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Inclusive Europe: the impact of the EU Cohesion Policy on immigrants' economic integration in Italy

Mara Giua[a,*], Rezart Hoxhaj[b], Eleonora Pierucci[c]

[a] *Department of Economics and Rossi-Doria Centre, Roma Tre University, Italy*
[b] *Ghent University, Belgium*
[c] *Department of Economics Roma Tre University, Rossi-Doria Centre, and IRCrES-CNR, Italy*

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Abstract

By examining the impacts of the Cohesion Policy on immigrants' economic integration, this study provides evidence on how the European Union promotes inclusion. Focusing on Italian municipalities, we estimate the causal effects of immigrant-related projects on the wage gap between natives and immigrants during the 2007–2018 period. We find a significant decrease in the average wage gap of approximately 7.6%. Specifically, Cohesion Policy played a positive role in immigrant economic inclusion through interventions targeted at supporting the employment and mobility of workers. For the inclusive dimension of the Next Generation EU program, this is key evidence to start with.

1. Introduction

The aim of building an inclusive Europe is at the core of the Next Generation EU (NGEU) era. In the most important and ambitious policy program that the European Commission has run

* Corresponding author.
E-mail addresses: mara.giua@uniroma3.it (M. Giua), Rezart.Hoxhaj@UGent.be (R. Hoxhaj), eleonora.pierucci@uniroma3.it (E. Pierucci).

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since its origin, the inclusion principle is the transversal pillar that joins the digital and green transitions supporting the renaissance of Europe's society and economy. With the economic and social crisis caused by the COVID-19 pandemic, tackling the pressing social issues already occurring in Europe appears to be inescapable for any possibility of recovery as well as the survival of the European Union (EU) itself. Migration flow management and immigrants' inclusion play key roles in this respect. Reducing the socioeconomic gap between immigrants and the native population and fostering their socioeconomic integration in Europe are crucial to build the inclusive Europe promoted by NGEU (European Commission, 2020).[1]

Until 2020, the efforts of the European Union toward the aim of socioeconomic inclusion were concentrated in the key policy that sustains the 'smart, sustainable and inclusive growth' strategy of the EU since decades, i.e. the Cohesion Policy (European Commision, 2014). Owing to the similar purposes and governance, the Cohesion Policy is currently identified as a study-lab for NGEU (Crescenzi, Giua, & Sonzogno, 2021).

Through the support of citizens, firms, local authorities, and public and private economic actors, the Cohesion Policy has aimed to promote and support the local development of all the territories of the Union in order to reduce the inequalities and disparities between EU citizens. The European Social Fund (ESF), one of the two most important funds of the Cohesion Policy, aims to create more and better jobs by supporting training activities, especially targeting the most vulnerable in society.

The impact of the Cohesion Policy on economic growth and employment has been extensively studied (for a review, see Crescenzi & Giua, 2017). However, no evidence has been provided on its impact on inclusion; nonetheless, this aim is of primary importance, especially for what concerns the ESF. Based on the foregoing, this study assesses the impact of the Cohesion Policy on inclusion by examining one of its most important dimensions in the years before the COVID-19 pandemic: immigrants' economic integration. By doing so, the paper contributes to two streams of the literature: the literature on the impact of the Cohesion Policy and the one on the impact of public policy on migrants' integration. More generally, by understanding what has worked and what has failed under the Cohesion Policy, this study contributes to the evidence base on how to implement the inclusive recovery aimed by the NGEU program.

This study focuses on the case of Italy. According to the latest data from 2019, migrants' inclusion in Italy lags well behind the EU average. In Italy, the median net income of non-EU nationals is 5% points lower than the EU average, 68% compared with 73%, respectively. In addition, the share of non-EU nationals aged 18–24 not employed or in education/training (NEET), which measures the education and employment perspective of the young, is 10% points higher than the EU average, 33% compared with 23%, respectively (EUROSTAT, 2020). Furthermore, in Italy, a country at the gates of Europe facing consistent flows of new immigrants and refugees, the low integration of immigrants exacerbates the national perception of 'invasion,' which in turn fuels fierce political debate and negative attitudes toward immigrants.

In practical terms, thanks to the availability of data on the Cohesion Policy at the project level (source: OpenCoesione), we identify a sample of 'immigrant-related projects' carried out in Italian municipalities during the last two programming periods (2007–2013 and 2014–2020).[2] By using novel data on the wage gap between the native population and

[1] Since the early 1990 s, the Cohesion Policy has accounted for the largest proportion of the EU budget together with the Common Agricultural Policy.

[2] To the best of our knowledge no other member states publish open data on single projects funded by Cohesion

immigrants made available by the Italian National Institute of Social Security, we investigate whether and to what extent the Cohesion Policy has favored immigrant integration in the hosting labor market.

Our analysis is conducted at the year-municipality level for 2007–2018 and it relies on a staggered difference-in-differences (DiD) approach (Callaway & Sant'Anna, 2021). In particular, we investigate the presence of post-treatment effects controlling for municipality time-invariant characteristics as well as municipality time-variant characteristics that vary similarly between municipalities hosting (treated) or not (untreated) immigrant-related projects using a time-varying DiD tool (Cerulli & Ventura, 2019).

Our analyses provide evidence of the positive impact of the Cohesion Policy on immigrants' economic integration in Italy. We find that the average wage gap between Italian workers and immigrant workers decreased in municipalities in which Cohesion Policy projects targeted immigrants' integration. Specifically, we observe that the average wage gap between treated and untreated municipalities decreased by up to 15 euros per month. This corresponds to a significant decrease in the average wage gap of approximately 7.6%.

