Universidade do Minho
Escola de Economia e Gestão

Oportunidades de Financiamento do Norte no Período de Programação 2021-27 das Políticas da União Europeia

Empreendedorismo, Financiamento e Assistência Empresarial

CCDR NORTE

Fernando Alexandre, Universidade do Minho | 19 julho 2021

Outline

1. Asymmetric regional dynamics
2. Agglomeration economies
3. Growing to the frontier
4. ERDF support to firms' investment

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1. Asymmetric regional dynamics

	2000-2018	2000-2006	2007-2013	2014-2018
Portugal	12%	4%	-7%	11%
Norte	18%	2%	-3%	13%
Algarve	20%	7%	-13%	21%
Centro	14%	4%	-5%	13%
Área Metropolitana de Lisboa	1%	3%	-11%	7%
Alentejo	12%	5%	-9%	14%
Região Autónoma dos Açores	23%	14%	-3%	10%
Região Autónoma da Madeira	21%	16%	-9%	11%
Alto Minho	33%	5%	10%	13%
Cávado	29%	5%	-1%	16%
Ave	20%	-5%	3%	14%
Área Metropolitana do Porto	9%	-1%	-8%	12%
Alto Tâmega	36%	15%	9%	9%
Tâmega e Sousa	28%	8%	0%	11%
Douro	41%	13%	9%	11%
Terras de Trás-os-Montes	35%	13%	2%	8%
Oeste	5%	1%	-10%	11%
Região de Aveiro	11%	-1%	-7%	15%
Região de Coimbra	15%	5%	-5%	12%
Região de Leiria	14%	4%	-7%	12%
Viseu Dão Lafões	18%	8%	-4%	11%
Beira Baixa	28%	9%	6%	9%
Médio Tejo	8%	1%	-7%	11%
Beiras e Serra da Estrela	30%	6%	2%	16%
Área Metropolitana de Lisboa	1%	3%	-11%	7%
Alentejo Litoral	21%	17%	-17%	21%
Baixo Alentejo	47%	28%	-2%	11%
Lezíria do Tejo	0%	-1%	-12%	12%
Alto Alentejo	14%	2%	-5%	12%
Alentejo Central	0%	-9%	-6%	16%
Região Autónoma dos Açores	23%	14%	-3%	10%
Região Autónoma da Madeira	21%	16%	-9%	11%

"Asymmetric regional dynamics in the Portuguese economy: debt, openness and local revenues", Regional Studies. Volume 55, 2, pp. 322-322, 2021. Fernando Alexandre, Hélder Costa, Miguel Portela and Miguel Rodrigues.

- Regions' indebtedness had a negative impact on economic growth.
- Openness to trade and fiscal decentralization had a positive impact on economic growth.
- Fiscal decentralization had a positive impact on economic growth.

