

FUNDOS EUROPEUS ESTRUTURAIS E DE INVESTIMENTO (FEEI)

AVALIAÇÃO DE IMPACTO NAS DIFERENTES
REGIÕES EM PORTUGAL

RESULTS PRESENTATION

NOVEMBER | 2021

Research Questions

1. What was the economic impact of the European Structural and Investment Funds on the Portuguese regions from 2015 to 2019?
2. How did they contribute to the regional convergence in Portugal?
3. How did they contribute to the convergence of the Portuguese economy towards the EU average?



Data

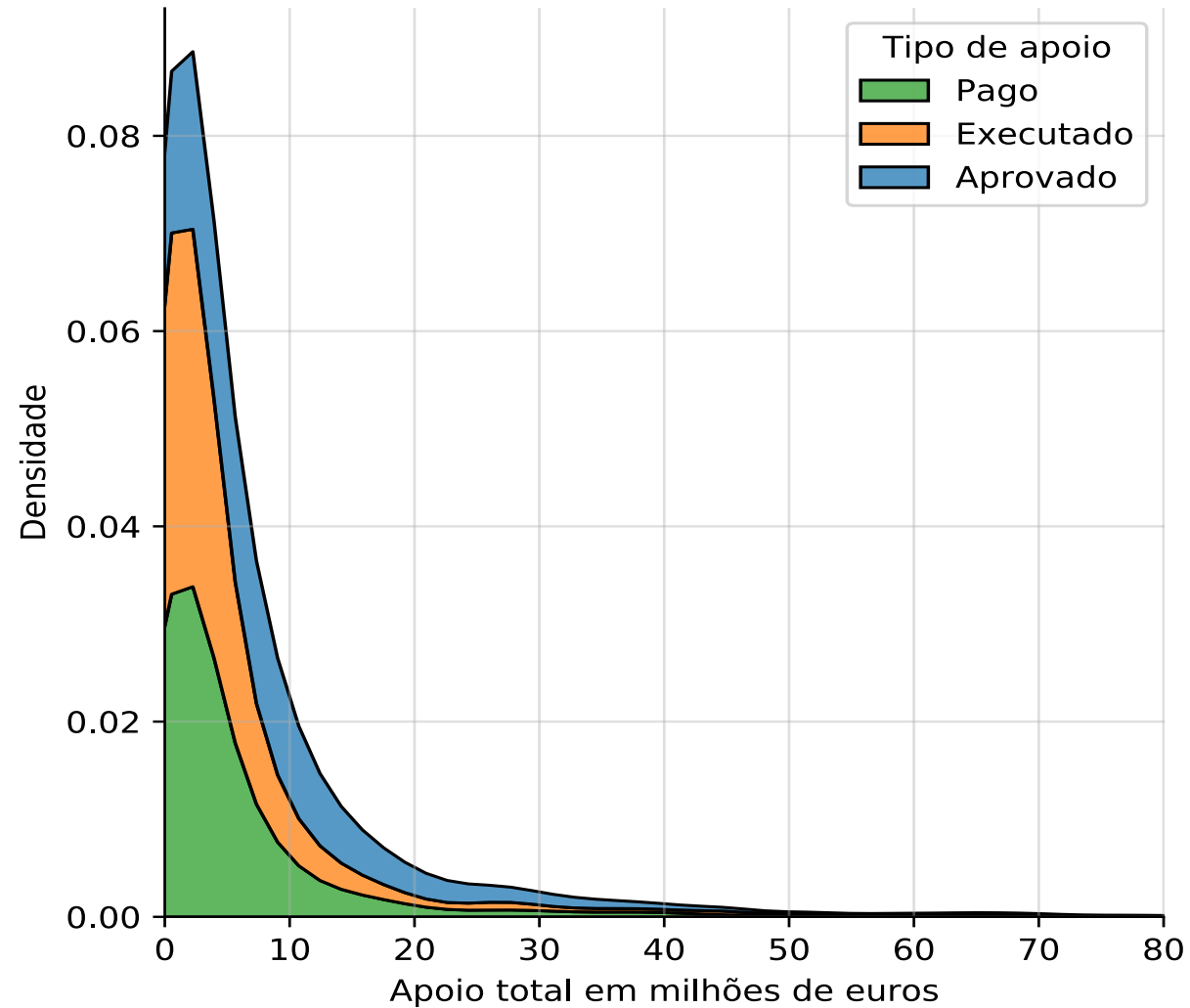
- We construct a novel panel database at the municipality level ranging from 2015 to 2019.
 - We have Approved, executed and paid EU support, gross value added, employment, unemployment rate, exports, labor productivity, number of firms and average wage for each observation.
- The construction involves two steps:
 1. Aggregate AD&C cumulative data on all operations of PT2020 (**CF, ERDF and ESF**) that were regionalized at the municipality level. The flow of funds for each year are recovered by taking the first difference.
 2. Merge the EU Funds data with INE/PORDATA data



