Examining the interactions of mission-led and place-based policies on regional economic performance in the European Union

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Abstract. Mission-led industrial policies, which have increasingly gained traction over the past decade, are often aimed at addressing societal challenges, yet concerns have been raised about their potential impact on regional disparities. We use a spatial general equilibrium model to examine the potential tensions between mission-led and their counterpart, place-based policies which are mostly associated with reducing disparities, by focusing on firm support under Horizon 2020 and European Cohesion Policy. We glean that regional and shock distributions that resemble place-based policy investments yield lower regional GDP returns compared to mission-led equivalents. Employment adjustments are higher under a place-based configuration, while regional inequality and disparities increase under a mission-led approach, compared to a decrease under a place-based allocation. This highlights potential contradictions in regional policy-making under mission-led approaches and underlines the need for careful consideration of collateral regional disparities in mission-led policy design.

Keywords: computable general equilibrium modelling, regional economics, cohesion policy, mission-led policies, European innovation policy.

JEL Codes: C68, O38, O47, R11.

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1. Introduction

Mission-led industrial policies have increasingly gained traction over the past decade and are a key strategy for addressing societal challenges such as sustainable development, social inclusion and the transition to net-zero technologies (Mazzucato 2021, 2024; Kattel and Mazzucato, 2018). A prominent example is the Horizon innovation policy, the European Union's (EU) flagship programme for research and innovation. Designed to stimulate the development of new technologies, products, and services, it is intended to drive economic growth and job creation (European Commission, 2013). Although Horizon exhibits key features of an industrial policy, its broad objectives make it a mission-led policy. It addresses societal challenges, such as health, energy, and climate change, supporting projects that develop innovative solutions to improve quality of life, drive economic growth, and enhance global competitiveness.

The adoption of this type of industrial policies has raised concerns about a return to protectionist trade policies (Mazzucato, 2024), a trend that appears to be supported by recent tariff increases in the US and elsewhere (Handley et al., 2025). Combined with the top-down (and space-blind) nature of mission-led policies (Henderson et al., 2023) and the role of agglomeration economies (Milanovic, 2005), this could result in spatially heterogeneous effects on growth and welfare, with negative implications for regional disparities (De Propris, 2024). The implementation of innovation policies is particularly affected by the regional context (Calignano, 2022; De Noni and Belussi, 2021), as the effectiveness of policies is likely to vary significantly across regions due to existing disparities in terms of economic and structural factors, including R&D ecosystems and the presence of skilled labour (Pinheiro et al., 2025; Iammarino et al., 2019).

Place-based industrial policy could foster economic convergence and cohesive growth (Bailey et al., 2023). Similarly, Rodríguez-Pose et al. (2024) and Barca et al. (2012) advocate for a place-sensitive approach tailoring policies to regional challenges and promoting inclusivity across all regions. In the EU, Cohesion policy aims to reduce economic, social and territorial disparities through a wide range of investments. This policy takes a strong place-based approach to achieving overarching policy priorities across the EU, and is bound to interact with the Horizon innovation policy. Some Cohesion interventions are typical of industrial policy, such as support to enterprises, including research and development (R&D) activities (EBRD, 2025) which in the 2014-2020 were deployed within the framework called Smart Specialisation (Flanagan et al., 2023; Barzotto et al., 2020). Hence, Cohesion policy partially overlaps with Horizon policy, in terms of scope, as the latter provides funding for both basic and applied research, but without explicit objectives regarding the spatial distribution of support and/or its benefits. While the two policies differ in terms of the territories targeted and the logic of the distribution of funds, Bachtrögler-Unger et al. (2025) identify synergies between Horizon and ERDF research and innovation funding, supporting this argument. However, this overlap occurs in regions with high knowledge-intensive services or urban centres, whereas the link is weaker in rural areas, raising concerns about policy equity and efficiency. In fact this concern, as well as factors affecting strategic autonomy, regional development and possible divergence, are becoming more prominent in the policy debate due to an increasing vertical and selective approach as part of the recent industrial policies such as the New Industrial Strategy for Europe and a current rethinking about the role of Cohesion policy, as Filippetti and Spallone (2025) mention.

Fai and Tomlinson (2019) argue that the impact of industrial policies on regional economic performance, and their interaction with existing place-based policies, has largely remained unexplored. This is the starting point of our research. Our paper examines potential tensions between space-blind mission-led and place-based policies, focusing on research and development (R&D) support under Horizon 2020 (H2020) and Cohesion policy 2014–2020. Using scenario analysis, we analyse the impact of these two types of policy on economic performance in terms of GDP, employment, regional disparities, and inequality. We employ the spatial dynamic computable general equilibrium model, RHOMOLO, which is calibrated for all EU NUTS-2 regions and ten economic sectors, incorporating endogenous inter- and intra-regional trade (Barbero et al., 2024).

Our findings show that H2020 allocations generate higher GDP returns, particularly in developed and transition regions, compared to Cohesion policy allocations. Conversely, the latter have a greater impact on employment as they are directed towards regions with relatively larger pools of unemployed workers. Inequalities are reduced under a place-based allocation, in line with the specific objective of Cohesion policy, as higher GDP impacts are recorded in less developed and transition regions. However, regional inequality increases due to the H2020 interventions, which are mostly concentrated in more developed or transition regions.

The rest of the paper is structured as follows. Section 2 presents the policy context, focusing on the differences between European cohesion and innovation policies. Section 3 briefly describes the model used in the analysis and explains the simulation strategy adopted for the analysis. Section 4 presents the results and Section 5 concludes.

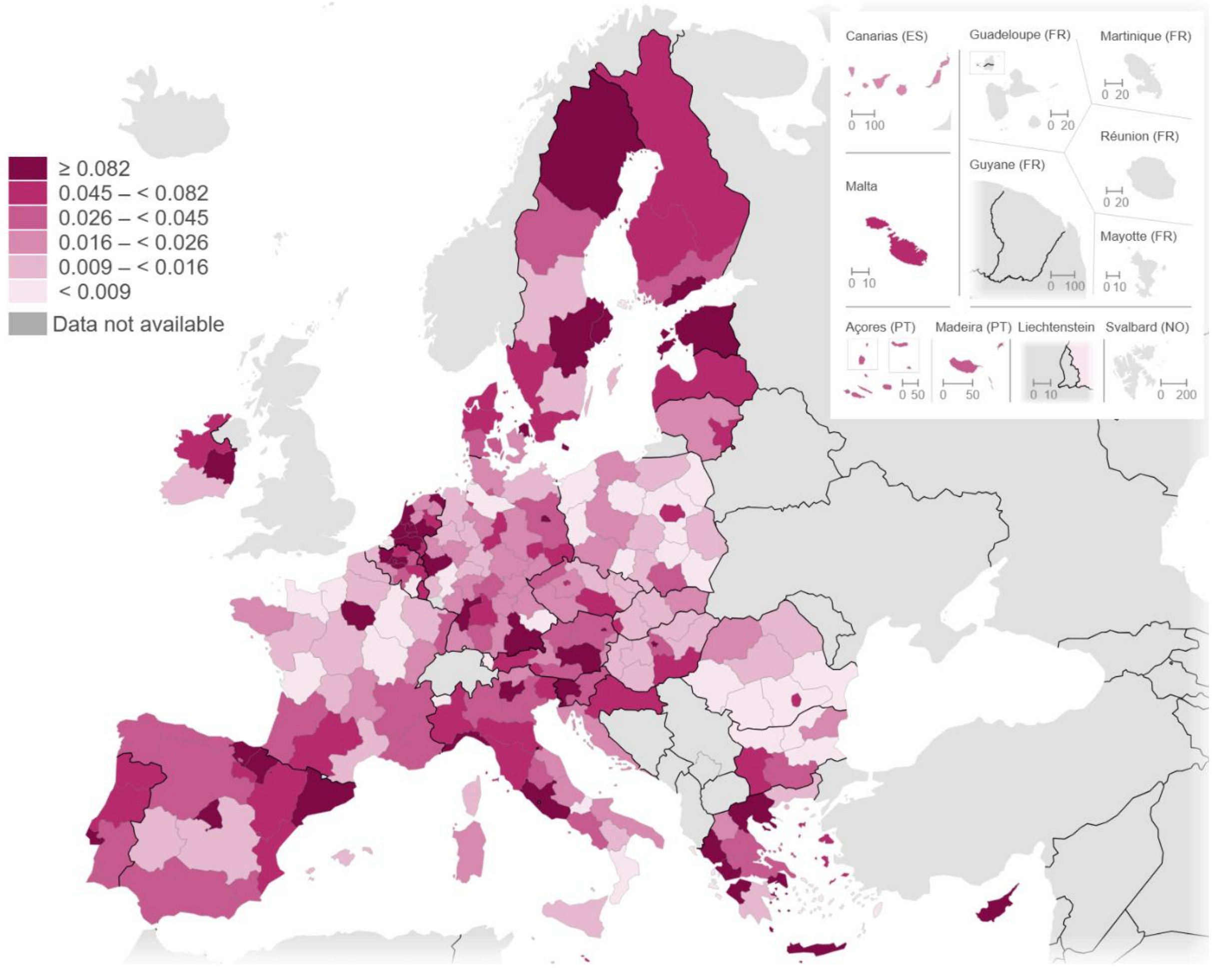
2. Mission-led versus place-based policies: a look at Horizon and Cohesion policies

The crux of the debate surrounding the regional performance of mission-led and place-based policies hinges on the dimensionality of the policy interventions. The regional distribution of funds and the types of planned economic interventions play a substantial role in determining the equity and efficiency degree of mission-led and place-based policies (see for example Farole et al., 2011; Aiginger, 2014).