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2. Agglomeration economies

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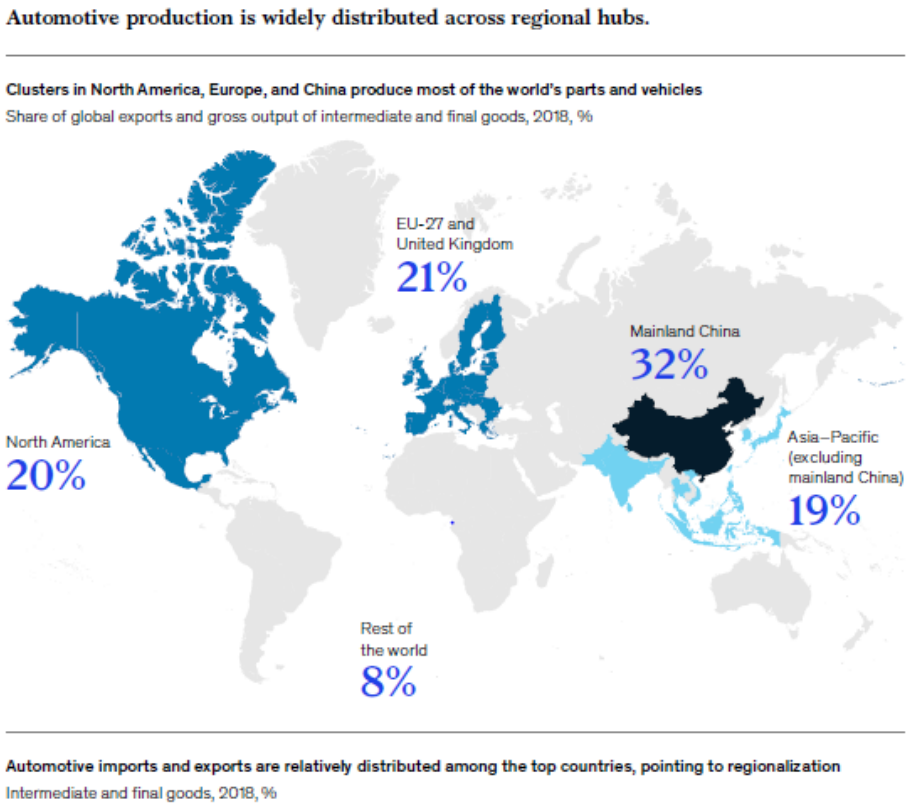
Global value chains: more concentrated and delocalizing R&D activities



Source: McKinsey Global Institute, 2020

- Agglomeration economies, with a high concentration of talent, research and innovation centers, excellent infrastructures and access to financial markets, have made location more relevant.
- Global Value Chains participate directly or indirectly in more than 50% of world trade (Cadestin et al., 2018).
- Production of goods is becoming more concentrated in regional terms and GVC are becoming increasingly based on know-how and highly-skilled labour (MGI, 2020).
- Considering the increasing and various risks of disruption in global value chains (e.g. natural disasters, cyberattacks), the McKinsey Global Institute estimates that, over the next five years, up to 26% of global goods exports may be relocated to other countries.
- The EU has been reiterating its goal of achieving industrial sovereignty in strategic sectors.
- This goal has been stated by the European Commission: "Europe must enhance its strategic autonomy in a number of specific areas, including in strategic value chains and reinforced screening of foreign direct investment."

2. Agglomeration economies

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Global value chains: more concentrated and delocalizing R&D activities

Lighthouses in the Portuguese economy

Source: Bosch Enginneering and Deveplopment Center, Braga, Portugal

Source: R&D partnership between BMW and Critical Software, Porto, Portugal

- In the past two decades, MNCs have expanded the geographic distribution of R&D activities, including to parts of the developing world (Foley, Hines and Wessel, 2021).
- The move of R&D activities by MNCs is motivated by pools of highly educated scientists and engineers (Branstetter, Glennon and Jensen, 2021)
- This change towards the delocalization of R&D activities creates new opportunities to integrate global value chains.
- Branstetter, Glennon and Jensen (2021) suggest that global productivity growth can be attained by combining talent in less developed countries with MNC innovation capacity through the globalization of MNC R&D.
- The most relevant new hubs of foreign R&D are characterized by growing human resource assets in IT hardware and software (Branstetter et al., 2021).
- Portugal has been part of the delocalization of R&D activities by MNC and its results seem to confirm the prediction of Branstetter et al. (2021).

2. Agglomeration economies

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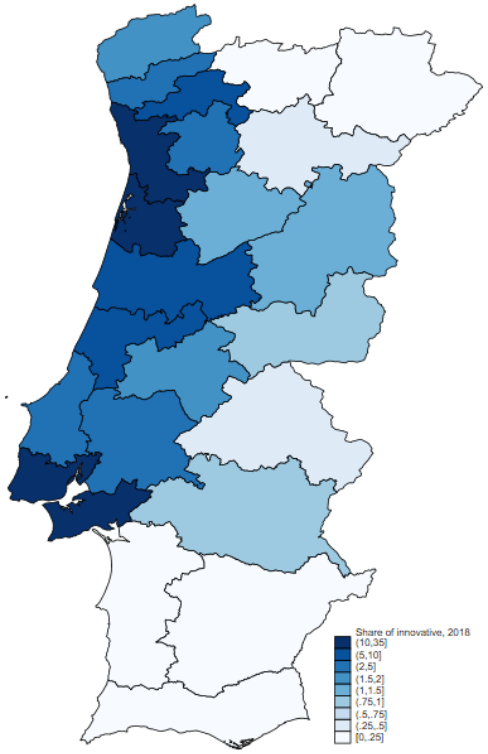
Portugal needs a star region