Descriptive Statistics

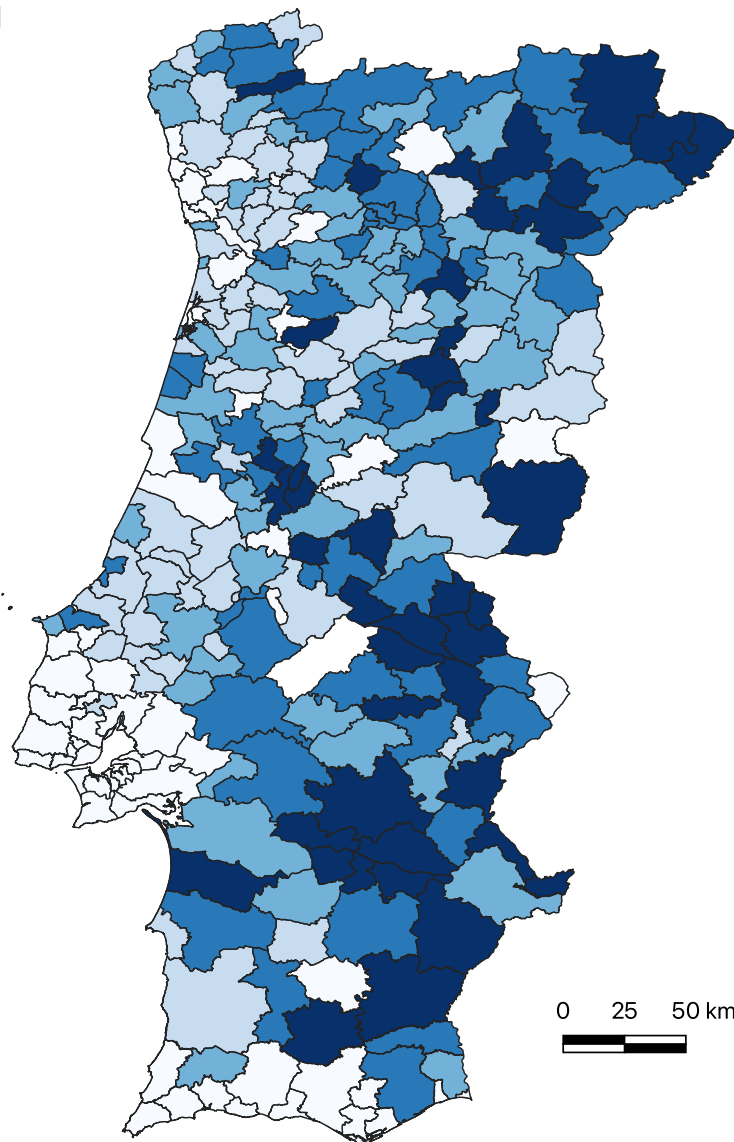
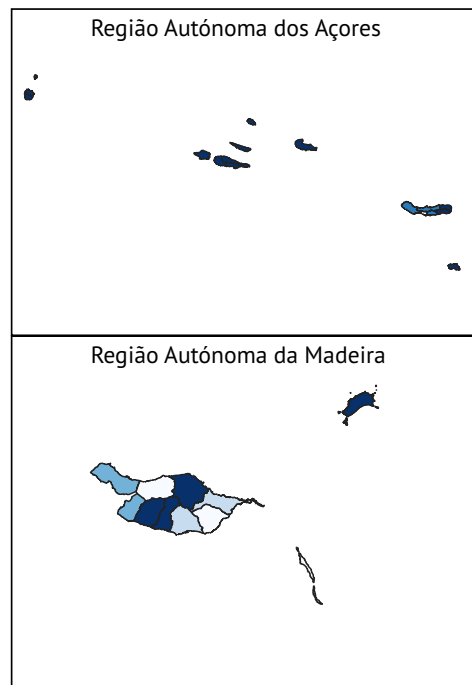
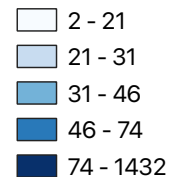
Variáveis	N	Média	Desvio-Padrão	Percentil 25	Percentil 50	Percentil 75
Apoio Aprovado (em milhões de €)	1.824	10,2	21,8	1,5	3,9	10,2
Apoio Executado (em milhões de €)	1.824	4,9	10,0	0,5	1,8	5,0
Apoio - Pagamentos (em milhões de €)	1.824	5,3	11,3	0,6	2,0	5,5
Valor Acrescentado (em milhões de €)	1.848	291,0	1.312,0	20,6	62,2	200,4
Exportações (em milhões de €)	2.156	166,1	491,2	2,4	16,0	118,1
Emprego (em €)	1.848	9.107	25.527	1.012	2.602	7.694
Produtividade Anual / Trabalhador	1.848	17.278	9.281	12.066	15.356	20.122
Desemprego (em %)	2.156	6,1	3,2	4,2	5,9	8,0
Nº Empresas	1.848	3.965	8.052	8.095	1.664	4.162
Nº Concelhos	308	308	308	308	308	308