In this regard, the H2020 programme, has attracted the attention of academics and researchers who have studied aspects such as its impact on innovation (Veugelers et al., 2015) and firm growth (Mulier and Samarin, 2021), as well as the factors that motivate institutions to participate in the programme itself (Enger, 2018). The European Commission (2024) published the official ex-post impact assessment of H2020, for which a quantitative analysis was carried out using three different economic models, including RHOMOLO (Christou et al., 2024), all of which suggested sizeable GDP and employment positive impacts of the policy.

The H2020 programme provided funding for research and innovation through competitive calls, open to a wide range of participants from the EU and beyond. By encouraging collaboration between universities, research centres, and industry, the programme aimed to promote knowledge sharing and stimulate economic growth. Figure 1 illustrates the distribution of average annual H2020 funding across EU regions from 2014 to 2021, expressed as a percentage of 2017 GDP. The funds examined here amount to almost €56 billion allocated between 2014 and 2021, which is a subset of the policy's total budget and focuses on funding directed to the regions of the 27 EU Member States. The funding is concentrated in Central Europe and in the most developed regions of EU Member States, including capital cities such as Paris and Dublin, which received an average of more than 0.045% of GDP each year. By contrast, Eastern European regions received relatively little funding, although there are some exceptions, such as the capital regions of Bucharest (€200 million), Warsaw (almost €400 million) and Athens (over €1 billion).

Figure 1: Territorial distribution of the H2020 funds in the EU regions (% of 2017 GDP, yearly average over the 2014-2021 period)



Source: European Commission's DG RTD (H2020 funds) and García Rodríguez et al. (2025) (GDP). Data are categorised into six different classes, with each class representing a sextile of the data distribution.

The observed distribution of H2020 funding, which sees a significant concentration of resources in already developed regions, raises concerns about the potential exacerbation of regional disparities and EU territorial cohesion. By allocating a disproportionate share of funding to the most prosperous regions, the policy may inadvertently exacerbate existing economic and social disparities, given that these regions are likely to have a greater capacity to absorb and utilise funding.

Conversely, European Cohesion policy, aims to reduce economic disparities between regions and to promote development and growth, particularly in less developed areas of the EU, and it aligns with the notion of place-based policies for that matter. As the EU's most important investment policy in terms of budget allocation, its economic impact on EU countries and regions can be substantial and is the subject of extensive academic and policy discussion (see for example von Ehrlich and Overman, 2020).

The economic impact of Cohesion policy has been extensively studied using neoclassical growth models, with mixed results. A meta-analysis by Dall'Erba and Fang (2017) found that the estimated effects of Cohesion policy on regional growth varied from negative to positive, and were often not significantly different from zero. Studies by Mohl (2016) and Pieńkowski and Berkowitz (2016) also highlight the inconclusive nature of the evidence, which may be due to methodological issues such as endogeneity and omitted variables (Berkowitz et al., 2020; Brasili et al., 2023). Alternative methods, such as counterfactual analyses using regression discontinuity design, have also been employed to evaluate the impact of Cohesion policy on economic growth, allowing for a more nuanced understanding of spatially heterogeneous effects. The resulting evidence suggests that Cohesion policy has a significant and positive impact on economic growth, though the benefits are not evenly distributed across EU territories (Crescenzi and Giua, 2020; Cerqua and Pellegrini, 2018; Gagliardi and Percoco, 2017; Ferrara et al., 2017; Percoco, 2017; Pellegrini et al., 2013; Becker et al., 2010, 2012, 2013 and 2018).[1]

The economic impact of Cohesion policy has also been studied using general equilibrium models. Multi-regional models in particular make it possible to assess the policy's impact on GDP, employment, convergence and economic cohesion.[2] Crucitti et al. (2024) used an earlier version of the RHOMOLO model to examine the impact of Cohesion policy 2014-2020 on regional disparities. Their findings reveal that the policy has the potential to reduce disparities through demand- and supply-side channels.

Here, we focus on a subset of Cohesion policy funds that resemble industrial policy interventions, namely support for firms, including subsidies for research and development (R&D). This improves comparability between the two policies in our analysis, despite their differences in terms of being mission-led or place-based. During the 2014-2020 programming period, support for firms from Cohesion policy support represented 22% of the policy allocation, amounting to about €74 billion. Of this, almost €54 billion was allocated to R&D activities. Figure 2 shows the distribution of average annual funding across EU regions over the period 2014–2023, expressed as a percentage of 2017 GDP. Note that Cohesion funds are spent over a period two years longer than Horizon funds.

Figure 2 is almost diametrically opposed to Figure 1, as Cohesion funding is mostly concentrated in the less developed regions of the EU, which are located in the east and which, on the other hand, attract little H2020 funding. This suggests that the mission-led approach applied to the Horizon policy interacts with regional development and with the main place-based policy in the EU in a non-trivial way.

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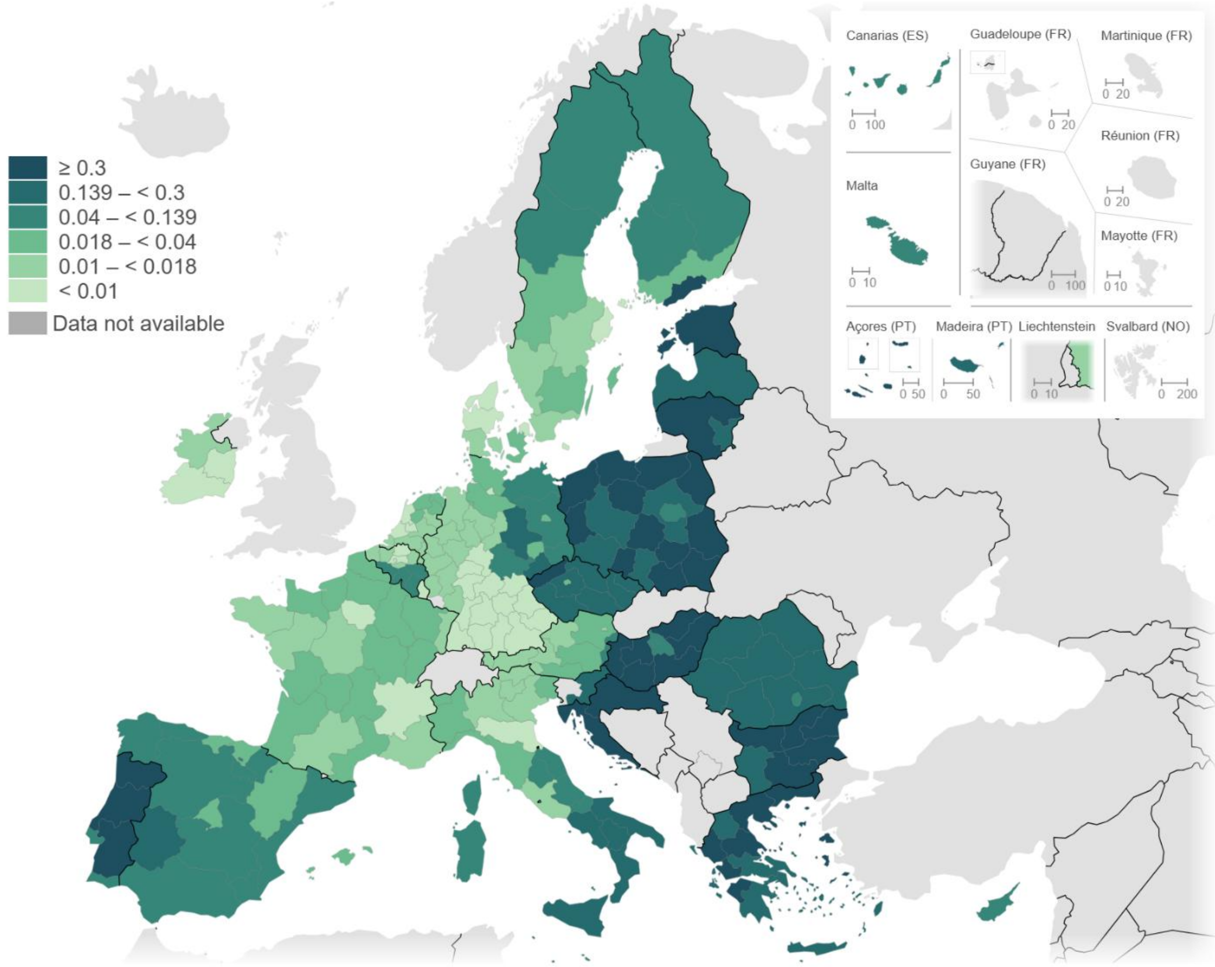
[1] Authors concentrating on national economic convergence find similarly mixed evidence on the impact of cohesion funds (Boldrin and Canova, 2001; Beugelsdijk and Eijffinger, 2005; and Maynou et al., 2016), while the evidence is mixed for the impact on within-country regional disparities (Kyriacou and Roca-Sagalés, 2012, and Mogila et al., 2022).

[2] Examples of such models include the CGE model used by Korzhenevych and Bröcker (2020) to assess the impact of the ESIF in Poland and the Baltic EU Member States, and the model used by Mogila et al. (2022) to examine intra-country disparities in Romania, the Czech Republic and Poland. Other models have also been used to examine the economic impact of Cohesion policy, such as the GMR model used by Varga et al. (2020) to analyse Smart Specialisation in Hungary and the general equilibrium model used by Blouri and von Ehrlich (2020) to study the impact of Cohesion Policy investments in 2007-2013.

