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FDI inflows in Europe: Does investment promotion work?

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ABSTRACT

Can active investment promotion efforts attract FDI towards areas and sectors that would not otherwise be targeted? This paper leverages an *ad hoc* survey on national and sub-national Investment Promotion Agencies (IPAs) in Europe and applies state-of-the-art policy evaluation methods to estimate the impact of IPAs on FDI attraction. The results show that FDI responds to IPAs even in advanced economies. Sub-national IPAs, operating in closer proximity to investors' operations, attract FDI in particular towards less developed areas where market and institutional failures are stronger. IPAs influence FDI over and above other policies targeting the general economic improvement of the host economies. Impacts are concentrated in knowledge-intensive sectors where collaborative systemic conditions are more relevant. IPAs work best for less experienced companies - 'occasional' investors - more likely to suffer from institutional failures. Finally, IPAs are equally effective in attracting companies from both outside and inside the EU Single Market even if the latter are less likely to suffer from regulatory or information asymmetries. Overall, this evidence sheds new light on the role of sub-national IPAs as local 'institutional plumbers' in support of foreign investors and their operations.

1. Introduction

In a context of increasingly competitive capital markets, the attraction of Foreign Direct Investments (FDI) has taken centre stage in public policies worldwide. The establishment of Investment Promotion Agencies (IPAs) has progressively diffused as one of the leading policy initiatives to attract FDI.

Nowadays, countries with no active IPAs constitute only a small minority in the world (OECD, 2015). In addition to national IPAs, whose competence covers an entire country, sub-national IPAs have also become the norm across the globe. The activity of IPAs is now an essential component of both national and local government strategies to attract inward investment. National and sub-national IPAs registered at the World Association of Investment Promotion Agencies (WAIPA) have increased from 112 in 2002 to 170 in 2018.

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A consolidated body of economic literature has highlighted the potential benefits from FDI (e.g. Markusen, 1984; Rodriguez-Clare, 1996; Borensztein et al., 1998; Markusen and Venables, 1999; Javorcik, 2004; Haskel et al., 2007; Arnold et al., 2011; Poole, 2013). More limited however is the evidence on the actual capability of active investment promotion to attract foreign capital and shape its global allocation. The scant literature that has looked into IPAs has not reached a consensus on their effectiveness. Some studies have estimated positive IPA impacts in advanced economies (Bobonis and Shatz, 2007; Charlton and Davis, 2007), others have instead suggested that impacts materialise only in developing economies where red tape and bureaucratic barriers to investors are prevalent (Harding and Javorcik, 2011, 2012, 2013).

However, this debate fails to consider the large (and increasing) heterogeneity between and within national economies in terms of FDI location drivers and investment promotion efforts. The literature is silent on the sub-national impacts of national IPAs and – despite the increase in resources and competences devolved to sub-national investment promotion – on the returns to these public policies over and above national efforts. Sub-national IPAs are fundamentally different from national IPAs in that they are responsible for much smaller jurisdictions, implying more in-depth knowledge of local conditions relevant to investors, closer ties with local governments and other public bodies with decentralised powers, and stronger capability to address investors' operational day-to-day bottlenecks on the ground. As a result, their analysis might unveil new highly localised institutional failures otherwise overlooked by macro-level analyses of FDI location and promotion.

This paper revisits the question of the impact of IPAs to explore: a) the capability of national-level investment promotion efforts to deal with the heterogeneity of host economy characteristics both between and within countries; b) the impact of sub-national IPAs, designed to leverage (or compensate for) this heterogeneity in investment conditions. We do so by looking at an economically integrated space – the European Union (EU) and its neighbouring countries – which allows to identify more effectively the intrinsic heterogeneity in investment attraction capabilities across countries which are at different stages of economic and technological development yet are also part of a Single Market with common trade and investment rules. The advantages of this setting are threefold. First, this makes it possible to reduce the scope of tax breaks and other location incentives as omitted variables. Second, it allows us to separate the role of IPAs from public policy efforts aimed at reinforcing the attractiveness of the host economies through public investment (especially in less dynamic areas), given that within the EU these funds are generally channelled through an EU-level common regional development policy explicitly modelled in the paper. Third, this setting enables us to compare the impact of IPAs on investing companies from inside and outside the Single Market, which can help disentangle the role of general information asymmetries from other barriers to the location of international capital.

The paper leverages a newly-developed *ad hoc* survey on both national and regional (i.e. sub-national) IPAs for a large number of European countries. This dataset makes it possible to capture for the first time the full institutional architecture of investment promotion efforts that is indeed highly diversified across countries. The specification of *within-countries* models based on sub-national units and sectors allows for better control for confounding factors that might affect *between-countries* estimates, capturing the full heterogeneity of impacts.

The main methodological challenge when attempting to capture the impact of IPAs is the non-randomness of the investment sectors chosen by the agencies for FDI attraction. If IPA decisions are driven by region-sector-time specific factors, it is likely that some investment sectors would be targeted instead of others because they are a priori more/less competitive. We address this empirical issue by relying on state-of-the-art estimation methodologies for policy impact assessment. We first develop a staggered difference-in-differences model exploiting unique information on the timing of sector-targeting from the agencies. A full battery of interacted fixed effects and time trends allows to minimise confounders, such as the predetermined attractiveness of given regions and sectors, or the presence of other forms of investment promotion efforts in the sectors targeted by IPAs. We estimate the temporal evolution of the impact through event studies, allowing a comparison of FDI inflows towards targeted sectors before and after an IPA strategy has begun with counterfactual region-sectors. As an alternative strategy to address endogeneity, for each region and sector targeted by IPAs we adopt a synthetic control method to construct counterfactual region-sectors that in the pre-treatment period mimic the trends of FDI inflows of treated region-sectors.

The results of the difference-in-differences analysis and the synthetic controls study suggest that national IPAs have a limited role to play in shaping the sub-national allocation of capital. Conversely, our results reveal that sub-national IPAs pursuing investment promotion strategies targeted towards specific sectors have a positive impact on the inflow of FDI. Regional IPAs are local organisations closer to the investor and its surrounding environment, and this proximity makes it possible for them to influence investment operative conditions effectively. The capacity of regional IPAs to influence FDI inflows by removing investors' operational bottlenecks is confirmed by the concentration of their impact in less developed regions, where information asymmetries and institution failures are more widespread. This finding suggests that, in attracting FDI towards less developed areas, sub-national IPAs act as compensation for malfunctioning institutions. Our results moreover unveil that this is true also in advanced economies, contrary to the expectations of part of the existing literature that confined these failures to emerging economies. Further exploration of the possible channels for IPA impact is achieved by looking across sectors within less developed regions. This shows that impact is concentrated in knowledge-intensive sectors where collaborative systemic conditions are more relevant to the success of the investment. As information asymmetries are unlikely to vary across sectors within the same local economy, this suggests that the capacity to create a supportive environment on the ground is complementary to the capacity to address information asymmetries highlighted by the existent literature on IPAs. Further support for this interpretation comes from the heterogeneous impact of regional IPAs on different types of investors. IPAs are more successful in the attraction of companies that are more likely to suffer from institutional failures and benefit from supportive conditions on the ground i.e. less experienced 'occasional' investors that pursue only a limited number of FDI projects over the entire study period. In addition, IPAs are equally effective in attracting companies from both inside and outside the EU Single Market. If the mitigation of information asymmetries

were the most prominent function of IPAs, we would expect to find their impact concentrated around non-EU investing companies. On the contrary, IPAs are equally beneficial to investors operating inside the EU Single Market (with common rules and standards) for whom the removal of local operational bottlenecks is likely to make the real difference.