EU funds distribution across municipalities

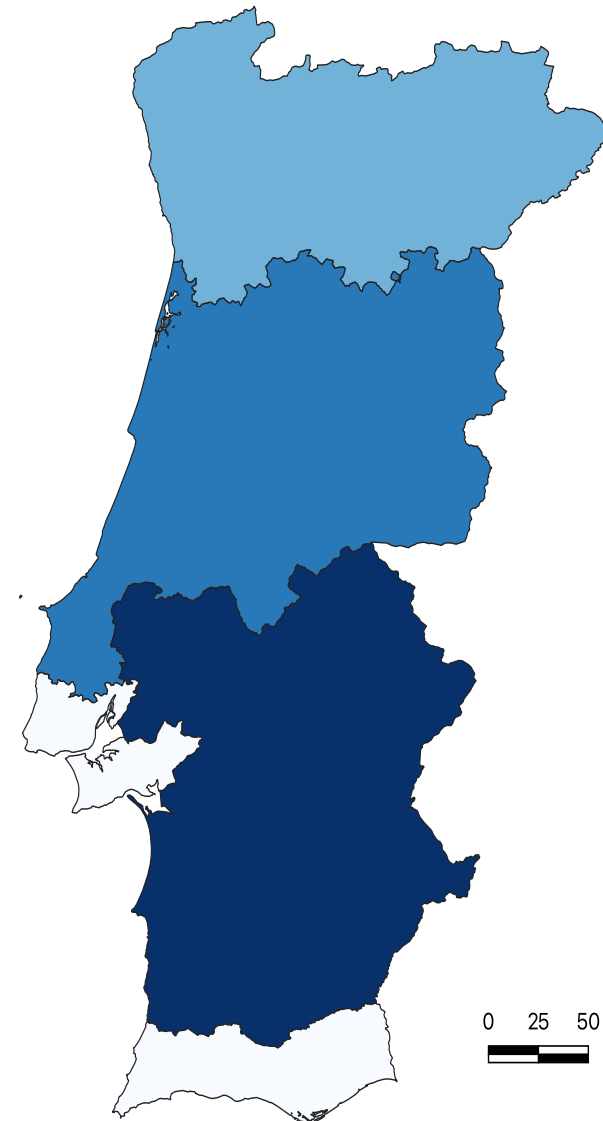
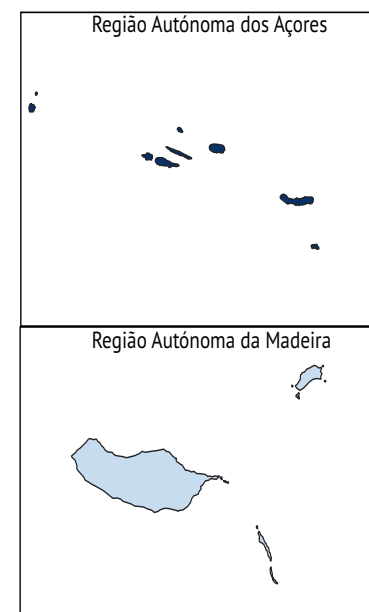
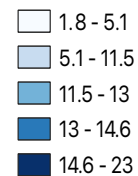


EU funds geographical distribution across PT regions

Apoio aprovado acumulado dos FEEI
ao final de 2020 em % do VAB



Apoio aprovado acumulado em 2020
em % do PIB de 2019 das NUTS II



Methodology: Identification Strategy

- Our identification strategy is similar to Kraay (2014):
 - **“Approved funds are unrelated to future macroeconomic shocks and subsequent payments of those funds are unrelated to same-period macroeconomic shocks.”**
- First part of the statement seems plausible. Second one dubious.
- We deal with this issue by making use of time fixed effects (control for business cycle) and local economic conditions controls.