Figure 2: Territorial distribution of the cohesion funds in support of firms in the EU regions (% of 2017 GDP, yearly average over the 2014-2023 period)



Source: European Commission's DG REGIO (Cohesion funds) and García Rodríguez et al. (2025) (GDP). Data are categorised into six different classes, with each class representing a sextile of the data distribution.

This brief overview of two different EU industrial policies suggests that H2020 interventions may widen the gap between the most and least developed regions, thereby undermining the EU's objective of promoting territorial cohesion and reducing regional disparities. However, industrial policy interventions under Cohesion policy could counteract this tendency. Our analysis compares the implications of the two approaches by examining the conditions behind their impact on GDP, employment, and regional disparities.

3. Model and simulation strategy

3.1 The model

We use the RHOMOLO spatial dynamic computable general equilibrium (CGE) model to analyse the impact of regional policies. This model has contributed to the literature on both CGE and policy analysis (Barbero et al., 2024; Crucitti et al., 2024) and is used routinely by the European Commission for policy impact assessments. The model comprises the 235 NUTS-2 regional economies of the EU-27 Member States, each consisting of 10 NACE Rev.2 economic sectors. A regional economy is calibrated to be at its steady state in terms of sectoral value added, bilateral final and intermediate inputs based on a set of regional social accounting matrices for the year 2017 (García-Rodríguez et al., 2025). The model incorporates spillovers related to trade and capital mobility, which are essential to capture the essence of policies deployed at the level of highly interconnected EU regions. For a full mathematical description of the model and how it aligns with the classes of CGE models please refer to Barbero et al. (2024).

In each NUTS-2 regional economy, there are three economic agents: firms, households and a government. Firms in a NACE Rev. 2 sector produce goods and services under a constant elasticity of substitution production function that blends three paid factors of production, capital, labour and intermediate goods, and one unpaid factor, public capital, which is subject to congestion (Barro, 1990; Baxter and King, 1993). Firms substitute between labour types (low, medium, and high education) using a constant elasticity of substitution. Firms are assumed to operate under monopolistic competition and generating markups in all sectors except agriculture, public administration and other services, where perfect competition in production is assumed.

A representative regional household receives income from capital rent, labour and government transfers. Households derive utility from consuming varieties of goods, which is a function of per period disposable income, assuming a constant savings rate. The government collects taxes from households to finance consumption of final goods (expenditures) and transfers to households. Regions are linked through trade, due to differentiated goods' production and a preference for variety (Dixit and Stiglitz, 1977). Households can purchase final goods and services from any region or sector subject to an Armington (1969) substitution elasticity, after paying an asymmetric unidirectional cost that is lost to transport under the "iceberg" assumption (Krugman, 1991).

Households maximise utility subject to their budget constraint. In each period, private investment partially adjusts towards the desired level of private capital (King and Thomas, 2006), with firms maximising profits subject to factor constraints. Regional governments are allowed to run deficits or surpluses. Given this setup, an equilibrium for each NUTS-2 region is characterised by a set of allocations of consumption and saving allocations for households, production factors for firms, private investment, expenditure and revenue for the government. An equilibrium characterisation of the regional unemployment rate ensures that its relationship with the characterised real wage rate respects a calibrated wage curve (Blanchflower and Oswald, 1995).

The model is solved using a recursive dynamic process, whereby sequences of static equilibria are linked by laws of motion of their state variables. Agents are myopic and base their decisions on current and past information. The model is used for scenario analysis, in which an exogenous shock disturbs the initial equilibrium, and the responses of the endogenous variables are interpreted as solely resulting from the shock itself.

3.2 Simulation strategy

Our analysis starts from the construction of a *Benchmark* scenario in which the industrial policy shock comprises the H2020 and Cohesion policy interventions illustrated in Section 2 (for a total of 129.88 billion). Specifically, the model's *Benchmark* shocks are the following.

i) The Cohesion policy subsidies to firms not related to R&D activities are modelled as an increase in private investment achieved through a reduction in the user cost of capital (for a total amount of 20.33 billion). This increases consumption of intermediate goods during the implementation period, and on the supply side it temporarily increases the stock of private capital.
ii) The H2020 funding to basic research is modelled as an increase in public investment (for a total amount of 22.24 billion). On the demand side, this increases public consumption of goods and services and on the supply side it temporarily increases the stock of public capital, generating increasing returns in the production function.

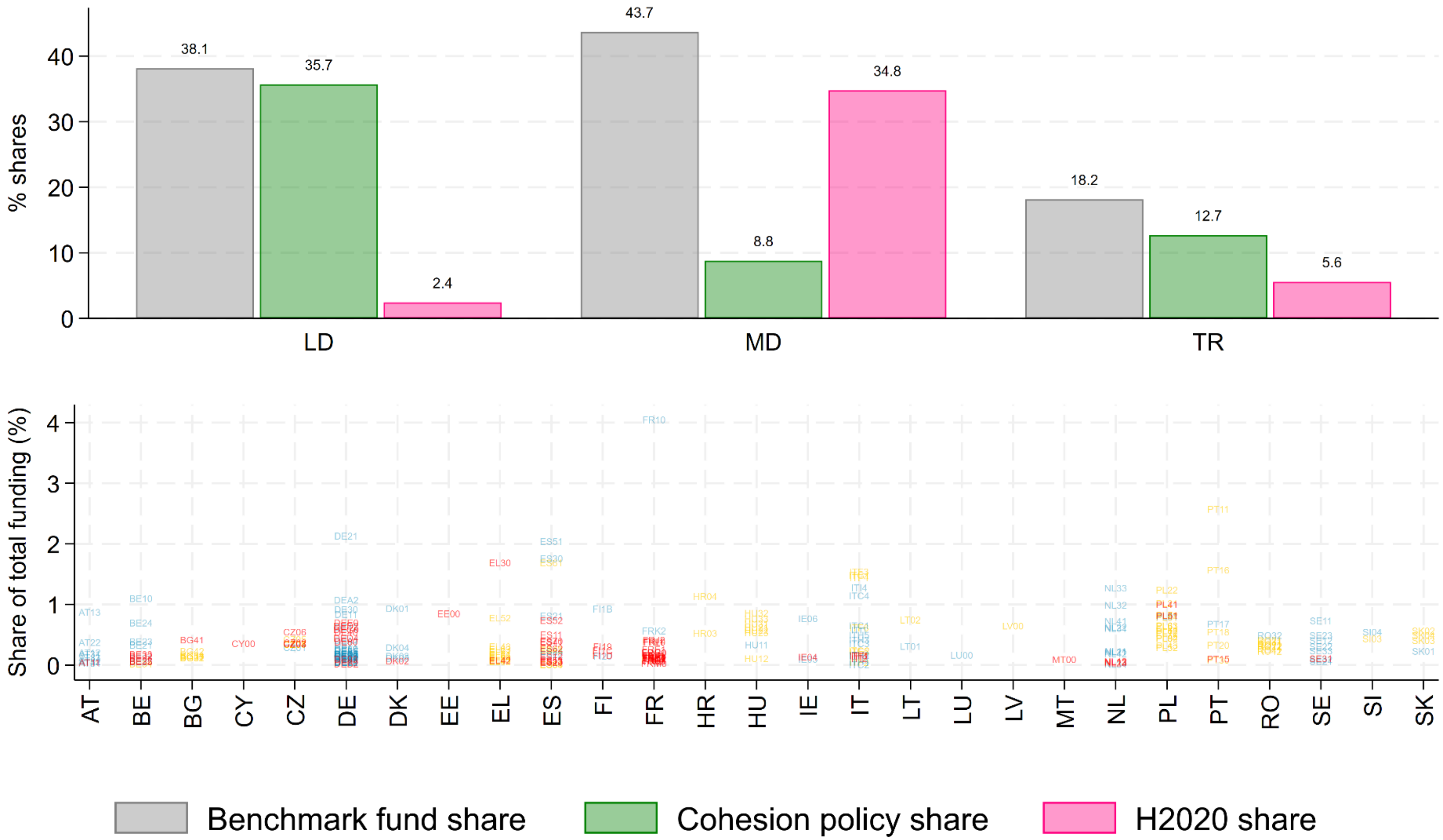
iii) The Cohesion policy R&D subsidies (53.97 billion) and the H2020 funds for applied research (33.34 billion) are modelled as an increase in private investment similar to i), but with an additional supply-side shock, namely an increase in total factor productivity (TFP) governed by an elasticity which depends on regional R&D intensity in line with existing literature (Kancs and Siliverstovs, 2016; Männasoo et al., 2018).

The *Benchmark* scenario represents the simultaneous allocation of Cohesion policy and H2020 interventions that affect regional private and public investment, and TFP. The upper panel of Figure 3 shows the distribution of funds across less developed (LD), more developed (MD), and transition (TR) regions, with a breakdown showing the differences between the shares of Cohesion policy and H2020.[3] The lower panel of Figure 3 shows how the policy funds are distributed in the regions of each EU country, again differentiated according to their level of GDP per capita.

The fund of the *Benchmark* scenario has three dimensions which jointly determine the regional macroeconomic outcomes of the interventions. The first is the territorial distribution of the interventions; secondly, the allocation of the regional funds across the three economic channels (shocks) identified above; and thirdly, the time profile of policy investments, i.e. the share of total allocated regional funds that are disbursed in each period. In what follows, we study the impact of the first two dimensions on regional performance, while using the H2020 time profile of fund disbursement across all simulations, as shown in Table A.1 of the Appendix, to isolate the effects associated with time allocations.