The remainder of this paper proceeds as follows. Section 2 reviews the most relevant contributions to the two streams of the literature on the Cohesion Policy and migrants' integration policies, Section 3 describes the dataset, Section 4 presents the empirical strategy, Section 5 shows the baseline results, robustness checks are explored in Section 6, and Section 7 concludes.

2. Cohesion Policy and immigrant inclusion in Europe: state of the art

2.1. Cohesion Policy: evidence and gaps at the launch of the NGEU inclusion pillar

The Cohesion Policy has represented the core of the policy strategy of the EU since its origin. Although the EU is a leading example of economic and political integration in the world, health and living conditions in the EU have always been characterized by deep disparities. Against the background of the Union's economic integration processes, globalization, and subsequent enlargement toward Eastern European countries, economic performance and opportunities among European territories have become increasingly unequal. Since the early 2000s, the resources dedicated to the Cohesion Policy funded through European Structural and Investment Funds have absorbed almost one-third of the budget of the Union. Among the European Structural and Investment Funds, the European Regional Development Fund primarily targets firms' productivity, innovation dynamics, and infrastructural endowment in less developed territories, while the European Social Fund supports projects fostering education, social inclusion, employment, and training.[3] Since 2008, the ESF has largely been used to overcome the social consequences of the financial crisis across Europe, especially for the most fragile people and workers such as women, young people, and immigrants. More specifically, migrants' integration has been a key pillar of the local development processes promoted by the EU over the last decades (Fioretti, Proietti, & Tintori, 2021).

(*footnote continued*)
Policy so that it is possible to precisely identify those policy interventions targeting specific objectives such as immigrants' inclusion.

[3] The Cohesion Fund and European Rural Development Fund are also European Structural and Investment Funds.

The important aim of inclusion is now shared by the Cohesion Policy and NGEU. Inclusion has been among the more direct purposes of the ESF since 2000 and it is one of the pillars of NGEU. Notwithstanding the relevance that the ESF experience can have for NGEU, no evidence exists on the role that European policies have thus far played on inclusion. This is critical for the urgent need to implement NGEU projects, starting with scientific evidence on what works (Crescenzi et al., 2021; European Commision, 2020).

A large number of studies have recently focused on the impact of the Cohesion Policy and on the contextual conditions capable of conditioning those impacts (for a review, see Crescenzi & Giua, 2017). When estimating the impact achieved, these studies have developed different policy focuses, allowing the maintenance of a direct and precise association between policy and intended outcome. Most of them focus on the EU as a whole when assessing Cohesion Policy overall impact on growth and employment (Becker, Egger, & von Ehrlich, 2010, 2013 Pellegrini, Terribile, Tarola, Muccigrosso, & Busillo, 2013). Some studies have identified interventions addressed to specific groups of territories in specific Member States (e.g., Objective 1/Convergence/Less Developed or Rural/Urban Areas) (Crescenzi & Giua, 2020; Di Cataldo, 2017; Giua, 2017; Percoco, 2017). Other studies (Crescenzi, de Blasio & Giua, 2020) have focused on specific programs (e.g., Smart Specialization Strategy) for specific purposes (e.g., industrial research of beneficiary firms). Others have identified specific policy interventions across Europe (e.g. infrastructure in Ferrara, McCann, Pellegrini, Stelder, & Terribile, 2017 and firms' support in Bachtrögler, Fratesi, & Perucca, 2020) to measure their impact on relevant outcomes.

However, no focus on the impacts of the Cohesion Policy on inclusion has yet been provided. This necessitates identifying a subset of interventions that aim to promote inclusion and associating them with changes in inclusion paths for the same recipients. Hence, by focusing on the impact of ESF projects that promote the inclusion of immigrants in Italy, this study provides the first evidence on the causal impact of EU policies on inclusion.

2.2. *Inclusion of immigrants: channels of integration and policy options*

It is widely accepted that integration is a two-way process of the adaptation of both immigrants and host societies in socioeconomic and cultural terms. On the one hand, immigrants must comply with the rules and obligations of the new country of residence; on the other hand, the hosting society should create opportunities for immigrants' full economic, social, cultural, and political participation (Scholten, Han, Rinus, & Stijn, 2015). Governments at all levels can play a proactive role by designing and implementing policies that facilitate and expedite the integration process.

From an economic perspective, successful integration implies a reduction in the differences between immigrants and the native population, generally in terms of labor market outcomes such as wages, employment opportunities, and job quality (OECD & European Union, 2018). A key measure of the extent to which immigrants are economically integrated into the host country and the effectiveness of the country's integration policy is the native–immigrant wage gap (Coulombe, Grenier, & Nadeau, 2014). A vast body of the literature investigates the main factors that determine immigrants' integration into the labor market and documents the most relevant policies affecting the integration pathway/trajectory.

A significant part of the native–immigrant wage gap is explained by labor market discrimination based on ethnic origin and by access to host country citizenship (Hoxhaj, Vink & Breuer, 2020).[4]

[4] These drivers are quite relevant in many high income countries such as Italy (Amo-Agyei, 2020).