Methodology: Identification Strategy

- In this way, we argue that we get variation from funds payments that is cleaned from changed economic conditions.
- The relevant conterfactual for our analysis is:
 - **Cross-sectional variation:** In a given year, municipalities that have same characteristics but received different EU funds
 - **Time variation:** variation in EU funds payments over the years for the same municipality.



Methodology: Econometric Model

Local Projections (Jordà, 2005):

$$\Delta Y_{i,t+h} = \alpha_i + \tau_t + \beta_h \Delta FEEI_{i,t} + \gamma' X_{i,t} + \epsilon_{i,t+h} \quad h=0, 1, 2, 3. \quad (1)$$

- $\Delta Y_{i,t+h}$ is the difference between the outcome variable in t+h and t-1
- α_i and τ_t are municipality and time fixed effects, respectively
- $\Delta FEEI_{i,t}$ is the variation in EU funds payments and $X_{i,t}$ is a vector of controls
- The coefficient of interest is β_h , the impact multiplier:

$$\beta_h = \partial \Delta Y_{i,t+h} / \partial \Delta FEEI_{i,t}.$$



PT EU funds multipliers: Gross Value Added

Variáveis	(1) h=0	(2) h=0	(3) h=1	(4) h=1	(5) h=2	(6) h=2	(7) h=3	(8) h=3
apoio_pagame ntos	0.900** (0.351)	0.889*** (0.268)	1.077* (0.628)	0.902* (0.496)	1.603** (0.688)	1.574** (0.659)	2.459 (1.493)	2.432** (1.175)
Constant	1.445e+07*** (2.329e+06)	1.036e+07*** (1.896e+06)	2.529e+07*** (4.788e+06)	2.402e+07*** (3.836e+06)	4.504e+07*** (4.327e+06)	4.086e+07*** (4.722e+06)	5.823e+07*** (9.747e+06)	5.434e+07*** (8.696e+06)
Observations	1.516	1.516	1.220	1.220	924	924	616	616
R-squared	0,036	0,219	0,033	0,204	0,062	0,09	0,051	0,206
Number of i	308	308	308	308	308	308	308	308
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	NO	YES	NO	YES	NO	YES	NO	YES

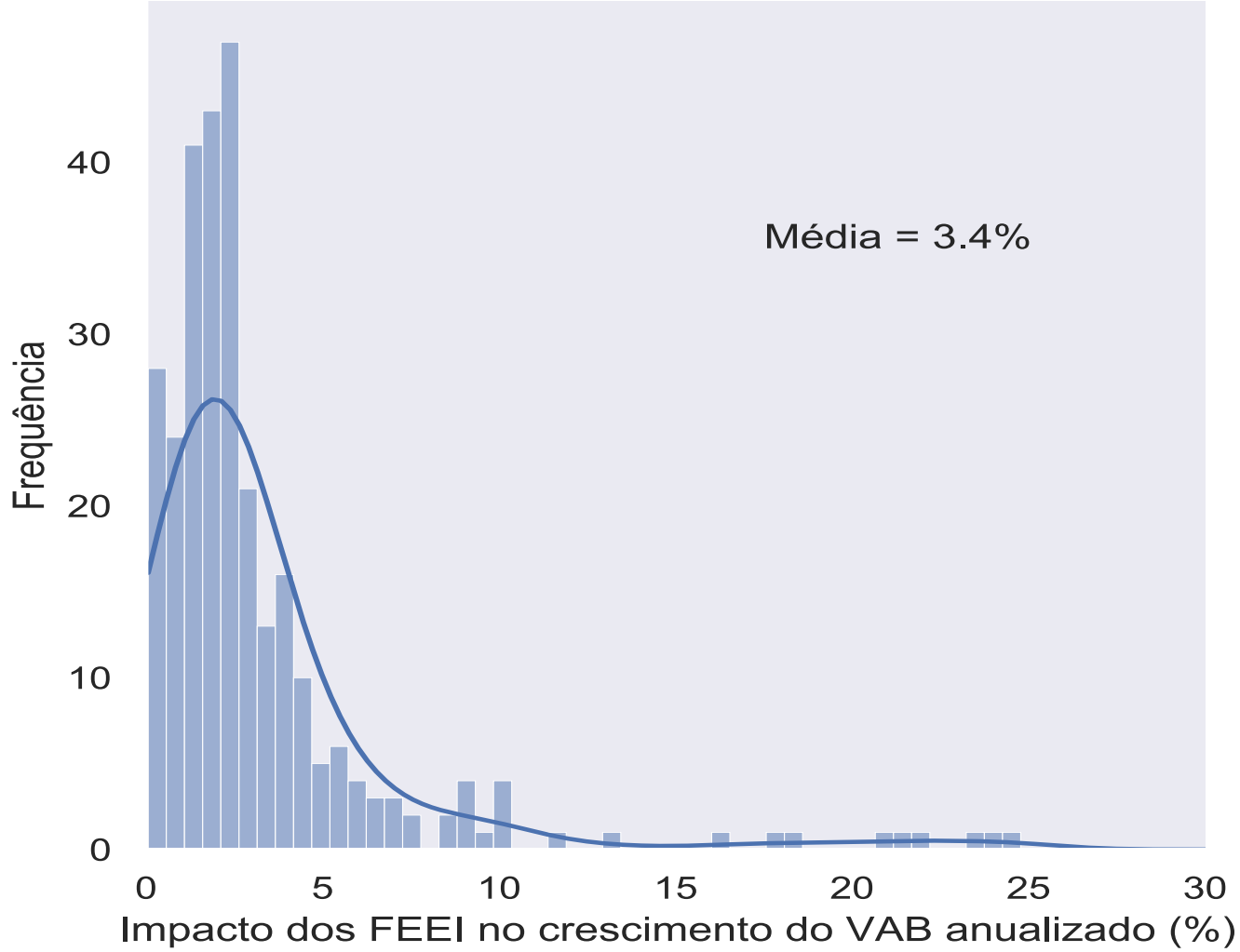
PT EU funds multipliers: Comparison with Literature estimates

