence" regions.

Baseline result: GDP per capita 1980-2008
(index 1995=100)

▶ Di Cataldo (2017) also constructs a counterfactual region for two of the largest beneficiary regions in the UK. The results show that labor market perspectives have improved.

▶ Giua (2017) exploits spatial discontinuities in Italian Objective 1 regions and finds a positive impact on employment levels.
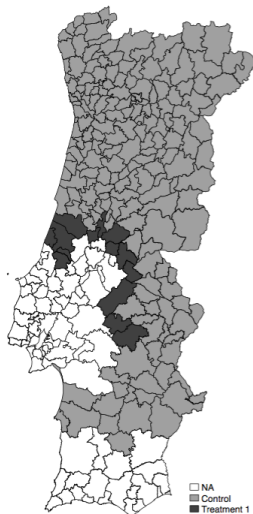
European Funds in Portugal

Community Support Framework 2000-2006   Community Support Framework 2007-2013

□ Objective 1
■ Phasing-out

□ Convergence
■ Phasing-out
■ Competitive

The quasi-natural experiment

Empirical Strategy
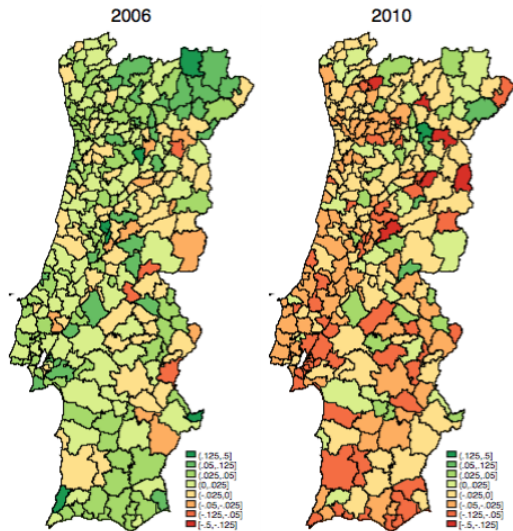
We exploit this quasi-natural experiment using a diff-in-diff:

$$Y_{it} = \alpha_i + \alpha_1 QREN_{it}.\text{Treated Municipalities}_i + \alpha_2 \text{Year dummies}_{it} + \alpha_3 X_{it} + \alpha_4 \text{European Funds}_{it} + \epsilon_{it} \tag{1}$$
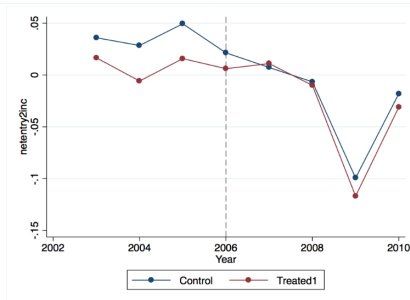
- Dependent variable:
  - Entry Rate
  - Exit Rate
  - Net Entry Rate

- X data publicly available from INE, DGAL, and Agência Desenvolvimento e Coesão:
  - Demographics (ln Population, Dependency ratio, Tertiary Education Share)
  - Economics (Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy)
  - Politics (Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share)
  - European Funds (resources and number of spending items – for own municipality and *average* neighbors)

- Standard errors are clustered at the municipal level

Distribution in Space and Time

▶ (Net) Entry and Exit Rates computed from Quadros de Pessoal:

Assumption I. Trends must be parallel in the pre-treatment period

Assumption II. Municipal characteristics must be balanced in the pre-treatment period

Mean Differences Between Treatment and Control

	Treated	Control	Difference
ln Population	9.519	9.685	-0.166
Dependency ratio	68.009	59.551	8.458
Tertiary Education Share	0.056	0.056	-0.001
Mean Value of Real Estate	4.485	4.903	-0.418
Electric Consumption	4050.701	3898.448	152.253
1st Instance Court dummy	0.714	0.784	-0.070
Highways dummy	0.500	0.463	0.037
Primary Expenditure PC	0.956	0.877	0.079
Municipal Business Tax Rate	0.041	0.043	-0.002
Municipal Property Tax Rate	0.713	0.691	0.022
Same Political Party dummy	-0.070	0.358	0.288
Majority dummy	0.857	0.911	-0.053
Leftist Mandates Share	0.491	0.504	-0.012
Mayor Tenure	10.571	10.337	0.235
Industrial Area Share	0.009	0.013	-0.005

Note: Standard errors are clustered at the district level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***).