Innovative firms in manufacturing, Portugal, 2018



- **Innovative firms are defined** as firms that spend at least 1% of total sales in R&D or have at least 1 worker dedicated to R&D for two consecutive years.
- **With classification there 1209 firms, accounting for 6% of total employment, 11% of total value-added and 23% of total exports.**
- Excellent research centers FCT are concentrated in this area.
- These regions concentrate around 80% of total patents.
- Infrastructures: airports, ports motorways
- The map shows that innovative firms are concentrated in the following regions: Ave | Porto | Aveiro | Coimbra | Leiria |Lisboa

Source: Own computations with SCIE database

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3. Growing to the frontier

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Frontier SMEs

Portugal and European countries labour productivity: frontier and non-frontier (th €), 2018

	Average labour productivity	
	All sizes	SMEs
Frontier: PT	115	72
Frontier: EU	193	134
Non-frontier: PT	22	21
Non-frontier: EU	46	44

Source: Own computations using data from Orbis database.

- **Andrew, Criscuolo and Gal (2015) show that global frontier firms have shown a robust increase in productivity and that global frontier firms are typically larger, more profitable, younger, have more patents and are also more likely to be part of a multinational group.**
- **According to Andrews et al. (2015), the cause of productivity growth slowdown is the increasing divergence between global frontier firms and the rest.**

- Table compares the productivity of Portuguese frontier firms and non-frontier firms with other European countries, using a group of countries from the Orbis database that report data for at least 25% of the population of firms.
- Table shows that the productivity gap of frontier Portuguese firms relative to other European counterparts is 60% for all firm-size classes and 54% for SMEs, whereas the gap for non-frontier firms is 48% of EU, both when we consider all firm sizes and SMEs.

3. Growing to the frontier

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Frontier firms

Frontier firms labour productivity by sector, 2018 (th €)

	Transport Equipment	Textile, wearing apparel	Rubber & plastics
Spain	135	107	126
Finland	122	109	148
France	120	100	137
Portugal	118	99	127
Sweden	117	99	124
Belgium	116	103	120
Italy	112	104	124

- In some very relevant sectors, in terms of their weight in total value added and exports, Portuguese frontier firms have a very similar performance in terms labour productivity relative to their European counterparts.

Source: Own computations using data from Orbis database.

3. Growing to the frontier

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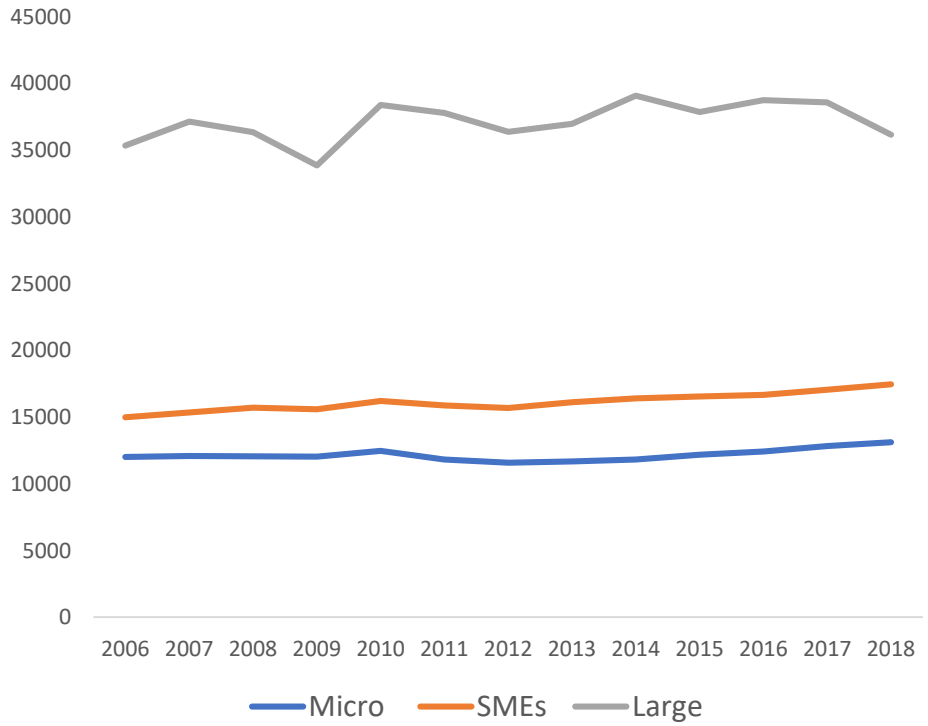
Too small to be productive?