- **PT**
 - Gil et al. (2021) estimate a national cumulative multiplier of around 0.9 (2015-2023)
- **EU**
 - Durand and Espinoza (2021) find multiplier of 1.2 on impact, and 1.8 one year later.
 - Canova and Pappa (2021) find a multiplier of 1.8 for ERDF (FEDER) and -0.57 for ESF in impact, and 1.58 and 2.57 one year later for each fund, respectively.

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Impact on Value Added Across Municipalities Distribution



PT EU funds multipliers: Unemployment

Variáveis	(1) h=0	(2) h=0	(3) h=	(4) h=1	(5) h=2	(6) h=2	(7) h=3	(8) h=3
apoio_pagamentos	7.99e-09** (3.20e-09)	2.52e-09 (3.57e-09)	4.26e-09 (5.62e-09)	-1.51e-08* (7.80e-09)	7.10e-10 (7.38e-09)	-2.45e-08*** (8.55e-09)	9.92e-09 (9.22e-09)	-1.46e-08 (9.05e-09)
Constant	-0.817*** (0.0376)	-0.796*** (0.0352)	-1.174*** (0.0621)	-1.079*** (0.0653)	-2.212*** (0.0681)	-2.044*** (0.0682)	-3.236*** (0.0701)	-3.063*** (0.0531)
Observations	1.824	1.516	1.528	1.220	1.232	924	924	616
R-squared	0,469	0,215	0,44	0,182	0,392	0,063	0,349	0,116
Number of i	308	308	308	308	308	308	308	308
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	NO	YES	NO	YES	NO	YES	NO	YES

PT EU funds multipliers: Number of Firms

Variáveis	(1) h=0	(2) h=0	(3) h=1	(4) h=1	(5) h=2	(6) h=2	(7) h=3	(8) h=3
apoio_pagamentos	3.90e-06*** (1.19e-06)	2.29e-06* (1.24e-06)	1.08e-06 (2.59e-06)	4.01e-07 (2.33e-06)	4.88e-06 (3.02e-06)	4.77e-06 (3.03e-06)	1.06e-05** (5.02e-06)	1.05e-05* (5.88e-06)
Constant	113.9*** (6.564)	88.87*** (11.06)	216.9*** (11.83)	192.1*** (11.53)	345.0*** (16.71)	321.2*** (23.16)	422.5*** (34.27)	406.8*** (39.34)
Observations	1.516	1.516	1.220	1.220	924	924	616	616
R-squared	0,041	0,184	0,017	0,091	0,023	0,031	0,039	0,056
Number of i	308	308	308	308	308	308	308	308
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	NO	YES	NO	YES	NO	YES	NO	YES

PT EU funds multipliers by **Thematic Areas**

Competitiveness and Internationalization

Competitividade e Internacionalização		
VAB	h=0	0,850***
	h=1	1,573***
	h=2	0,187
	h=3	-0,893
Taxa de desemprego	h=0	3,16E-09
	h=1	-1,44E-08
	h=2	-2,44e-08**
	h=3	-2,28E-08
Exportações	h=0	-0,981**
	h=1	3,412
	h=2	2,855*
	h=3	4,933*