[3] According to the 2014-2020 Cohesion policy regulation, EU NUTS-2 regions were categorised according to their GDP per capita level: less developed regions had a GDP per capita of less than 75% of the EU average; transition regions had a GDP per capita between 75% and 90% of the EU average;, and more developed regions had a GDP per capita of more than 90% of the EU average.

Figure 3. Distribution of the benchmark fund across less developed, more developed and transition regions (% of total interventions)



Source: European Commission's DG RTD (H2020 funds) and European Commission's DG REGIO (Cohesion funds). Data are broken down by their development status based on the NUTS classification (https://ec.europa.eu/regional_policy/policy/how/is-my-region-covered_en). In the lower panel, yellow represents less developed regions, red represents transition regions, and blue represents more developed regions.

We then construct two additional scenarios with alternative allocations of the *Benchmark* industrial policy shock based on the following criteria:

a) *Place-based scenario*: All €130 billion of the *Benchmark* funds are allocated to the Cohesion policy shocks *i)* and *iii),* according to their respective territorial distribution and composition (i.e. their proportion of the Cohesion funds under analysis).
b) *Mission-led scenario*: All the €130 billion of *Benchmark* funds are allocated to adhere to the H2020 territorial distribution and to the composition of its shocks *ii)* and *iii)* (i.e. their respective shares of the total H2020 funds).

These two alternative scenarios aim to capture the implications of different policy strategies on regional performance and disparities while normalising the amount of funds of the two policies under analysis. The *Place-based* distribution of the funds encompasses an intervention strategy and territorial distribution akin to Cohesion policy. The *Mission-led* distribution of the funds, resembles the H2020 intervention logic, with no territorial support objective (space-blind).

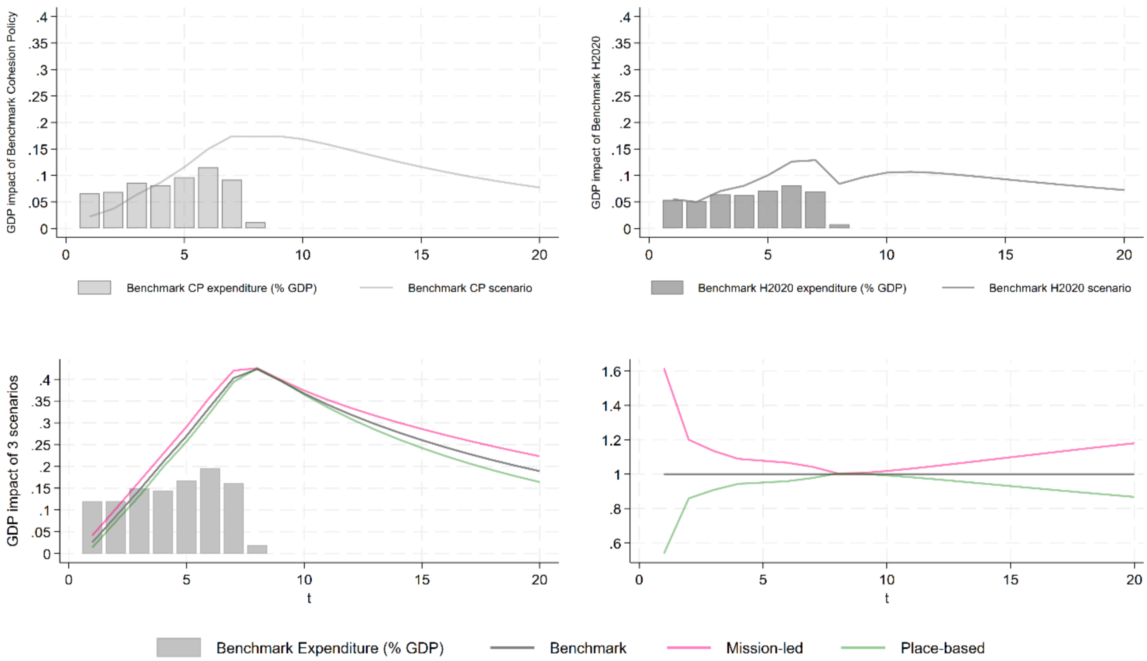
The three scenarios are simulated over 20 annual periods. In all cases, a non-distortionary lump-sum tax is used to finance the policy simulating the functioning of the EU budget, so that the contributions are proportional to the GDP weights, rather than being related to the amount of funds received. In other words, more developed regions contribute more than less developed ones.

4. Results: place-based vs mission-led

The top two panels of Figure 4 show the aggregate EU GDP impact in the *Benchmark* scenario, separately for the Cohesion and H2020 funds (left- and right-hand side figures, respectively). The impact is expressed as percentage deviations from a baseline, or no policy, scenario. We observe that the *Benchmark* industrial policy interventions comprising i) increased non-R&D related subsidies to firms, modelled as an increase in private investment, ii) funding basic research, modelled as an increase in public investment and iii) R&D subsidies and applied research, modelled as an increase in private investment and TFP, together lead to a steady increase in GDP that peaks in period 8 standing at +0.42% of baseline EU GDP. This happens as in the short-term up until the last year of the policy intervention, period 8, increased government and household consumption of intermediate and final goods lead to demand-driven GDP growth relative to the baseline. After the termination of the policy and in the long-run, the supply-side effects of the policy dominate due to the higher levels of TFP and stocks of public and private capital, which in turn sustain higher levels of private consumption and investment relative to the baseline. However, these effects gradually diminish across time due to the depreciation of public and private capital, which are not replaced due to the termination of the policy.

The bottom left panel of Figure 4 shows the EU GDP impacts of the funds of the *Place-based* (green line) and *Mission-led* (red line) scenarios, together with the total *Benchmark* impact (grey line). The *Mission-led* allocation has a slightly higher overall impact compared to the *Place-based* allocation, with the three GDP responses attaining approximately the same maximum in period 8 in the three scenarios. The bottom right panel of Figure 4 shows the percent GDP differences relative to the *Benchmark* impact (normalised to 1), indicating that the *Place-based* allocation of funds yields a long-run impact that is about 82% that of the *Benchmark*, while the long-run impact in the *Mission-led* scenario is roughly 1.2 times that of the *Benchmark*. Over 20 years, this equates to a cumulative difference of +0.40% between the *Mission-led* and the *Benchmark* scenarios, and -0.26% between the *Place-based* and the *Benchmark* scenarios.

Figure 4. EU GDP impact over time (% deviations from baseline)

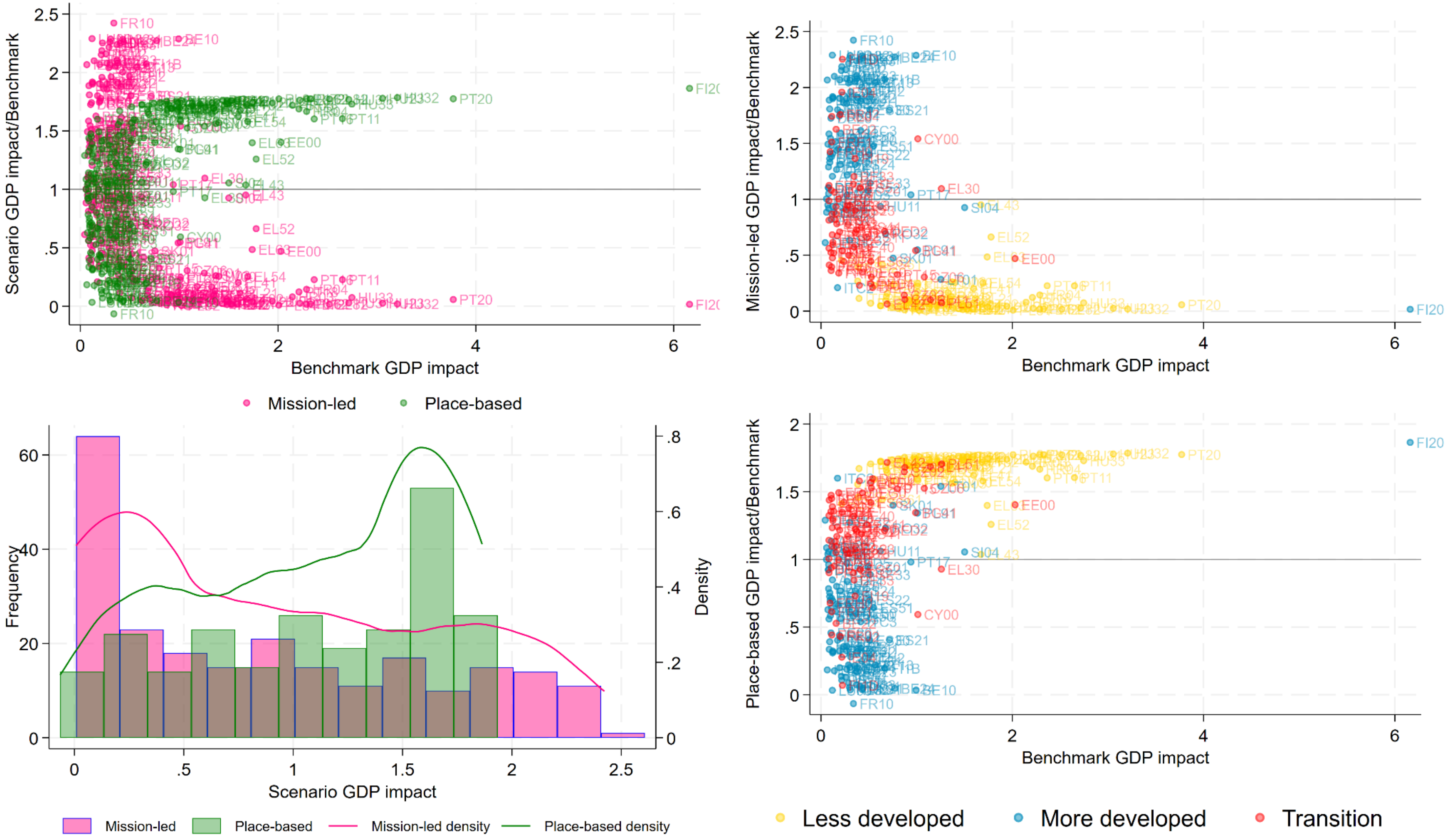


Source: RHOMOLO simulations, authors' calculations.