Other determinants of the native–immigrant wage gap reflect the differences in labor productivity between native-born and immigrants. A key issue in this respect is the skill dimension. Immigrants, especially in the early stages of their migration experience, are usually endowed with a low level of skills and competencies that are valuable in the host country's labor market. This is mainly because the skills acquired in the country of origin are not perfectly transferable to the host country's labor market due to technological differences, barriers to entry into professional occupations (e.g., occupational licensing), and even cultural differences (Chiswick & Miller, 2009). The main consequences of skill mismatches are a lower probability of finding a job and lower wages for immigrants than natives. This may hinder their integration into the host country. To address this issue, integration policies aim to adapt the existing skills of immigrants and help them develop new skills demanded by the host country's labor market. These policies usually promote vocational training programs combined with on-the-job practice, subsidies for the private and public sector employment of immigrants, and wage subsidies (Bilgili, 2015). Besides the skill upgrade, these programs also help immigrants find the most appropriate job given their skills and demonstrate their potential productivity to employers, which likely boost employability and wages. Studies evaluating the impact of these policies are scarce and generally based on specific programs and/or projects. For instance, Delander, Hammarstedt, Månsson, & Nyberg (2005) find that the participation of immigrants in a pilot scheme combining language attainment with practical workplace training resulted in much speedier transfers from unemployment to employment, further training, and education. Walter (2013) find that skill provision through short-term training programs in Germany increased the employment of immigrant women by around 12.6% points.

Another relevant issue that can generate obstacles for immigrants' productivity in the hosting labor market is education and linguistic barriers. Usually, immigrants have low access to education in the host country and have low proficiency in the host country's language, particularly in the early stage of their migration experience (OECD & European Union, 2018). As a consequence, they perform worse in the labor market than natives, as they are less able to acquire the competencies and skills that are valuable in the host country (Chiswick, 1978; Heath & Cheung, 2007). In fact, evidence shows that highly educated immigrants and those fluent in the host country's language have access to better jobs and higher earnings (Chiswick & Miller, 2009, 2015; Dustmann, 1994). This suggests that policies aimed at boosting immigrants' integration should enhance their access to education in the host country and promote language learning. These policies may include those aiming to promote the inclusiveness of second-generation immigrants by addressing school segregation and language-learning programs for immigrant (European Union Agency for Fundamental Rights, 2017).[5] The few studies available on these topics evaluate the impact of language-training programs and projects and generally find a positive effect on earnings (Sarvimäki & Hämäläinen, 2010) and employment (Clausen, Heinesen, Hummelgaard, Husted, & Rosholm, 2009).

Finally, difficulties in building social ties and networks beyond the network of co-nationals might also hamper migrants' positioning in the labor market. Given the strong relationship between social interactions with the host society and economic integration, different policy interventions are designed to help immigrants improve job matching and provide better job opportunities (Andersson, Larsson, & Öner, 2020; Borjas, 2000).

[5] An example is the ministerial circular in Italy which requires schools to distribute non-Italian students across classroom of the same school in order not to exceed the threshold of 30% of non-Italian students.

3. Data and sample description

To estimate the impact of the Cohesion Policy on immigrants' economic inclusion, this study explores the causal relationship between ESF projects directly targeted at improving the labor market conditions of immigrants (immigrant-related projects) and the native–immigrant wage gap. The empirical analysis focuses on the Italian case thanks to the availability of two crucial datasets used to precisely measure the migrant inclusion dimensions from the policy and outcomes perspectives. Focusing on a single country also reduces any unobserved heterogeneity across countries that might arise in multiple-country studies.

The first dataset includes data on average wages at the municipality level for both immigrants and natives. This original dataset, never used before, is provided by the National Institute of Social Security. In the dataset, the average wage data are assessed over the population of regular immigrants for whom social security payments are recorded by considering weekly wages earned in the main job by each registered worker resident in a given municipality.[6] Before calculating the average, the distribution of wages is winsorized in the extremes to address the potential impact of outliers. For privacy reasons, the dataset does not include data for municipalities that have 10 or fewer native or immigrant workers.[7] Starting from the wage data, we compute the yearly wage gap between native and immigrant workers over 2007–2018.[8] The wage gap between natives' and immigrants' average wage at time t for municipality I ($Wage\ Gap_{it}$) is the dependent variable in our model.

The second dataset allows us to identify immigrant-related projects. This dataset, made available by OpenCoesione, contains all the projects financed by the Cohesion Policy implemented in Italy during the programming years of 2007–2013 and 2014–2020.[9] For each project, the dataset provides information on title, objective, articulation, timeline, financial resources allocated and spent, funding source, and location (up to the municipality level). To identify the immigrant-related projects, we follow a two-step procedure as in Crescenzi, Giua, & Sonzogno (2021).

First, based on the literature discussed in Section 2.2, we focus on projects under three of the EU's priority classifications: (1) the *employment and mobility of workers*, which includes projects to improve working skills and abilities and the upward occupational mobility of workers; (2) *education*, which includes projects that provide educational courses with a focus on language learning for immigrants; and (3) *social inclusion*, which accounts for a large variety of projects aimed at fostering the social inclusion of people.[10]

Second, to isolate projects directly involving immigrant inclusion, we run a textual search of the word *immigrant* and its variants in all the relevant variables of the database: the title and description of the project, description of the activation procedure, name of the policy priority, and title of the outcome indicators of the projects.[11] All projects that respond to the textual search are then cross-checked and cleaned to check for inconsistencies.[12]

[6] The main job is identified as the job with the higher weekly wage.

[7] Municipalities with fewer than 10 immigrant workers are excluded more frequently because the absolute number of immigrants is below that of Italians.

[8] The full list of categories includes workers, employees, managers/directors, and apprentices.

[9] OpenCoesione is the open government initiative on the Cohesion Policy in Italy. The portal www.opencoesione.gov.it publishes open data on the implementation of the Cohesion Policy at the project level.

[10] Based on the EU's priority categories, OpenCoesione projects are classified in 13 policy themes; see https://opencoesione.gov.it/en/.

[11] The other variants of the word "immigrant" are migrant, emigrant, and foreigner. The search is conduced both in capital and in lowercase letters.

[12] For example, we exclude from the sample those projects whose title includes the word "*Straniero*," which is the translation

Table 1
Descriptive statistics of the projects.