The novel results produced in this paper have relevant implications for public policy, in particular given the increasing attention of policy makers on the attraction of global capital flows. IPAs are viable tools to attract FDI even in advanced economies. However, investment promotion is a multi-layered architecture that involves both national and sub-national organisations. In advanced economies with integrated capital markets, sub-national regional IPAs play, ceteris paribus, a key role in FDI attraction. Investment promotion policies should be focused around the organisational layer closer to the actual investment and its environment in order to remove matching frictions with workers and local suppliers as well as other localised operational barriers to the activity of foreign investors. While the removal of informational asymmetries is always beneficial to FDI – as suggested by a consolidated literature – our evidence seems to be convergent in supporting the idea of IPAs as local 'institutional plumbers' to the benefit of foreign investors and their operations.

The remainder of the paper is structured as follows: Section 2 discusses the role and rationale for investment promotion through IPAs; Section 3 describes our unique dataset; Section 4 discusses the empirical methodology; Section 5 presents the results; and Section 6 concludes.

2. FDI promotion: Rationale and impacts

The main motives behind FDI activities of multinational corporations (MNCs) are the search of resources not available in the home economy (resource seeking), the exploitation of new and larger markets (market seeking), the search for more efficient production modes (efficiency seeking) and of new and different technological capabilities (strategic asset seeking) (Dunning, 1996). Alongside these determinants of investment choices, another key element involves the business facilitation activity of the receiving environment (UNCTAD, 1998; Lim, 2008), including the definition of direct and indirect policies specifically aiming at the attraction of FDI (Loree and Guisinger, 1995). Among these policies, one of the most prominent and widespread tools is the establishment of IPAs (OECD, 2015; WWG, 2017).

The rationale for IPAs stems from the existence of information asymmetries and transaction costs in capital markets (Williamson, 1975, 1985). In the presence of information imperfections, private capital may be sub-optimally allocated across space, justifying government intervention to address this market failure (Greenwald and Stiglitz, 1986). As foreign investors experience substantial informational disadvantage relative to indigenous investors, IPAs support MNCs by facilitating their access to investment opportunities. IPAs are expected to influence FDI decisions by solving information/perception gaps about their host economy (Loewendahl, 2001; Lim, 2008) and reducing foreign firms' entry costs in new markets. Crucially, the provision of information makes reference not only to the structural conditions of the host economy – such as the number of active firms that are potential competitors or suppliers – but also to the way in which investment conditions may improve over time. This improvement may reflect, for instance, information on planning or regulatory decisions by the relevant domestic public bodies that might otherwise be costly to collect and process.

Over and above the reduction of information asymmetries that might facilitate the selection of the best investment destinations, IPAs may also actively contribute to the development of a favourable ecosystem to the benefit of foreign investors. Their activities in this area are expected to cut operational and search costs of foreign companies (for example when dealing with domestic suppliers or in university-industry linkages), reducing transaction costs in the interaction with the host economy at all stages of the investment life-cycle. In addition, IPAs may directly or indirectly contribute to shaping the national or local regulatory framework in response to investors' demand. As an example, agencies may lobby for the development of new infrastructure projects or for the design of specific training programmes to match their need for specialist skills (Wells and Wint, 2001).

Both IPAs' functions – addressing information asymmetries and improving the overall investment environment – ensure that the distribution of inward FDI across space is governed by the production decisions of firms and the potential of host economies rather than by information asymmetries, search and transaction costs. The objective of IPAs in pursuing both functions is ultimately the generation of positive effects for the domestic economy through direct channels – linked with the operation of the investment itself – and indirect effects through spillovers.

In executing their functions, IPAs pursue four types of activities: (1) investor servicing, i.e. helping investors solve practical problems, including bureaucratic difficulties; (2) policy advocacy, i.e. lobbying governments to seek approvals of regulations or removals of obstacles for investments; (3) image building, i.e. advertising the locations in which they operate as investment destinations; (4) investment generation, i.e. actively seeking out investors based on the development plans designed by governments (Wells and Wint, 2001; OECD, 2015; WWG, 2017). According to Morisset and Andrews-Johnson (2004), investment generation tends to absorb the largest share of IPAs' financial resources. Investment generation is usually pursued by targeting a limited and pre-selected set of priority sectors, rather than through the horizontal undifferentiated attraction of investment in all sectors (Sirr et al., 2012). This facilitates the role of the agency's practitioners, who can attend specific events related to the industries the IPA aims to attract. This type of targeted strategy is supposed to send a stronger, more tailored and more powerful signal to a narrower and more specialised audience (Harding and Javorcik, 2011).

In spite of the diffusion of IPAs as a policy to attract FDI, empirical studies examining the effects of IPAs' promotional effort are few and far between. The first study examining the effort of public investment agencies in conditioning investment decisions was produced by Head et al. (1999), estimating a location choice model on a sample of Japanese manufacturing firms and showing that investment agencies have no statistical effect on the inflow of FDI from Japan to the US. More recent analyses have reported

a positive role of IPAs in their effort of investment attraction. Morisset and Andrews-Johnson (2004) find a positive association between the budget and staff size of IPAs and the proportion of foreign investments towards the country where IPAs are based, while Lim (2008) shows that the age and the number of staff (domestically and overseas) of investment agencies contribute to attract foreign capital. Bobonis and Shatz (2007) and Anderson and Sutherland (2015) suggest that the active presence of IPAs in foreign countries can stimulate investment from the partner countries towards the IPA's domestic economy.

A related stream of empirical research has attempted to capture the causal impact of investment promotion on the growth of inward investments with country-level data. Charlton and Davis (2007) adopt propensity score matching in combination with difference-in-differences techniques. They find evidence of a positive effect of IPAs on the volume of investments towards specific industries targeted by the agencies in each country. A similar approach is employed by Harding and Javorcik (2011), developing difference-in-differences models to assess the impact of national IPAs on FDI inflows in targeted sectors, and comparing investment flows in each sector before and after a targeting strategy is implemented. Their results reveal that IPAs' activities are most effective in developing economies, characterised by severe information asymmetries and red tape. Follow-up works show that FDI attracted by investment agencies contribute to the export upgrading of the host economies (Harding and Javorcik, 2012), and that IPAs' effectiveness increases with their quality, measured in terms of clarity of their website and competence of their staff (Harding and Javorcik, 2013).