Labour productivity, manufacturing, 2006-2018 (€, 2011 prices)



Source: Own calculations with firm level data from **Statistics** Portugal

- Labour productivity in the manufacturing sector increases with firm size.
- In 2018, in the manufacturing sector, large-sized firms' labour productivity was 2.1 and 2.8 times higher than SMEs and micro-sized firms, respectively.
- A high share of micro and small-sized firms thwarts productivity growth.
- A business environment that favours the allocation of resources towards micro and small-sized firms may cause low aggregate productivity growth (e.g., Garicano et al., 2016).

3. Growing to the frontier

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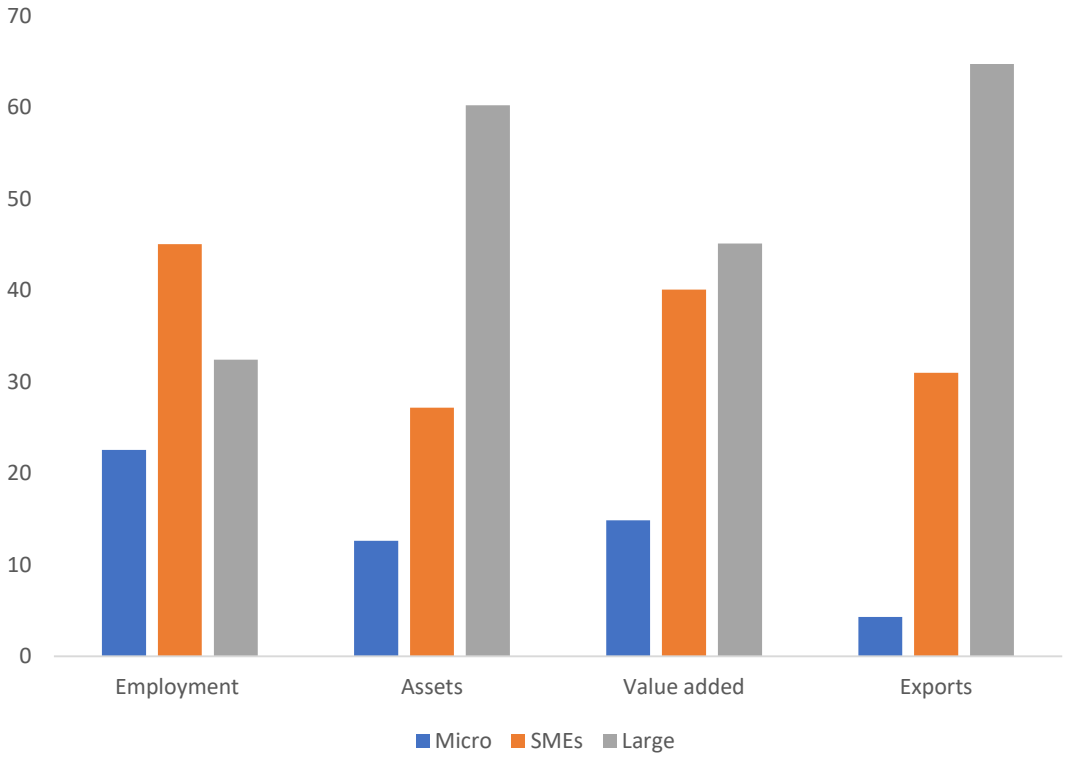
Too small to be productive?