Project's theme	Nr. of pro-immigrant projects	Total Nr. of projects	Nr. of municipalities
All themes	4,294	1,236,683	674
Employment and mobility	3,155	611,128	268
Education	852	298,938	206
Social inclusion	287	326,617	26

Note that the number of projects from the different themes do not sum up to the total number of all themes. This is because there are municipalities with more than one type of project; and these are excluded when reporting the number of projects by theme. Source: Own calculations based on the dataset in use.

Thus, we identify a sample of 6,415 immigrant-related projects in the *employment and mobility of workers*, *education*, and *social inclusion* themes. In our model, the treatment variable (D_{it}) takes the value of 1 for each municipality in which at least one immigrant-related project exists, starting from the year in which the project is activated, and 0 otherwise.[13]

By merging these two databases, we obtain a longitudinal dataset at the year-municipality level. This dataset contains 4,294 municipalities, among which 674 are classified as treated since they host at least one immigrant-related project over 2007–2018. Table 1 shows the distribution of immigrant-related projects by theme and municipalities in our sample.

To make untreated municipalities suitable to serve as counterfactuals for the treated, we rely on a rich set of relevant variables to run nearest neighbor matching on the observables and reproduce a sample of untreated municipalities that do not differ significantly from the treated. The variables used to perform the matching between the treated and untreated municipalities are selected because of their relevance in terms of selection into treatment (i.e., they might determine the treatment status and/or the outcome variable). These are listed as follows:

The *dissimilarity index* measures the spatial segregation of immigrants, that is, the evenness of immigrants' distribution across municipalities. The index ranges from 0 (complete integration) to 1 (complete segregation). According to the literature, higher segregation might negatively affect wages, as immigrants cluster in low-paid jobs (Liu, Zhang, & Chong, 2004).

The proportion of non-EU immigrants (*non-EU immigrant share*) in the Italian population at the municipality level: a higher concentration is related to larger migration networks, which can raise immigrants' access to employment as well as their wages (Munshi, 2003; Patel & Vella, 2013).

The *unemployment ratio* between the unemployment rates of natives and immigrants, which captures relative labor demand for natives and immigrants. A different relative demand for labor may affect the wages of these groups disproportionally and thus the wage gap. In addition, a higher unemployment rate for immigrants relative to that for natives may call for more projects targeting immigrants at the municipality level.

The average level of skills of the workforce, proxied by the share of adults with a secondary and tertiary education (*higher education*). The higher the workforce's qualifications, the higher

(*footnote continued*)
of foreigner in Italian, but that aim to attract foreign tourists rather than being related to projects targeting immigrants.

[13] The proportion of projects located in more than one municipality or associated with an entire province/region is only around 3% of the sample. The proportion of immigrant-related projects is even lower. We follow Ciani & de Blasio (2015) by considering only municipality-located projects.

Table 2
Model's variable.

VARIABLES	Definition	Source
Dependent variables		
Wage Gap$_{it}$	Difference between the average wage of native-born and the average wage of immigrants at the municipality level.	National Institute of Social Security database
Treatment variable		
D_{it}	Dummy variable equal to 1 for municipality *i* hosting at least one immigrants-related project	OpenCoesione
Control variables		
Dissimilarity index	A continuous variable ranging from 0 (complete integration) to 1 (complete segregation).	Alessandrini, Natale, Sermi, & Vespe (2017)
Non-EU Immigrants share	The share of non-EU immigrants on the population of Italy.	ISTAT
Unemployment ratio	The ratio between the unemployment rate of native-born and the unemployment rate of immigrants.	ISTAT
Higher education	The ratio of individuals (25–64 years old) having secondary or tertiary education on the total population of the municipality.	ISTAT
Large municipality	A dummy equal to 1 for municipalities with a population of 50 thousand or more, and 0 otherwise.	ISTAT
North	A dummy equal to 1 for municipalities allocated in the north of Italy as defined by ISTAT, and 0 otherwise.	ISTAT
Centre	A dummy equal to 1 for municipalities allocated in the centre of Italy as defined by ISTAT, and 0 otherwise.	ISTAT
South-Islands	A dummy equal to 1 for municipalities allocated in the south or islands of Italy as defined by ISTAT, and 0 otherwise.	ISTAT

is the wage gap between natives and immigrants.[14] Moreover, a highly educated population usually has more positive attitudes toward immigrants (Hainmueller & Hiscox, 2007), is more favorable to projects targeting immigrants, and is more able to benefit from financial transfers (Becker, Egger, & von Ehrlich, 2013).

A dummy classifying large municipalities (*large municipalities*), that is, those with a population larger than 50,000 inhabitants.

A set of dummies for the Italian macro regions (*north, center*, and *south and islands*) to balance the sample on possible unobserved characteristics at the region level.

Table 2 reports the names, details, and sources of the variables. Most data come from the Italian National Institute of Statistics (ISTAT) Census and they are therefore observed at the municipality level each 10 years. We run the matching analysis with both the 2011 and the 2001 data, obtaining similar results.[15]

[14] Given that immigrants in Italy usually have a low level of education and their qualifications are rarely recognized, this index mainly captures the average educational level of natives.

[15] Matching should be carried out on the pre-treatment (pre-2007) values of the observables. However, since Census 2001 lacks information on the crucial variables (e.g., dissimilarity index and the birthplace of immigrants necessary to assess the proportion of non-EU immigrants) and since there were relevant changes in local migration between 2001 and 2007, we prefer to run the main matching estimation using data from Census 2011. The results using Census 2001 data are available upon request.

Table 3
Descriptive statistics of the treated and untreated municipalities before matching.