PT EU funds multipliers by Thematic Areas

Social Inclusion and Employment

Inclusão Social e Emprego		
VAB	h=0	1,532***
	h=1	0,883*
	h=2	3,587***
	h=3	2,812***
Taxa de desemprego	h=0	9,67e-09*
	h=1	-4,97E-09
	h=2	-2,86e-08***
	h=3	-5,16E-09
Salário médio	h=0	4,76e-07**
	h=1	7,38e-07***
	h=2	6,41e-07**
	h=3	3,02E-07
Número de empresas	h=0	5,57E-06
	h=1	6,82E-07
	h=2	1,41e-05***
	h=3	1,86e-05***



Impact of PT EU funds on NUTS II

NUTS II	Impacto dos FEEI em termos de Crescimento do PIB Anualizado	Taxa de Crescimento Média do PIB Nominal Anual Observada	Impacto dos FEEI na Taxa de Crescimento do PIB Nominal Anual
Alentejo	1.04%	3.74%	28%
Algarve	0.27%	6.26%	4%
Centro	1.11%	4.30%	26%
Norte	1.03%	4.50%	23%
Região Autónoma da Madeira	1.23%	3.82%	32%
Região Autónoma dos Açores	2.01%	3.94%	51%
Área Metropolitana de Lisboa	0.10%	4.00%	3%

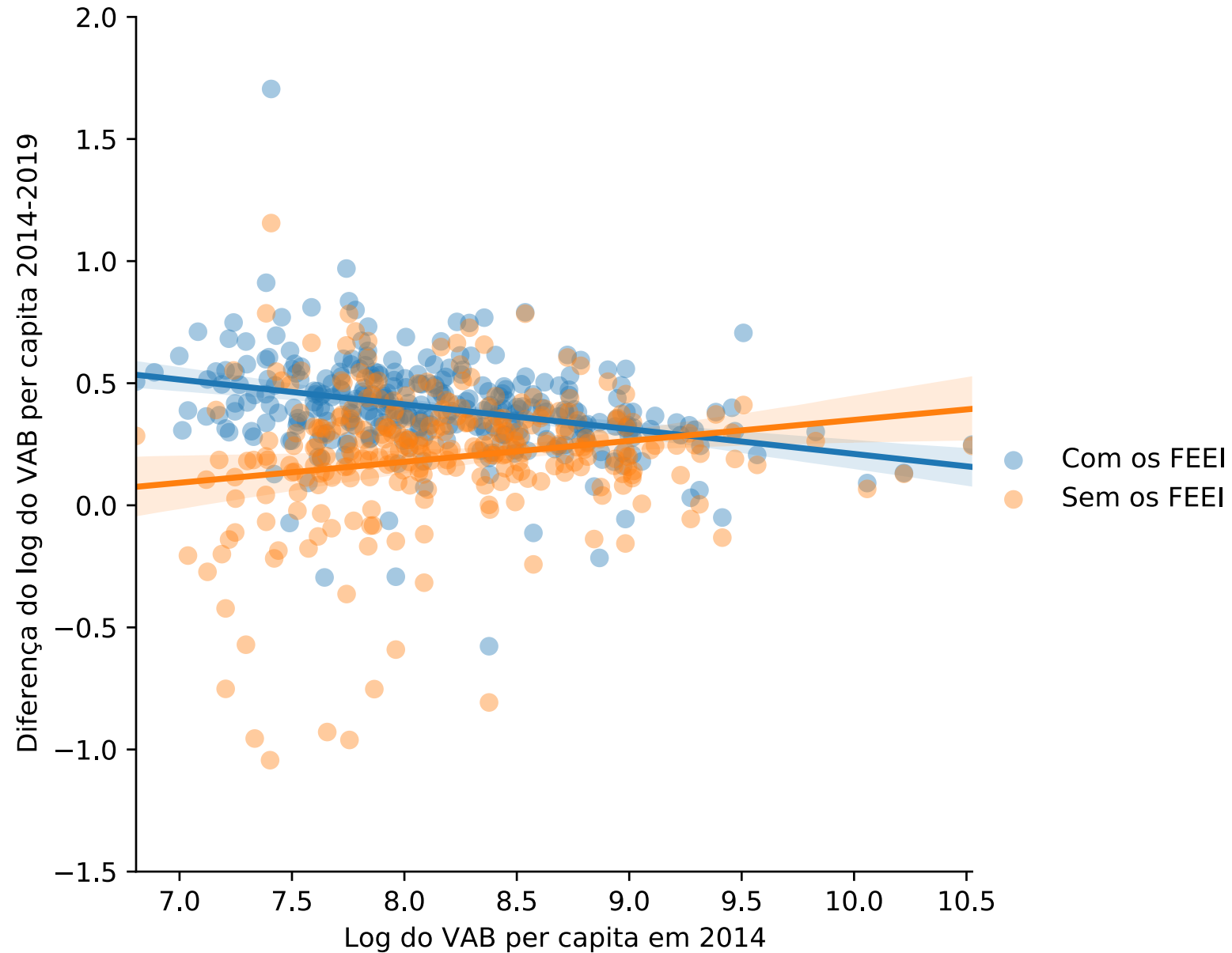
PT2020 EU funds Impact on Regional Convergence