Despite differences in shock composition and territorial distribution between the three scenarios, the aggregate results shown in Figure 4 look similar. However, this apparent homogeneity conceals significant regional heterogeneity, which we examine now. Figure 5 shows regional GDP changes under the three scenarios in the year of the maximum impact (t=8). The top left panel illustrates the regional GDP impact of *Place-based* and *Mission-led* scenarios relative to the *Benchmark* scenario. The horizontal axis shows the GDP impact of the *Mission-led* and *Place-based* scenarios, while the vertical axis shows the ratio of the GDP impact of the two scenarios to the *Benchmark* impact, which is normalised to 1 (any value above one indicates a superior impact to that of the *Benchmark*, and vice versa).

The bottom left panel of Figure 5 summarises the ratios of the GDP impacts in the *Place-based* and *Mission-led* scenarios versus the *Benchmark* scenario. Only 96 out of 235 regions experience a GDP impact greater than that of the *Benchmark* scenario in the *Mission-led* scenario, 27 of which have an impact twice as great. On the other hand, 139 regions experience a higher GDP impact in the *Place-based* scenario than in the *Benchmark* scenario, but none experience an impact that is at least twice as high.

Figure 5. Comparison of regional GDP impacts (at the peak) across scenarios



Source: RHOMOLO simulations, authors' calculations.

The graphs on the right of Figure 5 show the differences in GDP between the *Mission-led* and *Place-based* scenarios and the *Benchmark* scenarios (in the top and bottom panels, respectively), broken down by regional development status (MD, LD and TR). In the *Mission-led* scenario, the GDP impact in the more developed regions is consistently higher than in the *Benchmark* scenario, whereas the opposite is true for the less developed regions (and most of the TR regions). Conversely, the less developed and transition regions experience greater GDP impacts in the *Place-based* scenario than in the *Benchmark*.

Table 1. Comparison of regional GDP impacts (at the peak) across scenarios by groups of regions

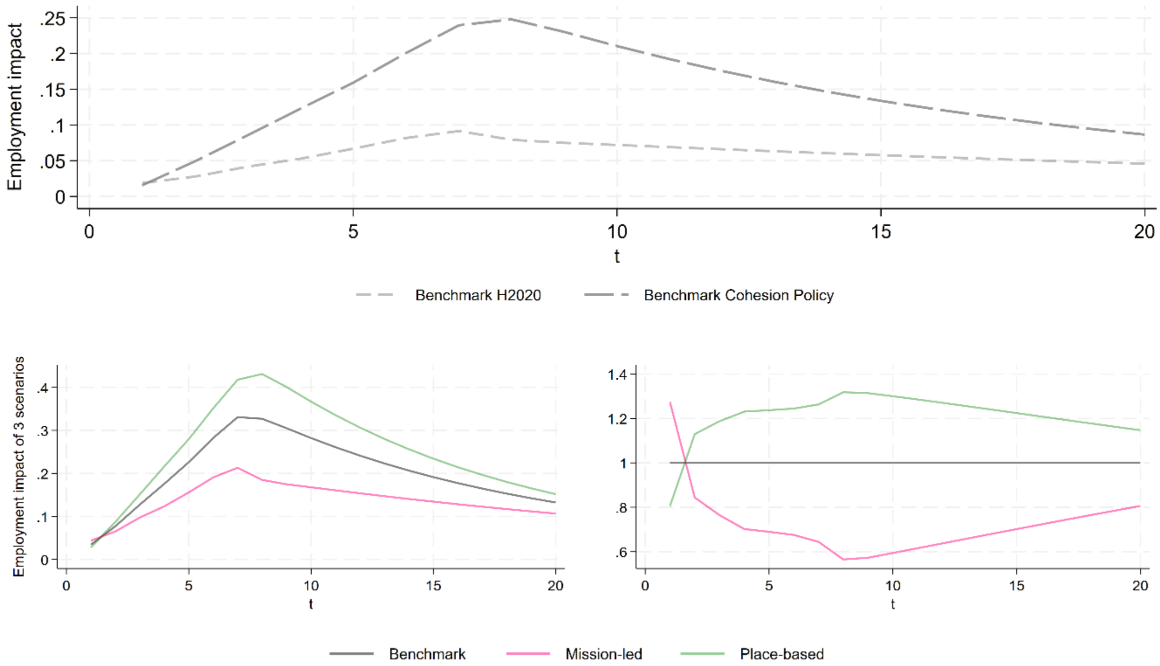
Region type	Number of regions		Mean (St. deviation) GDP impact relative to *Benchmark* impact	
	Place-based	*Mission-led*	*Place-based*	*Mission-led*
Scenario impact / *Benchmark* impact >=1				
Less developed	74	0	1.67 (0.12)	-
More developed	16	79	1.26 (0.24)	1.74 (0.39)
Transition	49	17	1.34 (0.20)	1.41 (0.36)
Total	139	96	1.51 (0.25)	1.68 (0.40)
Scenario impact / *Benchmark* impact <1				
Less developed	0	74	-	0.13 (0.15)
More developed	79	16	0.45 (0.29)	0.67 (0.30)
Transition	17	49	0.69 (0.27)	0.55 (0.26)
Total	96	139	0.49 (0.30)	0.34 (0.31)

Source: RHOMOLO simulations, authors' calculations.

Table 1 summarises the number of regions in each development category, alongside their average impact relative to the *Benchmark*.[4] In the *Mission-led* scenario, the average GDP impact of 79 out of 95 more developed regions is on average 1.74 times greater than the *Benchmark*, compared to 16 regions in the *Place-based*, for which the average impact is 1.26 times that of the *Benchmark*. All 74 less developed regions have a higher GDP impact in the *Place-based* scenario (an average of 1.67 times higher), but the opposite is true in the *Mission-led* scenario (with an average ratio of 0.13 times the *Benchmark* impact). The results for the transition regions place them between the less and more developed regions, but they behave more like the former qualitatively. These results explain the little aggregate differences seen in Figure 3, since in the *Mission-led* scenario the more developed regions experience higher GDP changes at the expenses of less developed ones, while the opposite is true for the *Place-based* scenario. Since the *Mission-led* allocation is particularly beneficial to the regions gaining from it, the EU GDP impact is slightly larger than in the other two scenarios.

[4] The regional distributions of *Place-based* and *Mission-led* are not symmetric along the unity line as implied by the top and bottom right panels of Figure 5 and Table 5. It is due to the exogenous territorial distribution of the funds under the Cohesion policy or H2020 distributions as noted also in Figures 1 and 2. The asymmetry is better noted in Figure 7 and Table 2 which discourse on the employment differentials.

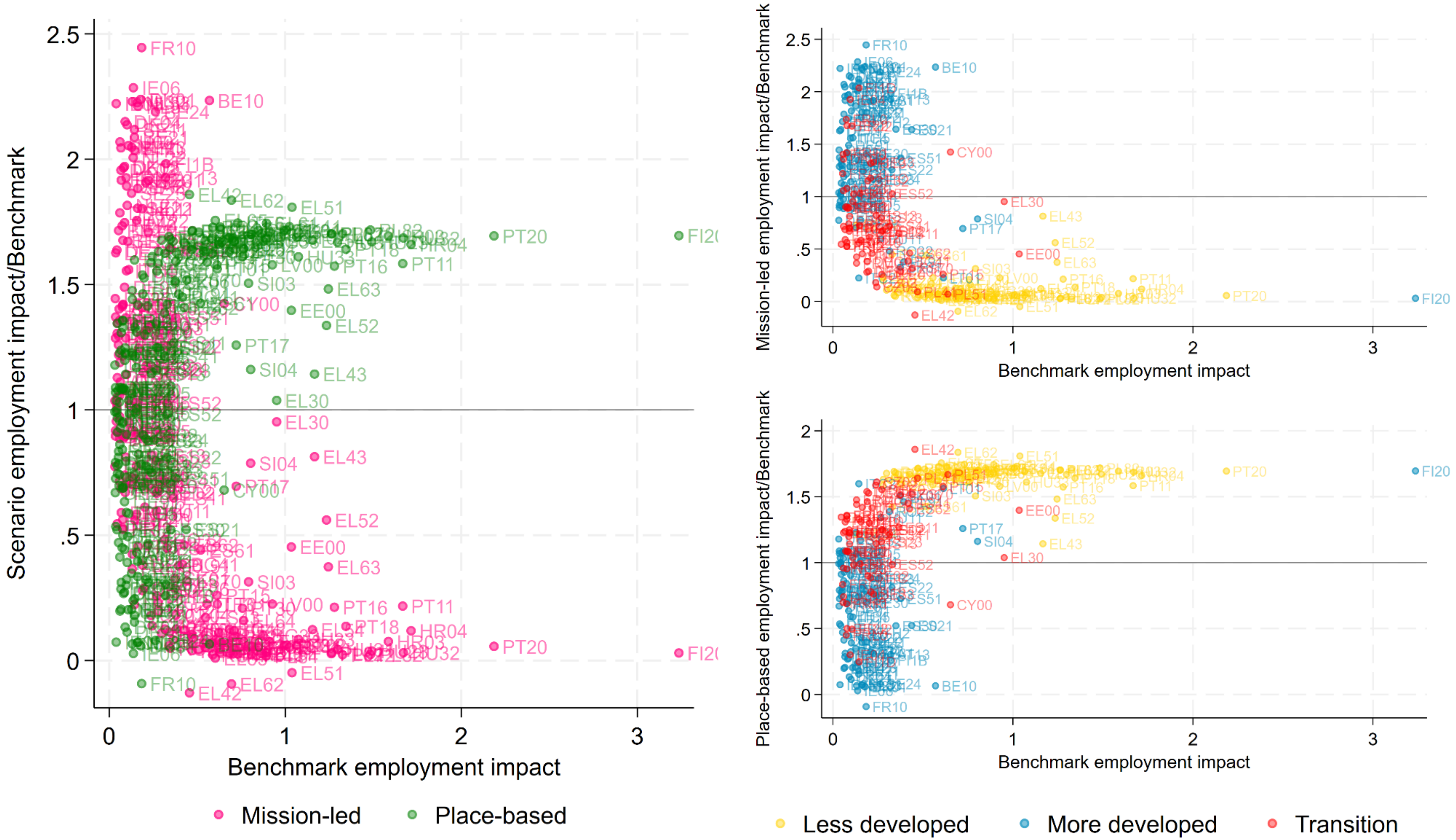
Figure 6. EU employment impact over time (% deviations from baseline)