Share of employment, assets, value-added and exports, 2018, (% of total)



- Our analysis focuses on SMEs and on makes them large.
- SMEs account for 45% of employment, 27% of assets, 40% of value added and 31% of exports.
- Large firms account for 32% of employment, 60% of assets, 45% of value added and 65% of exports.
- **Size matters for exports.**

Source: Own calculations with firm level data from **Statistics** Portugal

3. Growing to the frontier

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Frontier SMEs

SMEs and large-sized firms in the manufacturing sector, 2018

	Frontier SME	Non-frontier SME	Large
Average age of the firm	25	22	37
Average productivity (th €)	63	17	67
Average employment	40	32	429
Average assets (th €)	7,506	1,857	77,408
Average turnover (th €)	7,964	1,910	92,713
Average exports (th €)	3,201	683	52,637
Share of firms graduated workers	20.5%	7.3%	17.7%
Share of firms with graduated managers	63.0%	32.9%	96.1%
Average hourly wage (€)	8	5	9
Average price of exports (€)	446	85	295
Profitability (EBITDA/total assets)	12%	0%	7%
Foreign owned (>50%)	15%	3%	42%
Number of firms	1,371	10,029	424
Share in total employment	8.5%	49.4%	27.8%
Share in total VA	15.8%	31.4%	43.7%
Share in total exports	12.6%	19.6%	64.0%

Source: Own calculations with firm level data from SCIE (Statistics Portugal)

- Alexandre, Costa and Portela (2021, FFMS)

"The increase of productivity growth in the Portuguese economy requires that national frontier firms become closer to the performance of European and global frontier firms.

Second, it is crucial to create the conditions for the productivity of non-frontier to catch-up with frontier firms.

Third, it is necessary to design policies and incentives that favour the growth of frontier firms, for them to become large-sized firms."

- Frontier SMEs are defined as the group of the top 10% with the highest labour productivity.
- In 2018, there were 1,371 frontier SMEs, that accounted for 8.5% of total employment, 15.8% of total value-added and 12.6% of total exports.
- The average labour productivity of frontier SMEs was 3.7 times the labour productivity of non-frontier and non-innovative SMEs and was slightly lower than the labour productivity of large firms.
- Frontier SMEs are larger, export 4.7 times more than non-frontier firms, have a higher share of managers and workers with a college degree, and are much more profitable.
- 15% of frontier SMEs were foreign-owned.

3. Growing to the frontier

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SMEs productivity growth (Marchese et al., 2019)

Firm's internal factors

- Management & workforce human capital
- ICT & digitalization
- Innovation products & processes
- Participation in business networks

External factors

- Product market competition
- Labour market institutions
- Financial markets
- Infrastructures and access to markets
- Knowledge, technology and skills

Outline

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4. **ERDF support to firms' investment**

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4. ERDF support to firms' investment

Issues concerning public incentives to firms' investment:

- Funding activities that firms would have undertaken anyway
- Distortion of competition and trade
- Divert resources from other areas that might lead to a net loss in aggregate productivity
- Micro and small firms are more likely to be financially constrained
- Which externalities may arise from supporting large firms?
- Which instruments are more effective in enhancing competitiveness and regional development?
- Empirical results are mixed: positive effects on employment are found, but not so often on productivity
- Public subsidies, when properly designed, should produce externalities to the region and to the country

4. ERDF support to firms' investment

Assessment of Financial support to Undertakings in Portugal: Subventions, Prizes, Repayable Assistance, Financial Instruments

Produced for review by the DirectorateGeneral Regional and Urban Policy (DG REGIO).

http://repositorium.sdum.uminho.pt/bitstream/1822/73555/1/WP%2009.2021.pdf

4. ERDF support to firms' investment

ERDF by firm size, NSRF and PT2020 (% of total)