3. Data and descriptive statistics

Our analysis focuses on Europe, a context in which investment promotion agencies represent a widespread policy to attract FDI. Despite the diversity of economic conditions across the European continent, focusing on this context entails minimising heterogeneity in terms of how IPAs operate, as compared to cross-countries studies focusing on the entire world. Information on European IPAs has been collected as part of a research project on Multinationals, Innovation and Institutions in Europe (MASSIVE) financed by the European Research Council (ERC). An *ad hoc* survey was sent in 2018 to investment promotion agencies active at the national and at the regional level across Europe, in order to collect information on their key characteristics.[1] The questionnaires included questions on IPAs' history, sectoral strategies, public/private status, and modus operandi. Follow-up phone calls and emails helped increase the response rate and check information coherence and consistency.

The survey has collected systematic information on the *national* IPAs of 22 EU Member States[2] and for the following non-EU European countries: Albania, Norway, and Turkey. Such extended coverage allows us to study the phenomena across regions belonging to countries with different status (EU-15 Member States, EU Enlargement Member States, EU Candidates and EU Neighbours), geography (e.g. Eastern/Western Europe; Mediterranean/Continental countries) and different models of investment/industrial/productive structures (e.g. in terms of openness to trade).

Furthermore, the dataset includes information on *regional* (i.e. sub-national) IPAs from the following countries: Belgium, Germany, Greece, Italy, Ireland, Spain, Poland and Sweden.[3] This selection accounts for different models of national-regional IPA organisation: Belgium is the only EU Member State with regional IPAs active in each region but no national IPA; Greece and Ireland have national IPAs but no regional IPAs; in Italy only some regions have their own IPAs; in Sweden sub-national IPAs cover different types of geographies, some being responsible for large territories such as regions, while some only focus on individual cities; finally, in Spain, Germany and Poland all administrative regions have their own IPA. In the Polish case, regional IPAs were established simultaneously in 2011 partly thanks to the financial support of the European Union Cohesion Policy.

Fig. 1 reports the two samples of regions considered for the analysis: Panel (a) displays the regions of the 25 countries covered by the national IPAs survey, while Panel (b) illustrates those included in the regional IPAs analysis[4,5]

Very often, IPA strategies for FDI attraction involve the selection of priority sectors for targeting. A key section of our questionnaires relates to gathering information on these priority sectors, by asking IPAs whether such a targeting approach is in place, and if so, what the 'starting' and 'ending' dates of sector targeting are.[6] In this manner we constructed the full timing of IPAs' strategies.

[1] Two types of survey have been sent, depending on whether the IPA is national or sub-national. However, the structure of the surveys is similar, allowing to obtain comparable information. The surveys' questionnaires are available in the Online Annex.

[2] We did not obtain information on national IPAs from the remaining EU Member States, namely Croatia, Czech Republic, Latvia, Luxembourg, Slovenia, and Slovakia.

[3] Rather than considering all regions from all European countries, we have chosen to focus our sub-national analysis on a restricted sample of countries, which appear relevant and heterogeneous in terms of their investment promotion models. This choice minimises self-selection of regions into the sample due to differences in the survey response rates. In other words, we have preferred to collect regional information from a restricted number of countries, in order to concentrate data collection efforts more effectively and obtain information for the totality of their regions.

[4] The information is in all-but-8 cases based on the questionnaire sent to regional IPAs. Five regions of Germany (Berlin, Branderburg, Saarland, Schleswig-Holstein, Saxony-Anhalt) and three regions of Spain (Extremadura, Cantabria, Rioja) decided not to complete the survey. In these cases, information on year of establishment and targeted sectors has been retrieved from the agencies' websites, where available. When the only available data is on the establishment date, the region appears as a missing value in our database from the date of its establishment.

[5] The two samples (countries without regional variation in IPA targeting; countries with regional variation in IPA targeting) are similar in terms of key institutional conditions – average quality of government and ease of doing business (data available upon request). This suggests that results on the role of *regional* (i.e. sub-national) IPAs that we obtain from the sample of eight countries (Panel (b)) can be considered representative for the full sample (Panel (a)).

[6] We identify the following 20 sectors: Agriculture, Fishing and Forestry; Back office services; Biotechnology; Computers and electronic equipment; Construction; Electricity, gas and water provision; Financial intermediation; Food products; Hotels and restaurants; Machinery; Metal and metal products; Mining and Quarrying; Petroleum, chemical, rubber, plastic products; Real estate and business activities; Software; Textiles and apparel; Trade and repairs; Transport and telecommunications; Vehicles and other transport equipment; Wood and wood products.

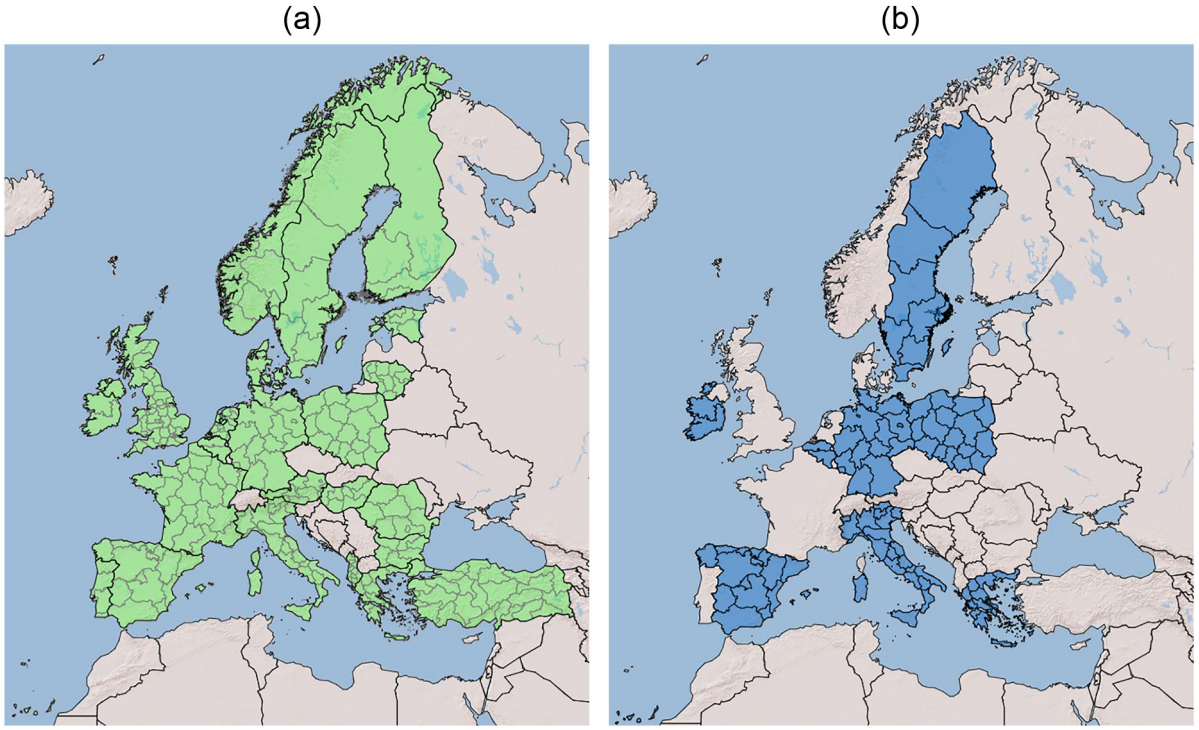

Fig. 1. Sample of National (a) and Regional (b) IPAs. Green: regions for which data on National IPA is available. Blue: regions for which data on Regional IPA is available.
(Source: LSE-ERC Multinationals, Innovation and Institutions in Europe IPAs Survey).