Source: RHOMOLO simulations, authors' calculations.

Interestingly, the employment results differ from those related to GDP. The bottom left panel of Figure 6 shows the impact on the EU employment in the *Benchmark*, *Place-based* and *Mission-led* scenarios, expressed as percentage deviations from the baseline employment (the upper panel of the same Figure breaks down the *Benchmark* impact into its constituent policy components). The bottom right panel of Figure 6 illustrates the differences relative to the *Benchmark* scenario (whose impact is normalised to one). In this case, the *Place-based* scenario generates a higher impact on the employment, at around 1.2-1.3 times that of the *Benchmark*. By contrast, the *Mission-led* scenario yields a change in the employment of 0.6-0.8 times that of the *Benchmark*. This outcome is the product of regional adjustments, as depicted in Figure 7 and Table 2.

Figure 7. Comparison of regional employment impacts (at the peak) across scenarios



Source: RHOMOLO simulations, authors' calculations.

Table 2. Regions with employment impact greater or equal than the benchmark impact.

Region type	Number of regions		Mean (St. deviation) employment impact relative to benchmark	
	Place-based	*Mission-led*	place-based	mission-led
Scenario impact / *Benchmark* impact >=1				
Less developed	74	0	1.65 (0.11)	-
More developed	21	75	1.24 (0.21)	1.65 (0.4)
Transition	47	19	1.34 (0.18)	1.37 (0.31)
Total	142	94	1.48 (0.23)	1.59 (0.40)
Scenario impact / *Benchmark* impact <1				
Less developed	0	74	-	0.12 (0.15)
More developed	74	20	0.51 (0.31)	0.67 (0.28)
Transition	19	47	0.73 (0.23)	0.54 (0.26)
Total	93	141	0.55 (0.30)	0.34 (0.31)

Source: RHOMOLO simulations, authors' calculations.

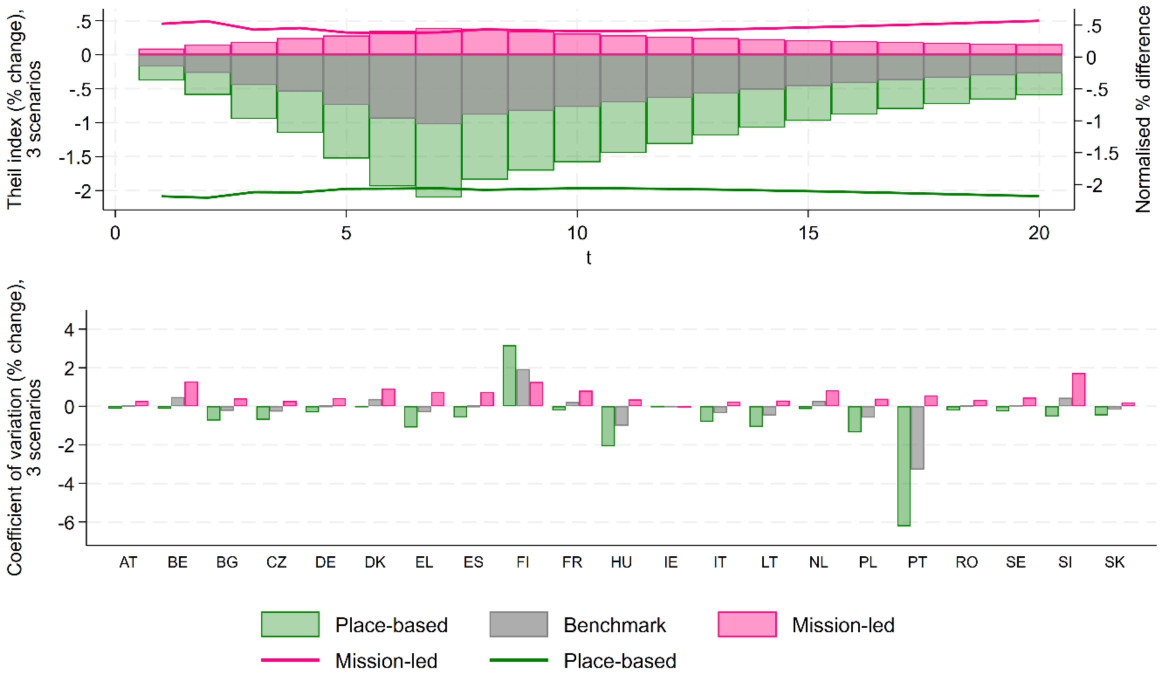
Compared to the *Benchmark*, 142 regions experience a higher impact on the employment in the *Place-Based* scenario, (with an average impact which is 1.48 greater than the *Benchmark*). On the other hand, 141 regions record a lower impact on the employment in the *Mission-led* scenario, with an impact which is 0.34 times that of the *Benchmark*. As *Mission-led* employment impacts greater than the *Benchmark* are restricted to more developed or transition regions, we can conclude that the higher aggregate EU impact of the *Place-based* scenario observed above is due to investment being concentrated in less developed regions, where the unemployment are higher and workers can be mobilised more easily when the economy is stimulated with industrial policy.

Figure 8 summarises the implications of our scenario analysis for regional inequality and disparities. The top panel shows the change in the Theil index calculated using GDP per capita over time.[5] The bottom panel of Figure 8 shows the change in the coefficient of variation[6] for individual EU countries in the year of maximum GDP impact (year 8). The top panel shows that regional inequality decreases more in the *Place-based* scenario than in the *Benchmark* (by approximately 2%), while it increases in the *Mission-led* scenario compared to the *Benchmark* (by about 0.5%).

[5] The index is calculated as: $Theil = \frac{1}{N}\sum_i^N S_j \frac{y_{ij}}{\bar{y}} \ln\left(\frac{y_i}{\bar{y}}\right) + \frac{1}{M}\sum_i^M S_j \ln\left(\frac{y_i}{\bar{y}}\right)$, where the first term of the formula represents the within part of the decomposition capturing the weighted averages of the Theil index of each Member State *i*. The second term is the between component of the Theil index and represents the component of disparities that depends on disparities across countries. S_j are weights and are computed as the ratio between the country average of income per capita, y, and its EU average.

[6] The coefficient of variation is defined as the ratio of the standard deviation of regional GDP per capita relative to the mean regional GDP per capita. A declining ratio implies less variation and a more homogeneous level of GDP per capita that converges toward the mean and vice versa.

Figure 8. Regional disparities (% deviations from baseline)



Source: RHOMOLO simulations, authors' calculations. Data for Croatia are omitted to facilitate the graph as its change was +20.15% under the benchmark, +24.19% under place-based and +14.28% under mission-led. In fact the level values of the coefficient of variation were approximately zero, as the baseline value is 0.004 while in t=8 it stands at 0.005, owing also to fact that at the NUTS-2 classification that is used in the RHOMOLO model, Croatia consists of two regions. Hence we cannot make any inference about the change in disparities within Croatia. For the case of Finland showing a positive change under the place-based allocation, any region that receives relatively more funding than the others tends to generate higher GDP per capita returns, indicating that they are more or less similar in terms of economic performance.

The change in the coefficient of variation reported in the bottom panel of Figure 8 indicates that the *Place-based* scenario results in lower regional disparities in all the EU countries than the *Benchmark* industrial policy scenario (with the exception of Finland). The opposite is true for the *Mission-led* scenario, in which more funds are assigned to more developed regions and, to a lesser extent, transition regions (about one fifth of occurrences).

All the results presented above depend on the two essential differences between the scenarios, that is the territorial distribution and composition of the shocks mimicking the policy intervention (note that the same time profile for the deployment of the funds is used in all scenarios). In order to understand which is the main driver of the results, we present in Appendix B the same analysis in which the sole difference between the *Place-based* and *Mission-led* scenarios lies in the different territorial distribution of the funds (and the composition of the shocks is the same, and it matches that of the *Benchmark* scenario). The results resemble those presented in the main text, proving that the territorial distribution of the funds plays a more significant role than the composition of the policy shock in terms of the three channels illustrated in Section 3.2.