	Treated					Untreated				
	Obs.	Mean	S.D	Min	Max	Obs.	Mean	S.D	Min	Max
Wage gap	674	48.28	30	-62	223.3	4,037	43.9	31.8	-85	223.8
Dissimilarity index	674	0.29	0.07	0.03	0.64	4,037	0.25	0.08	0	0.67
Non-EU immigrants share %	674	2.6	2.3	0	19.2	4,037	3	2.7	0	21.7
Unemployment ratio	674	0.76	0.52	0.19	7.85	4,037	0.67	0.53	0	6.61
Higher education	674	0.54	0.09	0.30	0.75	4,037	0.51	0.08	0.21	0.83
Large municipalities	674	0.13	0.33	0	1	4,037	0.005	0.07	0	1
North	674	0.25	0.43	0	1	4,037	0.70	0.46	0	1
Center	674	0.39	0.49	0	1	4,037	0.10	0.30	0	1
South-Islands	674	0.36	0.48	0	1	4,037	0.20	0.40	0	1

The wage gap is calculated as the average wage gap over all the time span (2007–2018). The values of the other variables refer to year 2011.

Table 3 reports the descriptive statistics of the full sample of treated and untreated municipalities (i.e., before matching). Treated municipalities have a slightly higher average wage gap than untreated municipalities. The higher unemployment ratio for treated municipalities shows that untreated municipalities have a lower immigrants' unemployment rate than native unemployment rate. The spatial distribution of projects across treated and untreated municipalities also differs remarkably. Imgrant-related projects are mainly located in large municipalities (cities) and in the *center* and *south and islands* macro regions.

After matching, all the differences in the observables between treated and untreated municipalities turn out to be not significant, as the balancing test in Table 4 shows. The sample of matched municipalities is composed of 674 treated and 463 untreated municipalities.[16]

Fig. 1 shows the spatial distribution of treated and untreated counterfactual municipalities (after matching).

4. Empirical strategy

To identify the impact of immigrant-related projects on the wage gap between native and immigrant workers, we employ a time-varying DiD model that exploits temporal and spatial variations: treated and counterfactual municipalities are observed yearly over 2007–2018. The model is estimated by considering a contemporaneous treatment with a varying number of lags and leads:

$$Wage\ Gap_{it} = \mu_i + \beta_{-n} D_{it-n} + \beta_0 D_{it} + \beta_{+n} D_{it+n} + \gamma x_t + \varepsilon_{it} \text{ where n} = 1, 2, \ldots \text{T} \quad (1)$$

[16] The matching is performed by allowing replacement, meaning that a municipality from the control group can be used as the counterfactual municipality more than once.

Table 4
Balancing test before and after the nearest neighborhood matching with replacement.

	Unmatched	Mean	Mean	% bias	%bias	t test		V (T)/I)
	Matched	Treated	Untreated		Reduction	t	p > |t|	
Dissimilarity index	U	0.2976	0.2559	52.7		12.2	0.000	0.8 *
	M	0.2976	0.2954	2.7	94.8	0.51	0.611	0.84 *
Non-EU immigrants share	U	0.2606	0.0305	-17.5		-3.99	0.000	0.73 *
	M	0.2606	0.025	4.0	77.2	0.76	0.449	0.83 *
Unemployment ratio	U	76.444	67.526	16.8		4.00	0.000	0.95
	M	76.444	76.876	-0.8	95.2	-0.16	0.872	1.29 *
Higher education	U	54.282	50.801	42.3		10.42	0.000	1.15
	M	54.282	54.114	1.7	96.0	0.30	0.764	1.03
Large municipalities	U	0.1276	0.0054	50.5		20.46	0.000	–
	M	0.1276	0.12611	0.6	98.8	0.08	0.935	–
North	U	0.2448	0.6963	-101		-23.8	0.000	–
	M	0.2448	0.2388	1.3	98.7	0.25	0.799	–
Center	U	0.3931	0.1010	71.9		20.97	0.000	–
	M	0.3931	0.4050	-2.9	95.9	-0.44	0.657	–
South-Islands	U	0.3620	0.2026	36.0		9.25	0.000	–
	M	0.3620	0.3560	1.3	96.3	0.23	0.821	–

Outcome variable: treated municipalities are those ones with at least one immigrants-related project; the balancing test refers to matching of treated (674) and (463) control municipalities.

where $Wage\ Gap_{it}$ is the wage gap of municipality i at time t, calculated as the difference between the average wage of natives and average wage of immigrants at the municipality level.

D_{it} is the binary treatment coded 1 for the year t from which at least one immigrant-related project is carried out in municipality i.[17] D_{it-n} and D_{it+n} are a full set of leads and lags dummy variables referring to each year before the beginning of the treatment and each year during the treatment. β_0 measures the contemporaneous average treatment effect (ATE): if $\beta_0 \neq 0$, the treatment delivered at time n affects the outcome at time n.

We expect a delayed effect of the treatment, as it may take time for the project's outcomes to affect the wages of immigrants. Indeed, any active labor policy such as job training may require time to translate into better jobs and higher wages for participants and then affect the native–immigrant wage gap of the municipality. We consider up to three leads (years) as sufficient time to detect this effect, but we also estimate the model using different numbers of lags and leads.[18] The vector μ_i represents the municipality fixed effects, while the vector x_t represents the

[17] A treatment variable accounting for the amount of per capita funding of immigrant-related projects would have allowed us to identify the causal effect of an additional euro spent on immigrant-related projects on the wage gap. Unfortunately, this analysis is infeasible due to data limitations. First, we lack information on the number of individuals that the project(s) target(s) to assess the per capita intensity of the treatment. Even proxying for the total number of immigrants in the municipality is unviable for the study period, as we have information on the number of immigrants from Census 2011. Second, many projects are conducted contemporaneously in several municipalities, and we lack information on the precise distribution of a project's amounts across municipalities. This prevents us from calculating the total payments used in a municipality for our projects accurately. When the treatment is binary, the distribution is not an issue since the municipality is treated when any project is conducted in that municipality.