The final dataset combines data on IPAs collected with the *ad hoc* survey with data on FDI at the level of region-sector-year. The latter comes from the Financial Times' fDI Markets database. This collects unique information on greenfield FDI projects for all countries in the world, providing detailed statistics on time, sector, location of investment, as well as region of origin of the investing company and estimates on the investment value and jobs directly created over the 2003–2017 period.

Figs. 2 and A1 in the Appendix show the total dollar value of foreign investment received and total years of IPA targeting by sector, for the sample of regions for which information on both national and regional IPAs is available. It can be noted that for some sectors regional IPA strategies are associated with higher investment inflows than national IPAs, which may be due to the fact that in some cases regional strategies targeting specific sectors have been initiated prior to the corresponding national targeting.[7]

Descriptive statistics of all variables used are reported in Table A1 in the Appendix.

Note: sample of regions for which information on both national and regional IPA has been obtained. Source: own elaboration with fDI Markets data and LSE-ERC MASSIVE Survey of IPAs.

4. Methodology and empirical models

4.1. Difference-in-differences model

Our empirical strategy, inspired by Harding and Javorcik (2011), relies on a staggered difference-in-differences model[8] exploiting information on IPAs' targeting strategies by sector in European regions. Hence, the units of observation are measured at the region-sector-year level. The sample is composed of NUTS regions (Nomenclature of territorial units for statistics)[9],

[7] Combining information from the FDI and the IPA datasets, we note that a portion of region-sectors in our samples did not receive FDI throughout the 2003–2017 period. This corresponds to around 30% of the 1920 region-sectors composing the sample covering both national and regional IPAs. 5% of this sample is composed of region-sectors that did not receive FDI while being targeted by regional IPAs, whereas 15% of that sample is made of region-sectors having never received FDI and targeted by national IPAs. We discuss how to deal with zero-FDI sectors in section 4.2.

[8] A number of contributions have been produced in recent years to discuss this type of methodology and its advantages and drawbacks (e.g. Callaway and Sant'Anna, 2020; Goodman-Bacon, 2021). By adopting two-way fixed effects versions of our main model, we have implemented 'Bacon decomposition' tests to verify whether our setting is characterised by issues of 'negative weights' (Goodman-Bacon, 2021). For all our main estimations, the large majority of the weights – more than 65% of total – seem to derive from 'Treated vs. Never-Treated' differences, rather than earlier treatments vs. later controls, or later treatments vs. earlier controls. This is reassuring, as it suggests that our parameter estimates are mainly the result of comparisons between region-sectors without IPAs and region-sectors with IPAs. Bacon decomposition tables are available upon request from the authors.

[9] More on the definition of NUTS regions at: https://ec.europa.eu/eurostat/web/nuts/background

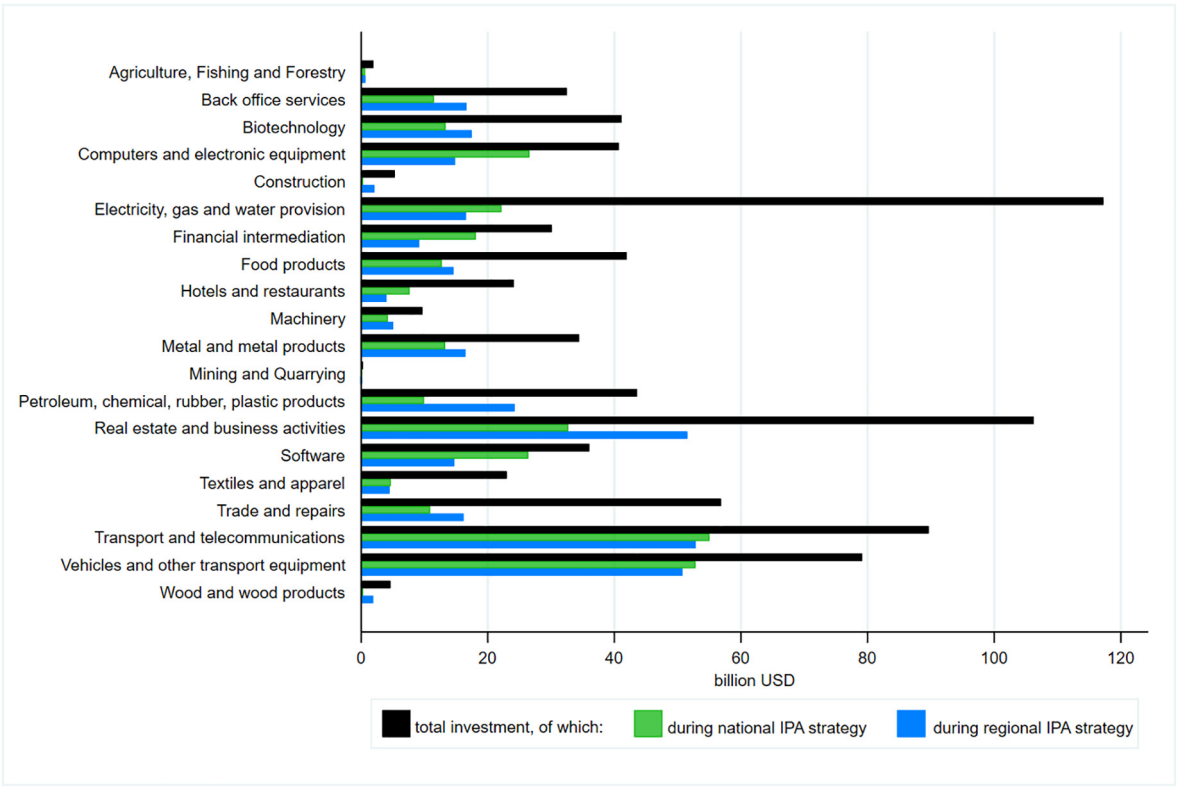

Fig. 2. Inward Foreign Investment by sector and IPA type, 2003–2017. Sample of regions for which information on both national and regional IPA has been obtained
(Source: own elaboration with fDI Markets data and LSE-ERC MASSIVE Survey of IPAs).

whereby the NUTS level for each country is chosen on the basis of the most meaningful subdivision reflective of administrative entities in a country.[10] Having identified the key targeted sectors selected by national and regional investment agencies for their investment attraction strategies, we assess the effects of IPAs by estimating the additional FDI inflows in selected region-sectors during periods of activities of national and/or regional investment promotion agencies, relative to periods in which the agencies are not in operation and non-targeted region-sectors. The identification strategy allows to determine whether agencies are capable of attracting the type of investments they seek. The analysis is performed for the 2003–2017 period.