Diff-in-diff Results

Baseline Results (2003-2010): Entry Rates

	Entry Rate				
	(1)	(2)	(3)	(4)	(5)
Treated*QREN	0,018***	0,018***	0,018***	0,018***	0,013***
	(0,004)	(0,004)	(0,004)	(0,004)	(0,004)
Controls	No	Yes	Yes	Yes	Yes
European Funds	No	No	Yes	Yes	Yes
European Funds NG	No	No	No	Yes	Yes
Dependent variable NG	No	No	No	No	Yes
Municipal Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Number of observations	1.632	1.632	1.632	1.632	1.632
Adjusted R2	0,368	0,379	0,378	0,378	0,410

Note: Standard errors are clustered at the municipal level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***). The set of time-varying municipal controls includes ln Population, Dependency ratio, Tertiary Education Share, Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy, Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share.NG stands for neighbour's average. PC stands for per capita.

Diff-in-diff Results

Baseline Results (2003-2010): Exit Rates

	Exit Rate				
	(1)	(2)	(3)	(4)	(5)
Treated*QREN	0,001	-0,000	-0,000	0,001	0,000
	(0,005)	(0,006)	(0,006)	(0,006)	(0,005)
Controls	No	Yes	Yes	Yes	Yes
European Funds	No	No	Yes	Yes	Yes
European Funds NG	No	No	No	Yes	Yes
Dependent variable NG	No	No	No	No	Yes
Municipal Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Number of observations	1.632	1.632	1.632	1.632	1.632
Adjusted R2	0,504	0,506	0,507	0,512	0,528

Note: Standard errors are clustered at the municipal level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***). The set of time-varying municipal controls includes ln Population, Dependency ratio, Tertiary Education Share, Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy, Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share.NG stands for neighbour's average. PC stands for per capita.

Diff-in-diff Results

Baseline Results (2003-2010): Net Entry Rates

	Net Entry Rate				
	(1)	(2)	(3)	(4)	(5)
Treated*QREN	0,018***	0,018**	0,019**	0,016**	0,013**
	(0,006)	(0,007)	(0,008)	(0,007)	(0,006)
Controls	No	Yes	Yes	Yes	Yes
European Funds	No	No	Yes	Yes	Yes
European Funds NG	No	No	No	Yes	Yes
Dependent variable NG	No	No	No	No	Yes
Municipal Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Number of observations	1.632	1.632	1.632	1.632	1.632
Adjusted R2	0,553	0,558	0,558	0,562	0,584

Note: Standard errors are clustered at the municipal level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***). The set of time-varying municipal controls includes ln Population, Dependency ratio, Tertiary Education Share, Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy, Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share.NG stands for neighbour's average. PC stands for per capita.

Heterogenous Baseline Results (2003-2010): Entry Rates

	Sector of Activity			Firm Size (Number of Workers)			Capital		
	Primary	Secondary	Tertiary	1 and 2	3 to 10	11 or more	Domestic	Mixed	Foreign
Treated*QREN	0,004*	0,004	0,006***	0,011***	0,003	0,000	0,013***	0,000	-0,001
	(0,002)	(0,003)	(0,002)	(0,003)	(0,002)	(0,000)	(0,004)	(0,000)	(0,000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
European Funds	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
European Funds NG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent variable NG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1 632	1 632	1 632	1 632	1 632	1 632	1 632	1 632	1 632
Adjusted R2	0,213	0,287	0,248	0,299	0,273	0,047	0,505	0,021	0,013

Note: Standard errors are clustered at the municipal level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***). The set of time-varying municipal controls includes in Population, Dependency ratio, Tertiary Education Share, Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy, Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share.NG stands for neighbour's average. PC stands for per capita.