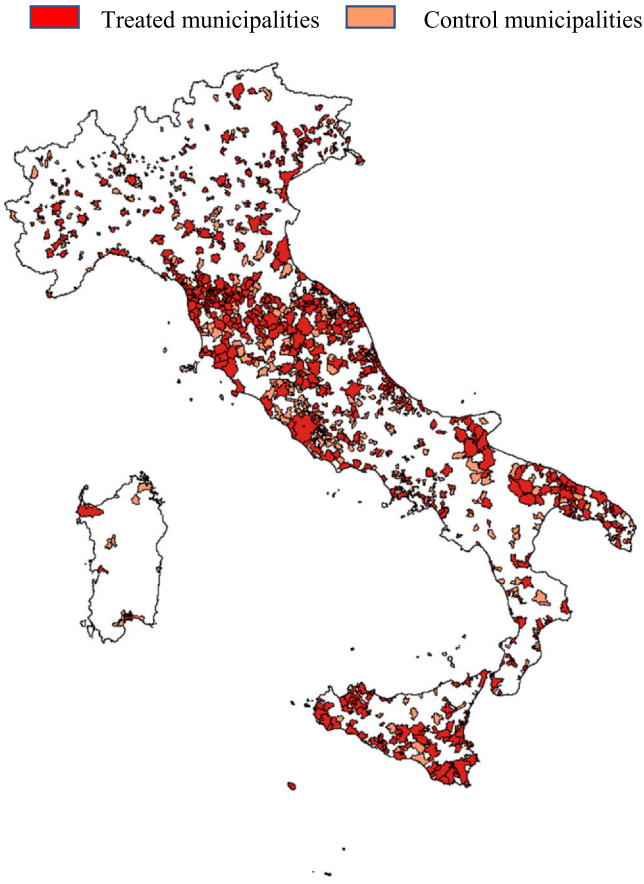

Fig. 1. Distribution of treated and control municipalities.

year fixed effects, allowing us to control for the differences in the time-invariant characteristics between treated and control municipalities as well as aggregate changes over time.

5. Results

This section presents the main results on the impact of immigrant-related projects on the wage gap in Italian municipalities over 2007–2018 (Model 1). We start by presenting the results of Model 1 run for the entire group of immigrant-related projects and then focus on the results obtained for a single theme. Fig. 2 presents the results of the time-varying DiD when considering the entire group of projects.

As shown in Fig. 2, the results of the parallel trend test suggest that the coefficients of periods t-2 and t-1 are not statistically different from 0.[19] This means that the results of the

[18] For the baseline analysis, we use the combination of two lags and three leads because this provides a good balance between using the highest number of observations possible and the need to investigate a sufficiently long period to detect the effect. Using a larger number of lags and leads consumes a high number of municipality-year observations. The estimations with two lags and four leads are available upon request.

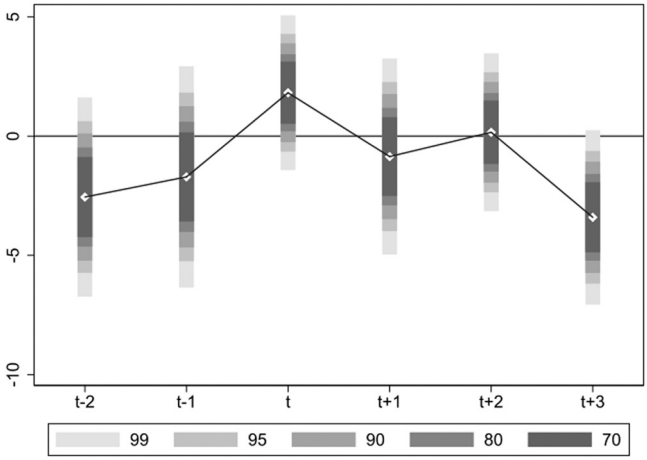

Fig. 2. Time-varying DiD estimations including the projects of *all themes*. **Outcome variable**: Wage gap expressed in euros; **treatment variable**: municipality with immigrant-related projects (all themes).Parallel trend test passed. F (2, 1136) = 1.50, Prob > F = 0.2522. Number of municipalities = 1,137; Treated = 674, Untreated = 463. Number of year-municipality observations = 9,399. The values in gray represent statistical significance.

treatment's impact are not affected by bias due to the pre-treatment differences between treated and untreated municipalities, thereby allowing us to capture the net impact of the treatment on the wage gap.

Fig. 2 also shows that the ATE is negative and significant at the 1% level. This finding suggests the remarkable impact of immigrant-related projects in reducing the wage gap between natives and immigrants in Italy. Specifically, the average wage gap between treated and untreated municipalities decreases by approximately 3.4 euros per week (15 euros per month) three years after the start of the treatment. This corresponds to a significant decrease in the average wage gap of approximately 7.6% over the period.[20]

Indeed, our analysis could, at least in principle, underestimate the real impact of immigrant-related projects. As immigrants are highly mobile and attracted by high-wage destinations (Schündeln, 2014), the municipalities considered in the analysis may pay higher wages than those omitted because of the low number of immigrants. Hence, the wage gap from natives is also lower than the case in which omitted municipalities could have been considered, which, in turn, could have resulted in an underestimation of the project's impact. Hence, our results are likely to represent the lower bound of the real impact of immigrant-related projects on the native–immigrant wage gap.