The baseline estimated model is

$$FDI_{r,c,s,t} = \beta\, IPA\ strategy_{r,c,s,t} + \vartheta_{r,t} + \vartheta_{s,t} + \vartheta_{r,s} + \vartheta_{c,s,t} + \varepsilon_{r,c,s,t}, \quad (1)$$

where $FDI_{r,c,s,t}$ is a set of outcome variables measuring FDI inflows at the extensive and intensive margin. The extensive margin effect, estimated with a linear probability model, is captured with a dummy variable taking value 1 if region r of country c has received any FDI in sector s in year t. The intensive margin effect, instead, is captured with the log[11] of the sum of million dollars of FDI in region r of country c in sector s in year t, or with the log transformation of the number of jobs directly created by the new FDI project.

$IPA\ strategy_{r,s,t}$ is a dummy variable that refers to the targeting of sector s in year t by an IPA. The agency can either be national or regional. In the case of a national agency, the dummy switches on from the moment the sector-targeting begins, until it ends for all the regions belonging to the country in which the national IPA operates. In the case of a regional agency, the dummy takes value 1 from the year in which the targeting of a sector begins until it comes to an end in that specific region.

$\vartheta_{r,s}$, $\vartheta_{r,t}$, $\vartheta_{s,t}$ are region-sector, region-time, and sector-time fixed effects, respectively, dealing with unobserved time-invariant characteristics specific to region-sector combinations (e.g., structural pre-existing conditions in sectors) and with region- and

[10] In particular, regions in the sample have been selected across the different NUTS level (1−2−3) in order to guarantee across countries comparability in terms of regions' role and representativeness: e.g., German Lander (NUTS1) are comparable to the Italian Administrative Regions (NUTS2) and the Lithuanian Counties (NUTS3).

[11] More specifically, we adopt an equivalent of taking log i.e. the inverse hyperbolic sine (IHS) transformation. This is based on the following formula: $IHS\ FDI_{r,s,t} = \ln\left(\left(FDI_{r,s,t} + \sqrt{1 + FDI^2_{r,s,t}}\right)\right)$. This technique is commonly used as an alternative for log-transformations of variables with 'zero' entries (Burbidge et al., 1988) In our case, it allows to include in the estimation the high number of zero values in the FDI variable that would be missed if the log transformation was applied.

sector-specific annual shocks (e.g. economic structure and changes at the regional level in each country; macro-economic sector-wide shocks); $\vartheta_{c,s,t}$ are country-sector-year specific dummies, accounting for any time-varying country characteristics, which complete our model when we estimate the impact of regional IPAs only, providing more robust regional estimates. $\varepsilon_{c,r,s,t}$ are idiosyncratic error terms. Standard errors are clustered at the region-sector level and are heteroscedasticity-robust, correcting for possible bias induced by estimation of log-linearised models with OLS (Santos Silva and Tenreyro, 2006).

As an alternative specification, the model is estimated as an AR(1) dynamic panel, where the dependent variable enters as first difference ($\Delta\, FDI_{r,c,s,t} = FDI_{r,c,s,t} - FDI_{r,c,s,t-1}$), and the right-hand-side variables include the lagged level of FDI, $FDI_{r,c,s,t-1}$, accounting for the FDI received by region r in sector s one year earlier. The model is as follows:

$$\Delta\, FDI_{r,c,s,t} = \alpha\, FDI_{r,c,s,t-1} + \beta\, IPA\ strategy_{r,c,s,t} + \vartheta_{r,t} + \vartheta_{s,t} + \vartheta_{r,s} + \vartheta_{c,s,t} + \varepsilon_{r,c,s,t}. \quad (2)$$

By considering how FDI inflows vary over time, this version of the model allows for further controlling for the FDI-attracting capacity of region-sectors in the period before the treatment kicks in.

4.2. Estimation issues

The main empirical challenge of our study is the endogeneity of FDI policy. The selection of specific sectors by IPAs is a non-random decision that may be taken strategically on the basis of pre-existing conditions. Some industries may already be recipients of high inflows of FDI before IPAs are established and, by targeting these sectors, regions may aim to reinforce their comparative advantage further. Alternatively, it may be that some new industries, not yet recipients of foreign investment, are targeted by IPAs because they appear to offer better future prospects for a region. In the former case, a positive estimated impact of IPA targeting on FDI inflows may simply be the consequence of the initial competitiveness of the region in the given sector. In the latter case, a link between IPAs' strategies and foreign investment may be the result of pre-determined regional conditions influencing future regional performance.

To deal with this issue, we include in the model region-sector fixed effects, controlling for any unobservable time-invariant characteristics specific to region-sectors and accounting for the comparative advantage of regions in each sector. Region-sector fixed effects also allow to control for the presence of 'inactive' sectors within regions, i.e. sectors where there are no operating firms or employed people across the entire sample period. Furthermore, region-sector fixed effects help us deal with region-sectors with no FDI flowing in throughout 2003–2017, as in the large majority of cases these are region-sectors untargeted by IPAs and hence treatment dummies are time-invariant.

A related econometric challenge consists in distinguishing between the role of IPA policies from incentives being promoted in coincidence with the activity of investment agencies. Region-year fixed effects are included in the model in order to minimise this problem. Moreover, sector-time fixed effects allow to capture sector-specific shocks in each year, occurring if international investors suddenly begin to concentrate investments in one or more sectors. Finally, country-year fixed effects account for anything varying at the national level. Clearly, these are collinear to the treatment dummy capturing national IPA strategies, hence this set of fixed effects can only be included to estimate the impact of regional, not national, IPAs. The inclusion of this battery of fixed-effects rules out all the confounding factors except those that vary at the region-sector-year level. In principle these are very rare. Region-year fixed effects also control for any other government efforts put in place to incentivise foreign investment in the region or country, as far as these policies do not target the same set of sectors as the IPAs in the same period of time.

In relation to this, given that we work with a sample of European regions we must account for the fact that the EU runs the largest regional development programme worldwide, the so-called EU Cohesion Policy. This EU-level policy also shapes priorities and targets of development policies of each EU member state through mandatory co-financing and various regulatory constraints. If Cohesion Policy funds supported, for each region, the same sectors targeted by IPAs with a similar timeline as IPA strategies, then any effects of IPAs could be biased by these overlapping funding flows. While this is very unlikely, as the nature of this policy is regional, not sectoral, we recognise the need to account for this potential confounder. We deal with this in Section 5.1.

In some cases, IPA targeting strategies terminate prior to the end of our sample period. While this is a rare condition, as the large majority of strategies were still ongoing in 2017, we need to account for the fact that these post-treatment years may be contaminated by the treatment. To avoid this kind of concern, all our specifications exclude post-treatment years from the sample.