5. Conclusions

Mission-led policies play a crucial role in the EU's industrial strategy, tackling societal challenges such as sustainability, achieving net-zero emissions, and promoting social inclusion. Nevertheless, there are concerns that these policies, by prioritising investment in already innovative and productive areas, may inadvertently widen the gap between regions, potentially increasing inequality between them and exacerbating existing regional economic disparities.

In this paper, we address this issue through scenario analysis, examining place-based and mission-led versions of industrial policy in EU regions, based on the 2014-2020 Horizon and Cohesion policies. Our analysis provides insights into the implications for regional equity and the efficiency of implementing mission-led policies as a coordinated package (Mazzucato and Rodrik, 2023). Our findings suggest that space-blind mission-led policy interventions generate higher regional GDP returns than place-based interventions, mostly in the more developed and transition regions of the European Union. Mission-led policy interventions also appear to yield relatively lower employment gains, compared to place-based policies. Lastly, our findings confirm the concerns that space-blind industrial policy may amplify regional disparities and inequality as mainly due to insufficient investment in less developed regions. The opposite is true for place-based allocations.

Essentially, as the more developed regions continue to accumulate more resources and expertise, they become even more competitive and attractive for investment, talent and innovation, leaving less developed regions further behind (Fujita et al., 1991). This self-reinforcing dynamic could have long-term consequences for the economic and social development of the EU's peripheral regions, potentially perpetuating a cycle of disadvantage and limiting their ability to catch up with more developed areas (Dijkstra et al., 2020). On the other hand, place-based policies are beneficial for economic and territorial cohesion, but they may yield relatively lower returns on investment than policies focusing on industrial leadership like H2020, due to relatively less favourable economic conditions in the less developed regions of Europe.

Our findings highlight the potential contradictions of regional industrial policy under mission-led approaches and the non-trivial implications for inclusive regional development. This suggests that addressing multifaceted societal challenges associated with a mission-led policy such as Horizon, may still overlook territorial polarisation and inclusive territorial development, a matter also raised in Filippetti and Spallone (2025). Ultimately, the policy maker needs to consider such trade-offs when attempting to address global challenges that encompass regional participation and performance (Rodríguez-Pose et al., 2024). Strategies such as micro-missions, which target specific issues and territories, for example, could be employed (Henderson et al., 2024).

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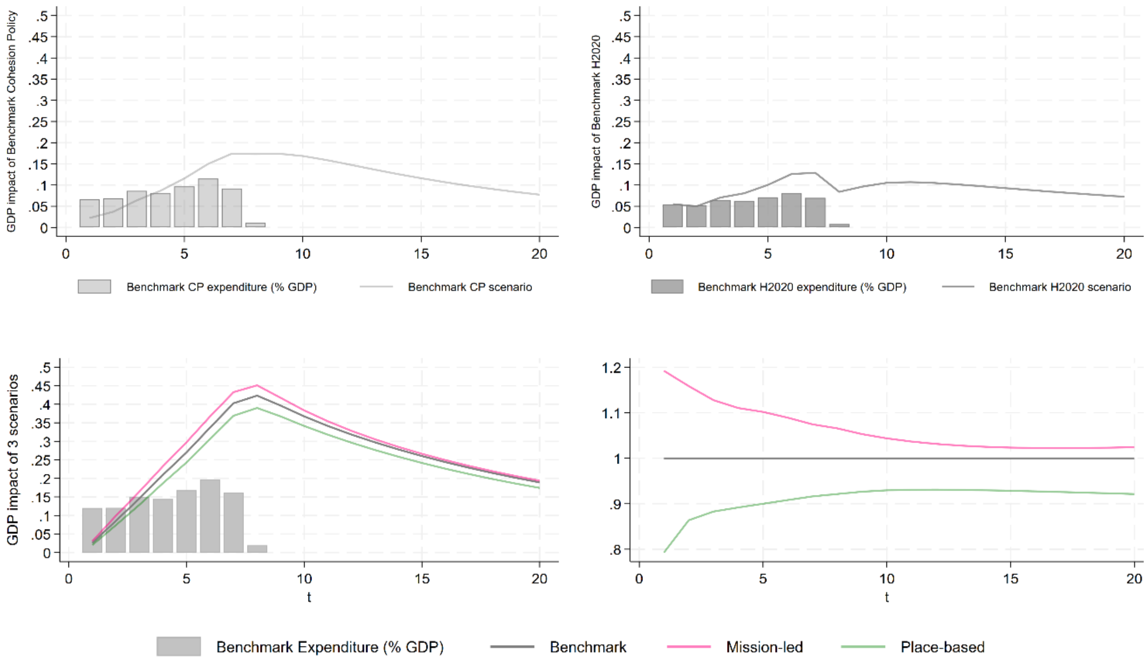
Appendix

Table A.1: Time profile of expenditure for Member States, average across NUTS-2 regions

	Share of ESF Funding							
Period	1	2	3	4	5	6	7	8
	11.20%	11.20%	13.90%	13.30%	15.60%	18.00%	15.00%	1.80%

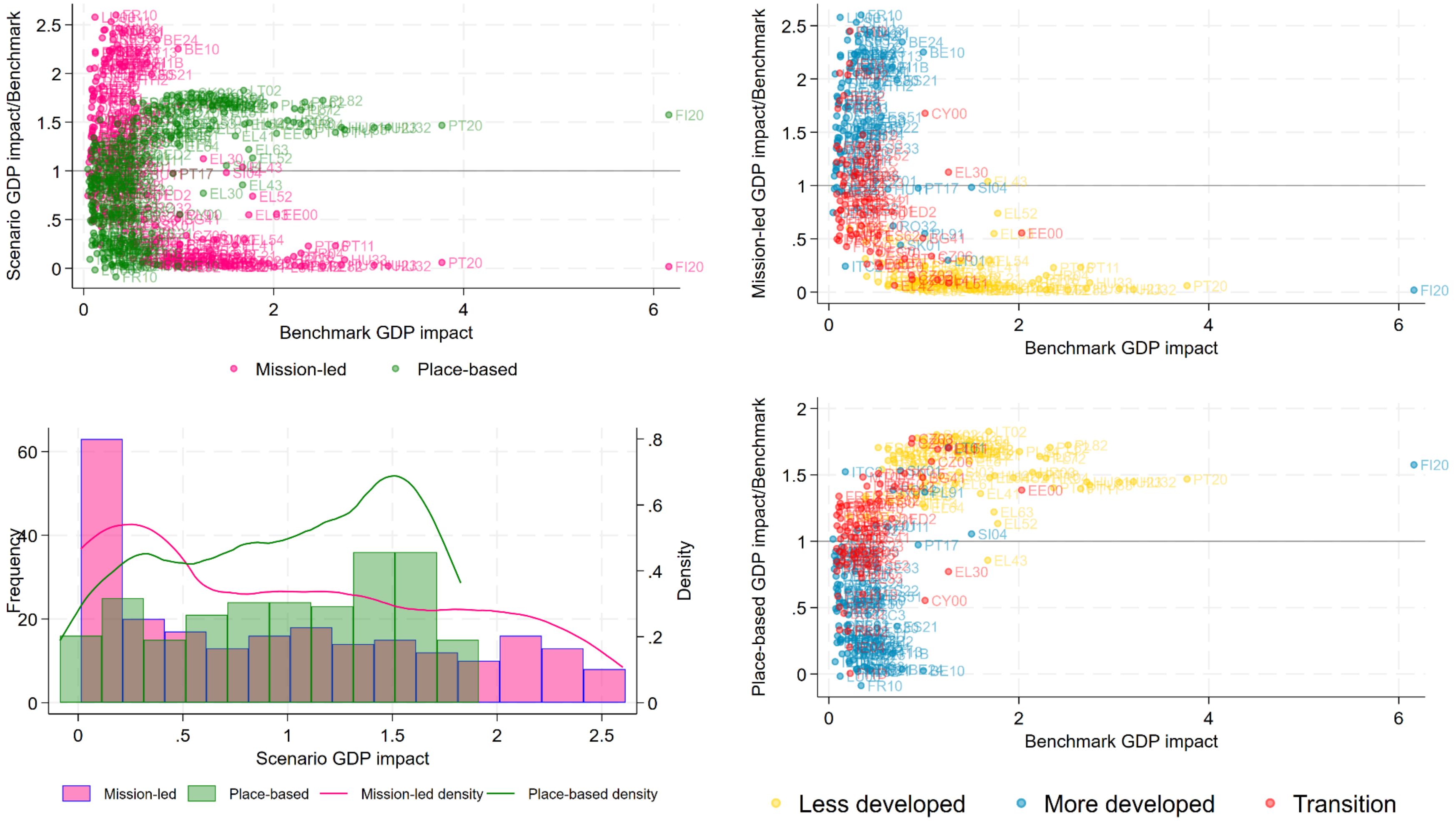
Source: European Commission's DG RTD (H2020 funds).