With supportive parallel trend tests, an even clearer negative impact in terms of the wage gap is estimated for immigrant-related projects under the *employment and mobility of workers* theme (Fig. 3), whereas not significant impacts are associated with immigrant-related projects under the *education* theme (Fig. 4). The causal impact associated with the *social inclusion* theme cannot be identified because the parallel trend test for this group of projects does not

[19] The parallel trend test also passes if Model 1 is estimated using up to three lags.

[20] This figure is computed as the ratio between the estimated decrease in the wage gap (3.4 euro) and the average wage gaps of both treated and untreated over the period 2007–2018 (which are reported in Table 3).

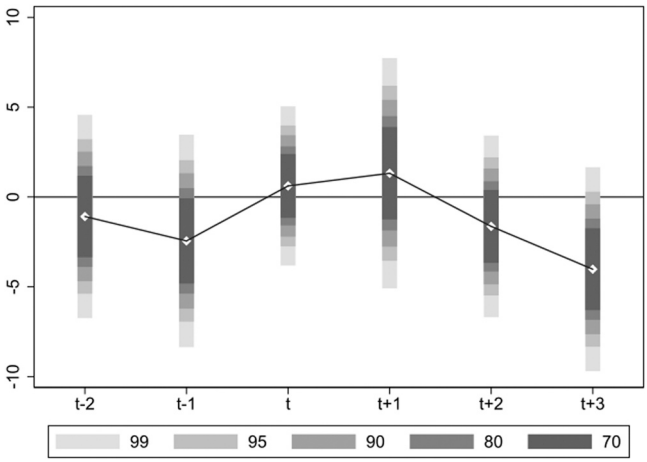

Fig. 3. Time-varying DiD estimations including the projects of the *employment and mobility of workers* theme. Outcome variable: Wage gap expressed in euros; treatment variable: municipality with immigrant-related projects (*employment and mobility of workers*). Parallel trend test passed. F (2, 492) = 0.64, Prob > F = 0.53. Number of municipalities = 493; Treated = 268, Untreated = 225. Number of year-municipality observations = 3,739. The values in gray represent statistical significance.

pass; hence, we cannot rule out the possibility that the ATE is biased due to the pre-treatment differences between treated and untreated municipalities.

Thus, our results suggest that the positive effect in Fig. 2 is mainly driven by projects under the *employment and mobility of workers* theme. These projects may have a direct impact on productivity by providing on-the-job training and access to higher-paid jobs (Chiswick, 1978). This finding is consistent with evaluation studies that show a positive effect of training on employment (Delander, Hammarstedt, Månsson, & Nyberg 2005; Walter, 2013). In addition, while employment-related projects are more likely to affect wages immediately, the impact of projects related to *education* may take more time to materialize. This is because education obtained in the host country can take longer to translate into marketable skills than training. Hence, the short post-treatment period we consider may not be sufficiently long to capture this effect. In addition, language-learning programs that target immigrants at the beginner or intermediate language level may be insufficient to provide access to highly qualified and professional jobs that require advanced language skills, with substantively higher than average wages.

Overall, our findings suggest that the Cohesion Policy plays a positive role in immigrant inclusion through interventions targeted at supporting the *employment and mobility of workers*. This effect is particularly appreciated in countries such as Italy in which the labor market is highly segmented and immigrants are usually allocated in the lower tail of the job distribution, with potentially less possibility of upgrading their skills and career progression (Strøm, Piazzalunga, Venturini, & Villosio, 2018).

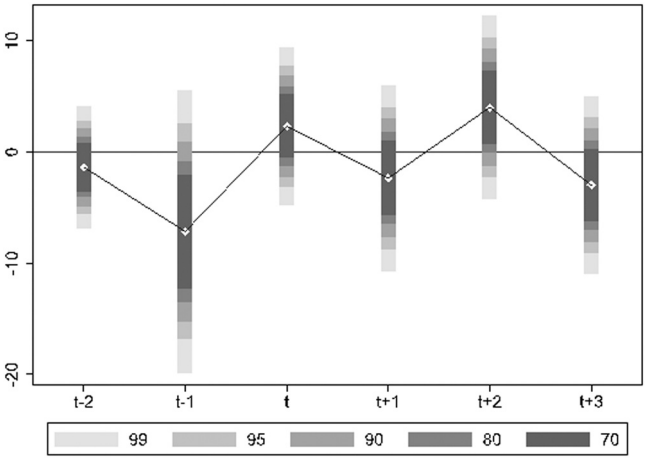

Fig. 4. Time-varying DiD estimations including the projects of the *education* theme. **Outcome variable**: Wage gap expressed in euros. **Treatment variable**: municipality with immigrant-related projects (*education*). Parallel trend test passed. F (2, 397) = 1.28, Prob > F = 0.28. Number of municipalities = 398; Treated = 206, Untreated = 192. Number of year-municipality observations = 2,863. The values in gray represent statistical significance.

6. Robustness check

The parallel trend test, presented in Section 5, already excludes selection into treatment issues (before some become treated, all sample municipalities experience similar trends in the wage gap). However, confoundedness may also be generated by other locally implemented policies during 2007–2018. Key interventions in this respect are the projects implemented in Italy by the European Integration Fund for 2007–2013 and the Asylum, Migration and Integration Fund that incorporated the European Integration Fund for 2014–2020. Unfortunately, the data on these funds include only fragmented information on the project's location since they are aggregated at the regional level. The municipality and year fixed effects allow us to significantly reduce the risks of confoundedness due to these factors, which are likely to be smoothly distributed among matched treated and untreated municipalities and do not overlap the spatiotemporal distribution of our treatment of interest. In addition, Fig. 5 presents a placebo test showing that not significant impacts are estimated when using a false treatment (the false treatment dummy is coded 1 if municipality *i* hosts projects belonging to a Cohesion Policy theme that is not expected to impact the wage gap directly, that is, *transportation and infrastructure*). The soundness of our results, already confirmed by the parallel trend test, is further corroborated by this test: the coefficient of the placebo treatment is not significant at conventional levels.[21]

[21] The placebo test is performed both with and without including the baseline treatment variable in the model, with similar results obtained. The results in Fig. 5 come from the model including the baseline treatment variable; the results coming from the model specified without the baseline treatment variable are available upon request.