- We use the gross value added multipliers to construct the following counterfactual exercise:

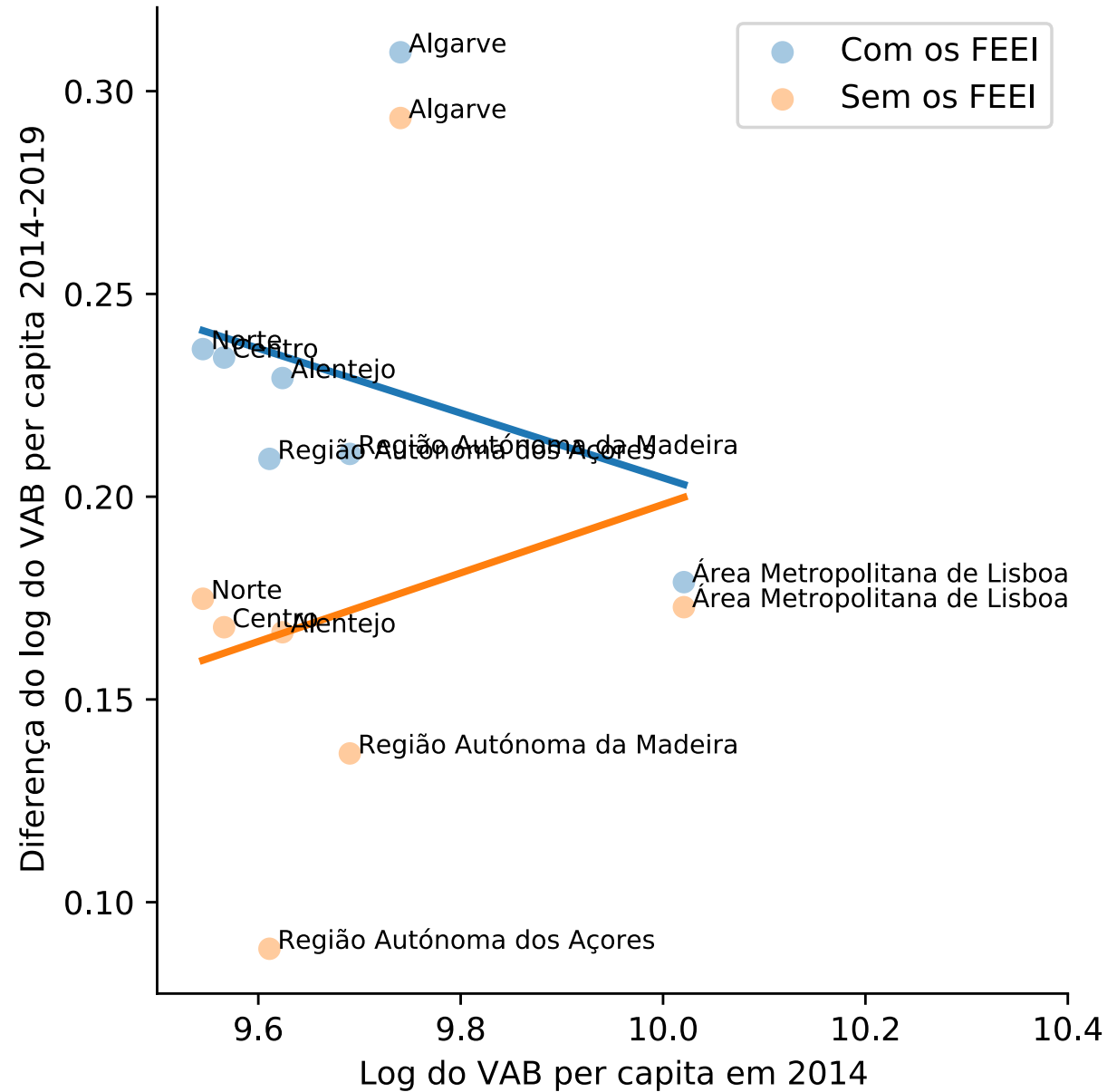
How would the regional convergence look like within Portugal and relative to EU if PT2020 had not existed?