As further control for pre-treatment differences in FDI inflows, we estimate our baseline model also as a dynamic panel, controlling for the lagged level of FDI in region-sectors. We further test for the direction of causality through an event-study including region-sector-specific time trends. In this way, we make sure that pre-trends are not confounding our estimates and show that treated and untreated region-sectors receive comparable FDI inflows in the period prior to the beginning of the IPAs' strategies. This exercise allows to verify the difference between treatment and control region-sector year-by-year before and during the treatment, shedding light on the temporal dynamics of the estimated effect.

In addition, as an alternative strategy to address endogeneity, we construct counterfactual region-sectors that behave in the same way as treated ones in the pre-treatment period, forcing the parallel trend assumption to be met. We do so by means of the synthetic control method (Abadie and Gardeazabal, 2003; Abadie et al., 2015). This strategy is explained in more details in Section 5.4.

Table 1
Baseline results (full sample).

	FDI dummy				million $ FDI			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
National IPA strategy	0.0105			−0.0141	0.0358			−0.0588
	(0.00912)			(0.0150)	(0.0404)			(0.0679)
Regional IPA strategy		0.0392*	0.0383*	0.0401*		0.201**	0.201**	0.204**
		(0.0221)	(0.0224)	(0.0222)		(0.0930)	(0.0942)	(0.0931)
Country-sector-year dummies			✓				✓	
Region-year dummies	✓	✓	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓	✓	✓
Observations	74,923	27,441	27,441	27,441	74,923	27,441	27,441	27,441
Region-sectors	5000	1920	1920	1920	5000	1920	1920	1920
R-squared	0.533	0.546	0.592	0.546	0.577	0.584	0.630	0.590

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: dummy variable for inward FDI towards region-sector in given year (columns (1–3)), inverse hyperbolic sine million $ inward FDI towards region-sector in given year (columns (4–6)). 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Years after the end of targeting strategies excluded from sample.

5. Results

5.1. Baseline results

The results of the difference-in-differences estimates of the impact of IPAs' strategies on FDI inflows are presented in Table 1. We estimate the extensive margin effect of a national/regional agency beginning an FDI-targeting strategy in columns (1–4) (dummy variable taking value 1 if there is an investment inflow in the region-sector), while the intensive margin effect (dollar value of the investment) is estimated in columns (5–8). The same model with FDI-jobs as dependent variable is reported in Table A2 in the Appendix. The baseline model initially estimates the effect of national IPA strategies or regional IPA strategies separately, including first the national and then the regional IPA treatment dummies in the model. Finally, they are both simultaneously included. All models include region-year, sector-year, and region-sector fixed effects. Estimates in columns (3, 6) include country-sector-year fixed effects.

We begin discussing the findings on the effect of national IPAs. Column (1) and column (5) of Table 1 report an insignificant coefficient of national IPA strategies at the extensive or intensive margin, suggesting a lack of impact of national IPA targeting on FDI inflows towards region-sectors of targeted countries. Similarly, there is no relationship between the activity of national IPAs and the number of FDI jobs directly created by the investment in a region-sector (Table A2 in the Appendix, column (1)).

Turning to the effect of regional IPA strategies, FDI inflows towards targeted region-sectors are higher than in control region-sectors. The probability of receiving FDI towards the sector(s) selected for targeting by a region increases by about 4% after the beginning of a strategy, as indicated by the positive and significant coefficient of the treatment dummy in column (2). This coefficient remains remarkably stable when controlling for any element varying at the national level with country-sector-year fixed effects in column (3). The result holds also when both treatment dummies are simultaneously included in the model in column (4).

Regional IPA strategies are effective in attracting FDI, and the amount of attracted foreign capital appears substantial. Columns (6–8), estimating the intensive margin effect, report a sizable impact. The magnitude of the coefficient, although lower than the one reported in previous studies on national IPAs (Charlton and Davis, 2007; Harding and Javorcik, 2011), indicates that the activity and targeting effort of a regional investment agency leads to an increase of around 23% in the inflow of FDI (column (8), Table 1). Table A2 in the Appendix shows that FDI-related jobs increase by up to 24% as a result of IPA targeting strategies. Considering an average dollar value of 28 million in FDI inflows in the region-sectors in sample, and an average of 85 jobs created, the estimated effect corresponds to an increase of 6 million dollars and 20 jobs per year in each region-sector. When combining together national and regional IPA treatment dummies in the same specifications, these results are confirmed (Table 1, columns (4, 8)).[12]

Therefore, sectors targeted by regional IPAs perform significantly better than non-targeted sectors in terms of FDI attraction, as investment agencies appear to be effective in their efforts to attract foreign capital in the sectors they identify as most suitable for the development of the region. The strong effect of regional IPA targeting strategies on FDI inflows is further confirmed when estimating the model as a dynamic panel. The results are reported in Table A3 in the Appendix; in this case coefficients are slightly higher than in Table 1, indicating a 5% average annual increase in the probability of FDI inflows after the beginning of targeting, while the increase in FDI in million dollars and jobs created corresponds to up to 24% and 25%, respectively.

[12] A negative and mildly significant coefficient of national IPA strategies emerges when using FDI-related jobs as dependent variable (Table A2, column (4)), suggesting that national targeting activities may have a harmful average impact at the sub-national level. This result, however, must be taken cum *grano salis* because it can be computed only for the restricted sample of regions for which we have collected information on regional IPA strategies.

The inclusion in all our models of region-year fixed effects entails that the exploited variability is given by national agencies whose targeting strategy varies across sectors. In other words, all national and regional agencies that, when created, do not adopt any sectoral preference for FDI attraction are not accounted for in the estimates of Tables 1, A2, and A3. Hence, the coefficients estimating the positive impact of regional IPAs should be interpreted as the annual variation in regional FDI inflow towards the sectors that regional agencies have identified as key for their regions, after the targeting strategy has begun.

One important question is whether strategies that do not identify any priority sectors for targeting (thus attracting FDI 'horizontally' towards all sectors) are equally successful. In order to test whether the effect of regional IPAs is exclusively driven by sector-targeting strategies, or whether 'horizontal' strategies are also effective, in Table A4 we present the results of a model including different treatment dummy variables identifying whether the agency specifically selects some key sectors for targeting inward FDI, or whether the agency does not prioritise any particular sector and instead targets FDI in all sectors.[13] In the latter case, the treatment dummy switches on for all sectors from the moment at which the agency has been created. Hence, we had to exclude region-year fixed effects. The results in Table A4 indicate that the mere creation of an agency is insufficient to increase the capacity to attract FDI. In order to be successful, the agency has to select some sectors and aim for higher FDI towards those sectors.

Given that regional IPAs appear to be generally effective in their effort of attracting foreign capital, we further investigate the nature of this effect by verifying that impact does materialise where the functions pursued by IPAs are expected to matter the most, i.e. where both information asymmetries and investment conditions are more challenging. For this purpose, we subdivide our sample of regions between 'advanced' and 'less developed', following the classification adopted by the European Union.[14] This classification makes it possible to identify the regions that have been lagging behind in terms of economic performance and that are more structurally disadvantaged. Less developed regions are generally less open to external competition (Baldwin and Venables, 1995), have lower levels of generalised trust (Guiso et al., 2004) and weaker institutional and systemic conditions (Tabellini, 2010; Charron and Lapuente, 2013). As a consequence, if regional IPAs are impactful because they pursue their functions effectively, their impact should be stronger in less developed regions where they are needed the most. As shown in Fig. A2, this sub-division splits our sample identifying 37 regions classified as 'less developed' and 59 'advanced' regions.