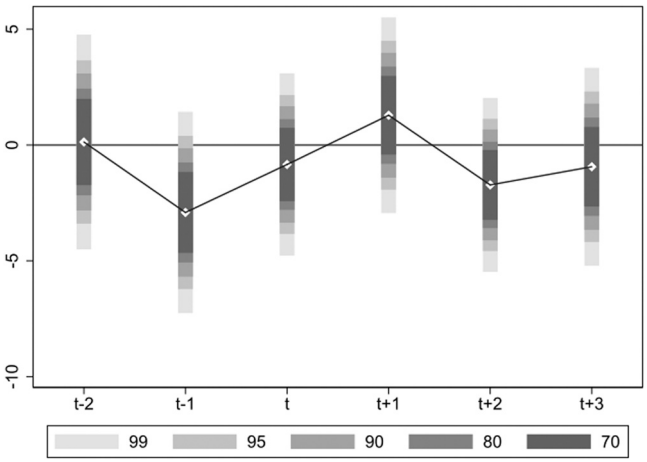

Fig. 5. Placebo test. **Outcome variable**: Wage gap expressed in euros; **Treatment variable**: municipality with *transportation and infrastructure* projects. Parallel trend test passed: F (2, 813) = 1.47, Prob > F = 0.23. Number of municipalities = 814; Treated = 462, Untreated = 352. Number of year-municipality observations = 6,468. The values in gray represent statistical significance.

7. Conclusions

This study provides evidence on the impacts of the Cohesion Policy on inclusion by examining one of its dimensions: immigrants' economic integration. By focusing on the case of Italy, a country at the gates of Europe facing consistent flows of new immigrants, we exploit project-level data on the Cohesion Policy to identify a sample of immigrant-related projects carried out in Italian municipalities during the last two programming periods (2007–2013 and 2014–2020). These data allow us to estimate the causal effects of such projects on the trend in the wage gap between the native population and immigrants for Italian municipalities. In particular, a staggered DiD approach integrated with matching techniques allows us to investigate whether and to what extent municipalities hosting immigrant-related projects experience, on average, a more consistent reduction in the wage gap between native and immigrants than similar municipalities without such projects. In this respect, this study analyzes if and to what extent the Cohesion Policy has favored immigrants' integration into the hosting labor market. We also investigate the policy types of interventions through which the impacts materialize by separately analyzing interventions classified under the *employment and mobility of workers*, *education*, and *social inclusion* themes. We find that the average wage gap between Italian workers and immigrant workers decreased in municipalities in which Cohesion Policy projects target migrants' integration. Specifically, we observe that the average wage gap between treated and untreated municipalities decreases by up to 15 euros per month. This corresponds to a significant decrease in the average wage gap of approximately 7.6%. Specifically, the Cohesion Policy plays a positive role in immigrant inclusion through interventions targeted at supporting the *employment and mobility of workers*.

This evidence is crucial for NGEU implementation: if the route of the NGEU's purpose is now consolidated, the design of policy interventions and their practical implementation are much less clear. An evidence-based debate on the "policy in practice" does not yet exist at the

institutional level (from the European Commission to the different EU member states) or within the scientific community. This is particularly true for the inclusive component of the NGEU program. To the best of our knowledge, little of the evidence provided until now to guide how to practically implement NGEU projects relates to specific categories of interventions and this is mostly related to digital and green transitions (Crescenzi, Giua, & Sonzogno, 2021), whereas no evidence exists on how to implement NGEU-inclusive pathways. The analysis of Cohesion Policy projects targeting inclusion provided in this study suggests that active labor market policies can help support inclusive recovery and resilience in Europe.

Acknowledgment

We thank the participants to the annual workshop of the Italian Association of Regional Sciences (AISRe) and to the workshop "Cohesion Policy: evidence-based lessons for digital and green recovery in Europe" for useful comments and suggestions. All remaining errors are authors' own responsibility.

Appendix

See Table A1.

Table A1
Estimations associated to Figs. 2 – 4.

	Fig. 2	Fig. 3	Fig. 4
VARIABLES	All themes	Employment and mobility	Education
Lag (t-2)	-2.555	-1.086	-1.344
	(1.620)	(2.189)	(2.125)
Lag (t-1)	-1.709	-2.446	-7.130
	(1.801)	(2.287)	(4.928)
Treatment (t): All themes	1.819		
	(1.258)		
Treatment (t): Only employment and mobility		0.615	
		(1.713)	
Treatment (t): Only education			2.329
			(2.756)
Lead (t + 1)	-0.857	1.321	-2.329
	(1.593)	(2.480)	(3.244)
Lead (t + 2)	0.162	-1.638	4.018
	(1.283)	(1.956)	(3.189)
Lead (t + 3)	-3.405 * *	-4.022 * *	-2.963
	(1.418)	(2.195)	(3.106)
Constant	47.02 * **	43.00 * **	50.67 * **
	(0.865)	(1.203)	(1.164)
R-squared	0.006	0.005	0.019
Observations: municipality/year	9.399	3.739	2.863
Number of municipalities	1,137	493	398

Outcome variable: Wage gap expressed in euros. Municipality and year fixed effects are included in the models. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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