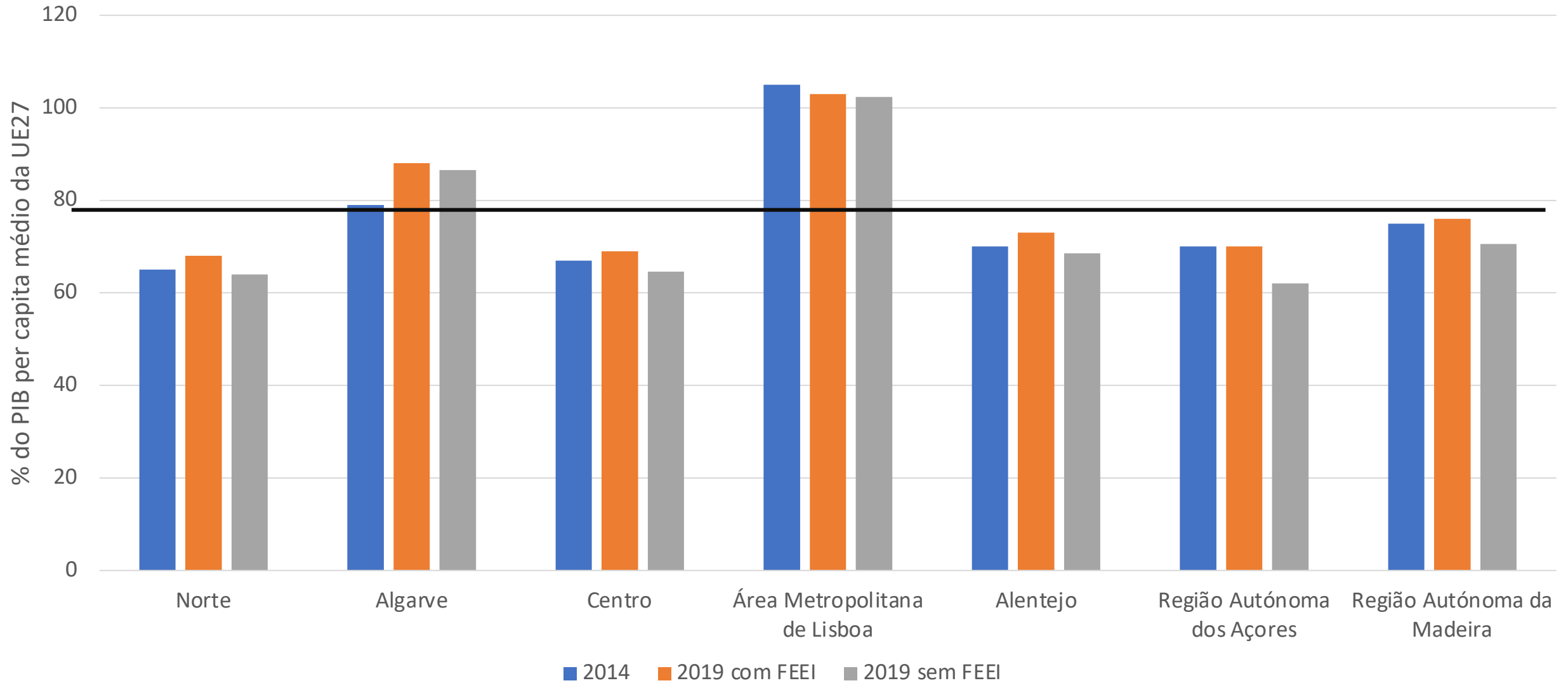
PT2020 EU funds Impact on Regional Convergence: **Municipalities**



PT2020 EU funds Impact on Regional Convergence: **NUTS II**



PT2020 EU funds Impact on Regional Convergence: **NUTS II to EU**



Conclusion

1. *What was the economic impact of the European Structural and Investment Funds on the Portuguese regions from 2015 to 2019?*

Big and Persistent impact

Municipalities: 80 cents in gross value added for each euro of EU investment in the same year, increasing to 2.4 euros after three years.

2. *How did they contribute to the regional convergence in Portugal?*

Critical role: without EU funds Portugal regions would have diverged

3. *How did they contribute to the convergence of the Portuguese economy towards the EU average?*

Critical role: without EU funds, Portugal regions (except Lisbon Metro Area and Algarve) would have diverged relative to the EU average



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