NSRF					
	No. projects	No. firms	Total Inv	Eligible Inv	ERDF
Micro	34.2	35.6	12.4	12.3	16.6
Small	42.9	42.8	24.8	25.1	31.2
Medium	17.1	16.4	21.9	21.5	22.8
Large	5.9	5.2	40.9	41.1	29.3
Total	100	100	100	100	100
PT2020					
	No. projects	No. firms	Total Inv	Eligible Inv	ERDF
Micro	33	36.5	20.1	20.5	21.8
Small	18.1	43.3	33	32.1	35.6
Medium	18.1	16.4	27.1	27	26.7
Large	4.1	3.8	19.9	20.4	16
TOTAL	100	100	100	100	100

The Portuguese business structure has a very high share of micro and small-sized firms, accounting for around 50% and 40% of total employment and value-added, respectively.

The instruments SI Entrepreneurial Innovation and Entrepreneurship and SI Qualification and Internationalization SMEs, which accounted for 85% of total ERDF in 2015-2018, target SMEs and aim at improving their competitiveness and business capacity, namely, through innovation and internationalization.

From NSRF to PT2020, there was an increase in the share of total ERDF incentives to micro and small-sized firms from 47.8% to 57.4%. The percentage allocated to medium-sized firms has also increased from 22.8% to 26.7%. **The share of ERDF allocated to large-sized firms decreased from 29.2% to 16.0%.**

Micro and small-sized firms are more likely to be financially constrained.

On the other hand, assessing micro and small-sized firms' economic and financial condition and their prospects are more challenging to evaluate.

Source: Own computations with data from Agência para o Desenvolvimento e Coesão and SCIE (Statistics Portugal)

4. ERDF support to firms' investment

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ERDF by exporting intensity, PT2020 (% of total)

Export intensity	No. projects	Total Inv	Eligible Inv	ERDF
Non-exporter	40	37.1	36.7	39.2
Q1	3.6	1.0	1.0	1.3
Q2	5.8	3	3	3.3
Q3	12.3	6.5	6.4	6.9
Q4	38.3	52.1	52.5	49

Improving productivity and becoming more competitive in international markets are two goals of the NSRF and PT2020. The fulfilment of transforming the production profile in favour of higher value-added domains involves the change in the structure of the Portuguese economy in terms of technological and exporting intensity.

Exporters represented around 60% of firms that have received ERDF incentives in the NSRF and PT2020. Regarding exporting firms, data show that ERDF incentives for the top 25% with the highest export-to-sales ratio accounted for around 50% of ERDF in both the NSRF and the PT2020.

Source: Own computations with data from Agência para o Desenvolvimento e Coesão and SCIE (Statistics Portugal)

4. ERDF support to firms' investment

ERDF by technological intensity in manufacturing, PT2020 (% of total)

Technological intensity	No. projects	Total Inv	Eligible Inv	ERDF
Low-technology	48.2	37.4	37.7	37.6
Medium-low-technology	32.1	34.7	34.2	36.2
Medium-high-technology	16.3	19.8	19.7	19
High-technology	3	8.1	8.5	7.2

ERDF incentives have been concentrated in low- and medium-low-technology sectors, which account for around 73% of incentives in the NSRF and PT2020.

On the other hand, firms in high-technology sectors accounted for only 7% of ERDF incentives to firms' investment.

Source: Own computations with data from Agência para o Desenvolvimento e Coesão and SCIE (Statistics Portugal)

4. ERDF support to firms' investment

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Firms supported by ERDF by productivity deciles, PT2020 (whole economy) (%)

	2015	2016	2017	2018
D1	5.3	6.7	8.5	9.6
D2	3.7	1.9	2.5	2.8
D3	3.6	3.7	3.6	3.2
D4	3.5	2.8	2.6	4.0
D5	4.9	4.3	5.0	5.7
D6	7.4	6.4	7.5	8.8
D7	12.5	9.7	11.7	10.9
D8	17.2	17.0	13.6	16.3
D9	22.3	21.8	22.7	21.5
D10	19.5	25.8	22.3	17.3

In PT2020, in 2015, the group of the 40% most productive firms corresponded to 72% of firms supported by ERDF. This percentage remained above 70% in 2016 and 2017 but decreased to 66% in 2018.