Figure A.1. EU GDP Impact (% deviations from baseline)



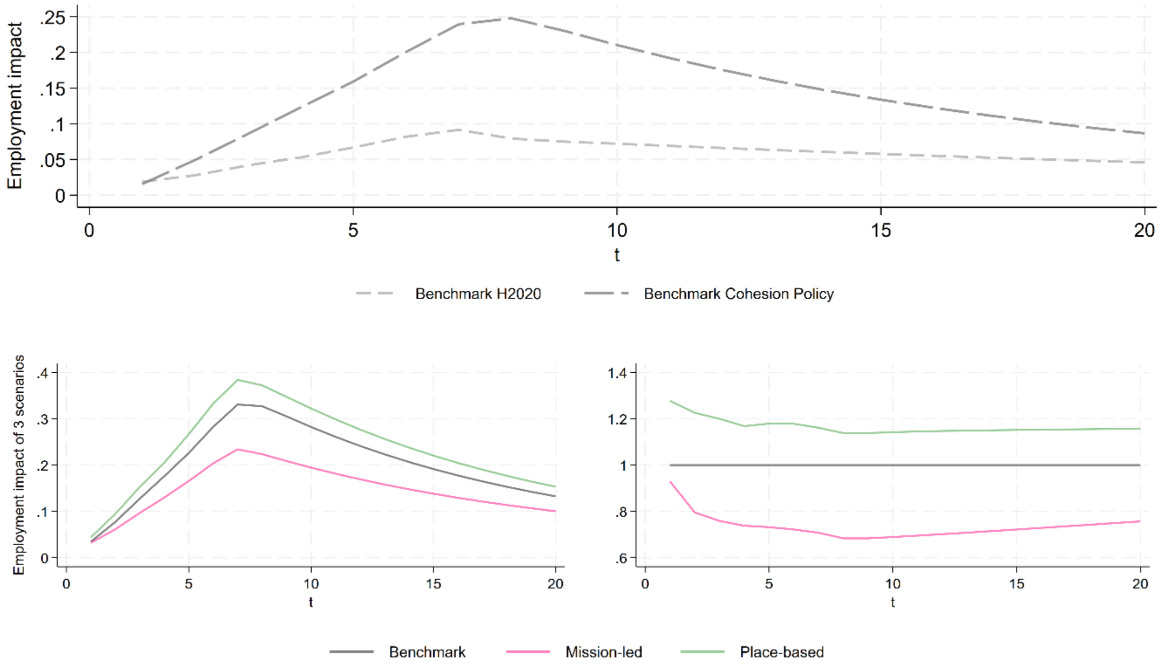
Source: RHOMOLO simulations, authors' calculations.

Figure A.2. Regional GDP Impact (% deviations from baseline and relative to benchmark)



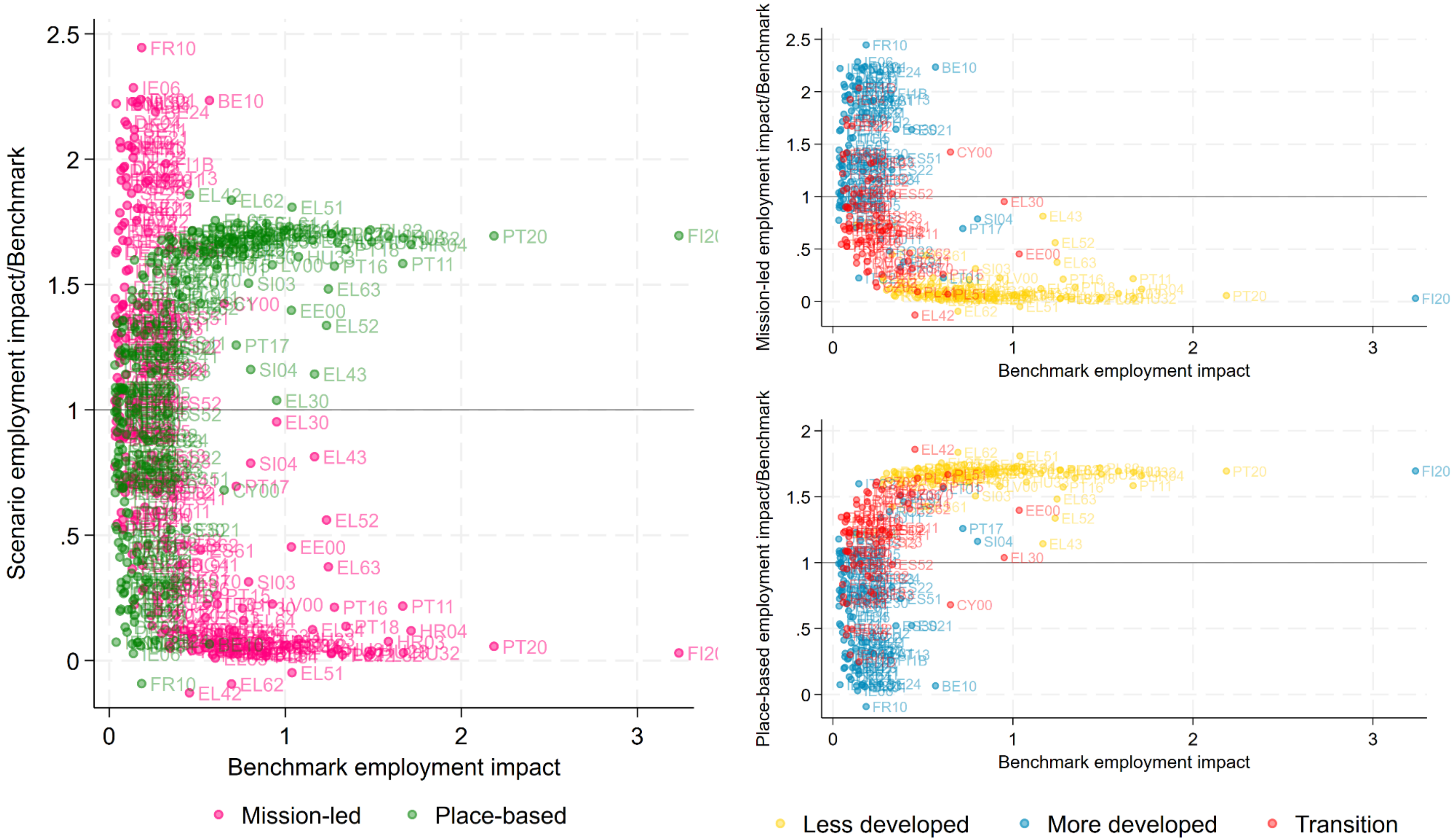
Source: RHOMOLO simulations, authors' calculations.

Figure A.3. EU Employment (% deviations from baseline)



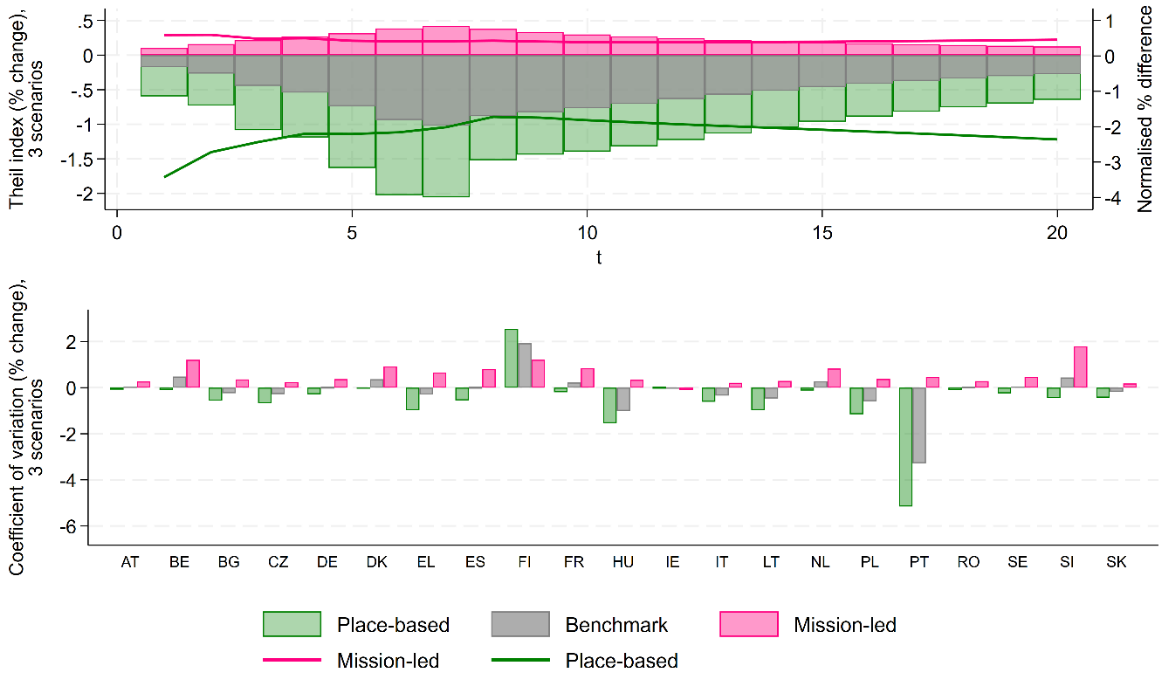
Source: RHOMOLO simulations, authors' calculations.

Figure B.4. Regional Employment (% deviations from baseline and relative to benchmark)



Source: RHOMOLO simulations, authors' calculations.

Figure A.5. Regional disparities (% deviations from baseline)



Source: RHOMOLO simulations, authors' calculations. Data for Croatia are omitted to facilitate the graph as its change was +20.15% under the benchmark, +24.19% under place-based and +14.28% under mission-led. In fact the level values of the coefficient of variation were approximately zero, as the baseline value is 0.004 while in t=8 it stands at 0.005, owing also to fact that at the NUTS-2 classification that is used in RHOMOLO, Croatia consists of two regions. Hence we cannot make any inference about the change in disparities within Croatia. For the case of Finland showing a positive change under the place-based allocation, any region that receives relatively more funding than the others tends to generate higher GDP per capita returns, indicating that they are more or less similar in terms of economic performance.