Diff-in-diff Results: Robustness Check I (in time)

In time Falsification Test (2003-2006)

	Entry Rate			
	No Crisis Period		Falsification Test	
	(1)	(2)	(3)	(4)
Treated*QREN	0,017***	0,010**	-0,002	0,000
	(0,005)	(0,005)	(0,005)	(0,005)
Controls	Yes	Yes	Yes	Yes
European Funds	No	Yes	No	Yes
European Funds NG	No	Yes	No	Yes
Entry Rate NG	No	Yes	No	Yes
Municipal Fixed Effects	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Number of observations	816	816	816	816
Adjusted R2	0,333	0,382	0,203	0,257

Note: Standard errors are clustered at the municipal level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***). The set of time-varying municipal controls includes ln Population, Dependency ratio, Tertiary Education Share, Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy, Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share.NG stands for neighbour's average. PC stands for per capita.
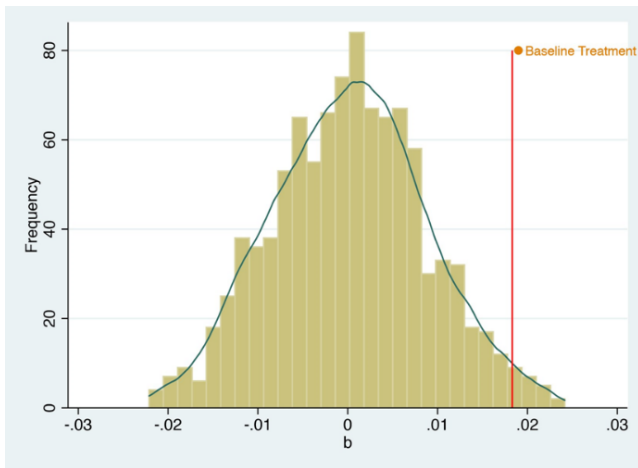
Diff-in-diff Results: Robustness Check II

Restricting the Comparison and Treatment Groups (2003-2010)

| | Entry Rate | | | | | |
| | No Oporto Metropolitan Area | | No North Region | | Only Centre Region | |
	(1)	(2)	(3)	(4)	(5)	(6)
Treated*QREN	0,019***	0,013***	0,014***	0,013***	0,011***	0,011***
	-0,004	-0,004	-0,004	-0,004	(0,004)	(0,004)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
European Funds	No	Yes	No	Yes	No	Yes
European Funds NG	No	Yes	No	Yes	No	Yes
Entry Rate NG	No	Yes	No	Yes	No	Yes
Municipal Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1.504	1.504	944	944	624	624
Adjusted R2	0,374	0,403	0,31	0,308	0,346	0,347

Note: Standard errors are clustered at the municipal level. Stars indicate significance levels of 10% (*), 5% (**), and 1% (***). The set of time-varying municipal controls includes ln Population, Dependency ratio, Tertiary Education Share, Mean Value of Real Estate, Electric Consumption, 1st Instance Court dummy, Highways dummy, Primary Expenditure PC, Municipal Business Tax Rate, Municipal Property Tax Rate, Same Political Party dummy, Majority dummy, Leftist Mandates Share, Mayor Tenure, Industrial Area Share. NG stands for neighbour's average. PC stands for per capita.

Diff-in-diff Results: Robustness Check III (in space)

Entry Rate

Concluding Remarks

- Our paper exploits a unique quasi-natural experiment where increased access to European Union regional funds was administratively attributed to some municipalities by artificially splitting a "non-convergence" region.

- The results are consistent in the several robustness checks.

- Most of the effect of increased access seems to be related to wholly domestic owned micro enterprises, in the agricultural and mostly in the service sector.

THANK YOU!
E-mail: joao.santos@novasbe.pt
Website: https://sites.google.com/site/joaorpereirasantos/home