In 2015-2018, the group of 40% less productive firms was consistently above 15% (16% in 2015 and 20% in 2018). The share of firms in the first productivity decile, or the 10% less productive, increased from 5.3% in 2015 to 9.6% in 2018.

The analysis of the position of the firms supported by ERDF in the productivity distribution shows that the share in the top 40% most productive decreased continuously during the period of the NSRF.

The comparison between the NSRF and PT2020 shows that the percentage of firms funded by ERDF in lower productivity deciles is higher in PT2020 than in the NSRF. **This result may be explained by the higher concentration of ERDF in micro and small-sized firms in PT2020.**

Source: Own computations with data from Agência para o Desenvolvimento e Coesão and SCIE (Statistics Portugal)

4. ERDF support to firms' investment

Transition across productivity deciles between *t* and *t+3* in NSRF and PT2020 (% of total firms)

	Move to higher deciles	Remain in the same decile	Move to lower deciles
2008	36.8	44.9	18.3
2009	36.9	41.7	21.5
2010	34.0	42.1	24.0
2011	32.2	41.4	26.3
2012	27.4	40.3	32.3
2013	29.6	35.4	35.0
2014	31.7	25.7	42.6
2015	26.7	38.5	34.8

This table provides a descriptive analysis of the dynamics of firms' productivity that received ERDF support to investment. This analysis considers firms' position in the productivity distribution at the time of receiving the ERDF support and its position in the productivity distribution three years later. This analysis is built on transition matrices across productivity deciles between the year of the ERDF contract (t) and three years later (t+3).

The percentage of firms that improved their relative position in the productivity distribution of the economy three years after receiving the ERDF incentive, decreased over time, from 36.8% in 2008 to 26.7% in 2015.

The percentage of firms that moved to lower productivity deciles three years after receiving the ERDF incentive increased from 18.3% in 2008 to 42.6% in 2014 (34.8% for firms financed by ERDF in 2015).

These trends apply to grants and repayable assistance.

These results suggest that ERDF incentives may have fallen short in fulfilling the goal of improving firms' productivity and competitiveness and suggest that the selection procedure has not been optimal.

Source: Own computations with data from Agência para o Desenvolvimento e Coesão and SCIE (Statistics Portugal)

4. ERDF support to firms' investment

- **The empirical results of this report suggest that:**
  - The empirical results of this report suggest that it might be suboptimal to allocate a high share of ERDF incentives to micro-sized firms.
  - The empirical results of this report suggest that it might be beneficial to allocate several ERDF incentives to the same firm instead of giving single ERDF incentives to many firms.
  - The empirical results suggest that grants or a combination of different instruments, namely grants and repayable assistance, may be more effective than ERDF incentives in the form of repayable assistance.
  - The empirical results suggest that the financial condition of firms is relevant for the impact of ERDF incentives and that high leverage may wreak havoc on the project.
  - These results suggest that ERDF incentives may effectively enhance productivity growth at the municipality level and have promoted regional convergence.
  - Results observed in the NSRF also suggest that the allocation of ERDF incentives may deteriorate in the final phase of implementation of the Multiannual Frameworks. More regular implementation overtime must therefore be sought when the Multiannual Framework is in force.

4. ERDF support to firms' investment

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- **The empirical results of this report suggest that:**
  - Despite the positive effects of the allocation of multiple subsidies to the same company, these situations should be subject to a rigorous assessment of their social impacts and the economy of the regions and the country.
  - On the other hand, in this context, it is also necessary to avoid situations of public funds capture and distortion of the functioning of markets, namely by increasing the market power of subsidized companies that may result in barriers to the entry of new companies and their growth.
  - The involvement of SMEs in projects with large-sized companies and entities of the scientific and technological system can be an option to improve the impact of ERDF incentives by generating externalities to the regional innovation ecosystem.