The results of the difference-in-differences analysis, reproducing the estimation of eqs. (1,2) with these split samples, are reported in Table 2 and Tables A5 and A6 in the Appendix. We again test the impact of IPAs on FDI attraction at the intensive and at the extensive margin, adopting a linear probability model and the FDI dummy dependent variable in the former case, and the log of FDI million dollars and jobs created as dependent variables in the latter case.

First, it can be noted that for no sub-sample do we uncover a significant contribution of national agencies for FDI attraction. This confirms the results discussed in the previous section. Irrespective of the investment conditions, national IPAs have limited impact in terms of FDI attraction. Turning to regional agencies, as shown in Tables 2, A5, and A6, across all different specifications and models the analysis indicates that IPAs in less developed regions are highly effective, while the same is not true for advanced regions. IPAs in less developed regions increase the probability of attracting foreign capital by up to 14% (column (2), Table 2) on average, increase the inflow of investment by up to 71% (column (8), Table 2) and the number of jobs created by up to 102% (column (2), Table A5) on an annual basis. Considering that over the period under analysis each sector in less developed regions has received an average FDI inflow of 24 million dollars, and an average of 96 jobs have been created through FDI yearly, the estimated effect corresponds to an annual increase of 17 million dollars in greenfield FDI and 98 new jobs per year in each of the 20 targeted sectors, on top of what would have been received/created in the same region in the absence of the agency.

Our estimates are obtained by accounting for any potentially confounding national policy, as well as any regional policy that may influence FDI inflows at the region-sector level. As previously discussed, the EU Cohesion Policy is possibly the only large-scale policy that could confound our results. All EU regions are in receipt of Cohesion Policy funds that are inversely proportional to their level of economic development and are aimed at spreading and extending the benefits from the process of EU economic integration.[15] EU Cohesion Policy also defines the framework conditions of most national policies targeting regional development and guides the earmarking of a relevant share of national resources in this policy area through mandatory co-financing of Community expenditure. If Cohesion Policy funding exactly coincided in timing and sectorial targeting with the strategies of IPAs, our results would possibly reflect the impact of Cohesion Policy expenditure/incentives together with the impact of IPA strategies. To check for this, by leveraging disaggregated data on EU spending across 86 priority themes made available by the European Commission, we have reconstructed annual Cohesion Policy expenditure in the 20 sectors targeted by IPAs for all EU regions. As a robustness check, we have then included a variable 'EU Regional Policy' in our models, corresponding to log (inverse hyperbolic sine) thousand euros of Cohesion Policy expenditures in each region-sector. The results of this robustness test, shown in Tables A7 and A8 in the Appendix, indicate that Cohesion Policy aid is not significantly related to FDI inflows. Interestingly, we find no relationship between EU spending and FDI inflows in poorer regions, i.e. those receiving the bulk of financial support

[13] One of the questions of our questionnaire explicitly asked regions whether they had a targeting strategy on some sectors or not. The treatment variable for non-targeting strategies takes value 1 from the moment an agency is created in all sectors of a region if the regional IPA has declared that it does not operate sector-targeting. 16 regions of our sample have declared to have no such targeting strategy.

[14] The EU categorises 'less developed regions' according to their income relative to the EU average. Regions with a GDP per capita below 75% of the EU average are assigned this status. In our study, we adopt the sub-division established in 2000 for the 2000–2006 EU budget period.

[15] EU Cohesion Policy is the largest public investment programme for economic development promotion in Europe. Through the European Regional Development Fund (ERDF), the European Social Fund (ESF), and the Cohesion Fund, the EU finances different types of projects in different areas (infrastructure, firm support, human capital promotion, social inclusion, innovation, etc.), with the purpose of promoting local development and making regions competitive at the global level. All regions across Europe are entitled to receive some form of financial support. The funds are made available depending on the level of economic disadvantage (https://ec.europa.eu/regional_policy/index.cfm/en/).

Table 2
Less developed / advanced regions.

Sample:	FDI dummy						million $ FDI					
	Less developed regions			Advanced regions			Less developed regions			Advanced regions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
National IPA strategy			−0.0140			−0.0108			−0.0408			−0.0698
			(0.0334)			(0.0173)			(0.147)			(0.0788)
Regional IPA strategy	0.104**	0.139***	0.105**	0.0149	0.00517	0.0155	0.447**	0.535***	0.451**	0.104	0.0681	0.108
	(0.0453)	(0.0456)	(0.0456)	(0.0251)	(0.0258)	(0.0251)	(0.189)	(0.199)	(0.190)	(0.105)	(0.110)	(0.105)
Country-sector-year dummies		✓			✓			✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	10,680	10,680	10,680	16,761	16,761	16,761	10,680	10,680	10,680	16,761	16,761	16,761
Region-sectors	740	740	740	1180	1180	1180	740	740	740	1180	1180	1180
R-squared	0.506	0.569	0.506	0.573	0.629	0.573	0.530	0.589	0.694	0.620	0.675	0.620

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: dummy variable for inward FDI towards region-sector in given year (columns (1–3)), inverse hyperbolic sine million $ inward FDI towards region-sector in given year (columns (4–6)). Treatment dummy variables: 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country. 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). Advanced regions: regions not classified as 'Less developed' by the EU.

from the EU. More importantly, our main results are not affected by the inclusion of this control, as the coefficient of Regional IPA strategy dummy retains its positive and significant coefficient for less developed regions (Table A8).[16]

This set of results suggests that IPAs make the difference for FDI attraction, particularly in less developed regions. As FDI in less developed regions generally involves higher risks and uncertainty for investors, IPAs can reassure foreign companies over the receptiveness of the local environment to foreign investments and their expected returns. Therefore, closer proximity to the operative environment of foreign investors in host economies makes regional IPAs more effective in pursuing their functions, better addressing investors' needs.

5.2. FDI heterogeneity

IPAs are generally unwilling (or legally unable) to disclose detailed information on beneficiary investors. As a result, the existing literature has been fundamentally constrained in its attempts to investigate the transmission channels linking promotion efforts and FDI attraction. It remains to be clarified what operational choices by IPAs offer the highest returns in terms of additional FDI. Given that all agencies formally pursue their functions with limited systematic tracking of time or budget allocations across their basic functions, the literature needed to rely on more indirect clues. While our analysis shares similar data limitations, some new evidence on possible mechanisms can be identified by exploring impact heterogeneity in the following three ways.

First, we can verify whether impacts vary across sectors within the same group of regions. It is unlikely that activities that primarily address information asymmetries (e.g. 'image building') would be systematically biased in favour of specific sectors, taking into account how diversified our sample is in terms of countries and regions. Conversely, if the impact is stronger in sectors where connectivity with local business ecosystems is more important for the success of the investment – i.e. knowledge intensive sectors – we would find indirect evidence of the importance of functions enhancing the investment environment vis-à-vis more general informational/promotional functions.

To test for this, we leverage the definition of high-tech and low-tech industries and knowledge-intensive services provided by the European Commission for NACE sectors and sub-divide sectors on the basis of their knowledge-intensity.[17] The results, reported in Panel A of Tables 3 and A9 and in Table A10, confirm that the estimated IPA impact in less developed regions derives especially from the attraction of FDI in high knowledge-intensive sectors. The coefficients of the Regional IPA treatment dummy in Panel A of Table 3 indicate that IPAs increase the probability of FDI attraction in knowledge intensive sectors by 21% (column (2)), the FDI million dollar value is up to 176% higher in these sectors (equivalent to a 38 million dollar difference) (column (6)). Column (2) of Table A9 (Panel A) indicates that up to 260% more jobs are created (a difference of 231 additional jobs) in knowledge-intensive sectors vis-à-vis other sectors. This evidence suggests that IPAs are particularly effective in the attraction of more knowledge-intensive investment towards less developed regions, supporting to the hypothesis that their impact is mostly driven by their capacity to enhance the quality of investment ecosystems rather than by more 'horizontal' image-building or informational activities.

[16] In Poland IPAs have been established thanks to EU funding in 2011, but have been independent from the EU ever since. Hence, we do not expect Cohesion Policy to be collinear with IPA targeting in Poland. To test if our findings are sensitive to the inclusion of Poland, we have replicated the estimates for less developed regions by excluding Polish regions from the sample, and controlling for EU Regional Policy expenditures. The results of this test (available upon request) confirm that our main findings are robust to this change of sample.

[17] https://ec.europa.eu/eurostat/cache/metadata/en/htec_esms.htm. High-knowledge-intensive sectors in our dataset are identified as follows: 'Biotechnology', 'Computers and electronic equipment', 'Software', 'Machinery', 'Transport and telecommunications', 'Vehicles and other transport equipment', 'Financial intermediation' are considered as knowledge intensive, while all remaining sectors are classified as less knowledge-intensive.

Table 3
FDI heterogeneity.

	FDI dummy						million $ FDI					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: FDI sector type	Knowledge-intensive sectors			Low knowledge-intensive sectors			Knowledge-intensive sectors			Low knowledge-intensive sectors		
National IPA strategy			0.0496			−0.0563			0.0329			−0.155
			(0.0575)			(0.0408)			(0.260)			(0.172)
Regional IPA strategy	0.146*	0.208***	0.145*	0.0552	0.0813	0.0603	0.807**	1.016***	0.807**	0.212	0.248	0.226
	(0.0743)	(0.0722)	(0.0742)	(0.0655)	(0.0649)	(0.0662)	(0.337)	(0.372)	(0.337)	(0.264)	(0.259)	(0.266)
Observations	3738	3738	3738	6942	6942	6942	3738	3738	3738	6942	6942	6942
Region-sectors	259	259	259	481	481	481	259	259	259	481	481	481
Panel B: investor type	Serial investors			Occasional investors			Serial investors			Occasional investors		
National IPA strategy			−0.00488			−0.00912			0.0467			−0.0553
			(0.0244)			(0.0260)			(0.0998)			(0.120)
Regional IPA strategy	0.00952	0.0504	0.0100	0.0942**	0.0882**	0.0951**	−0.00177	0.136	−0.00638	0.414**	0.382**	0.420**
	(0.0395)	(0.0381)	(0.0402)	(0.0426)	(0.0413)	(0.0426)	(0.188)	(0.167)	(0.190)	(0.186)	(0.190)	(0.187)
Observations	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680
Region-sectors	740	740	740	740	740	740	740	740	740	740	740	740
Panel C: FDI origin	EU investors			Non-EU investors			EU investors			Non-EU investors		
National IPA strategy			−0.00293			−0.0260			0.0305			−0.140
			(0.0331)			(0.0268)			(0.143)			(0.106)
Regional IPA strategy	0.0697*	0.0989**	0.0700*	0.0786	0.0769	0.0812*	0.220	0.301*	0.217	0.316*	0.292*	0.329*
	(0.0426)	(0.0453)	(0.0430)	(0.0493)	(0.0480)	(0.0494)	(0.171)	(0.183)	(0.173)	(0.186)	(0.177)	(0.185)
Observations	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680
Region-sectors	740	740	740	740	740	740	740	740	740	740	740	740
Country-sector-year dummies		✓			✓			✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variable in columns (1–6): dummy variable for inward FDI (*panel B*: from either larger – columns (1)–(3) – or smaller – columns (4)–(6) – investor; *panel C*: from either EU countries – columns (1)–(3) – or non-EU countries – columns (4)–(6)) towards region-sector in given year. Dependent variable in columns (7–12): inverse hyperbolic sine million $ inward FDI (*panel B*: from either serial – columns (1)–(3) – or occasional – columns (4)–(6) – investor; *panel C*: from either EU countries – columns (1–3) – or non-EU countries – columns (4–6)) towards region-sector in given year; 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Sample of less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). High-knowledge-intensive sectors: 'Biotechnology', 'Computers and electronic equipment', 'Software', 'Machinery', 'Transport and telecommunications', 'Vehicles and other transport equipment', 'Financial intermediation'. Serial investors: companies having performed more than 10 FDI over 2003–2017 in our sample; Occasional investors: companies having performed 10 or less FDI over 2003–2017 in our sample. EU investors: companies whose headquarters are in the EU; non-EU investors: companies whose headquarters are outside the EU. Years after the end of IPA targeting strategies excluded from sample.

Second, the nature of the investors that better respond to IPA promotion efforts can also offer additional insights on the mechanisms underlying our main results. The location behaviour and attitudes of international investors towards their host economies may differ, depending on the size and experience of the investor (e.g. Alcácer and Chung, 2007).

Highly-experienced multinationals making multiple greenfield investments abroad – that we will label 'serial investors' – are obvious targets for IPAs. Their propensity to invest abroad makes them the ideal counterparts for FDI promotion efforts by IPAs. However, their simultaneous presence in several jurisdictions will also make them less reliant on local investment conditions given their capacity to leverage more developed intra-corporate networks and resources. Conversely, more 'occasional' FDI players will be more reliant on local ecosystems for their operations, given their more limited locational diversification. As a consequence, where most of the impact of IPAs is driven by occasional FDI players, we will find indirect support for the importance of ecosystem development as a key function of IPAs, over and above the mitigation of information asymmetries. The latter are likely to remain the same for all types of foreign investors, irrespective of their presence in other regions.

In order to test this, we have divided the FDI sample into two sub-samples based on the nature of the investing company responsible for each investment project. The first sub-sample includes FDI by 'serial investors' i.e. MNCs that account for more than 10 greenfield FDI over the period of analysis (2003–2017) in our full sample of European countries. The second sub-sample comprises FDI by 'occasional investors' i.e. MNCs responsible for 10 FDI or less.[18] Next, all our dependent variables are

[18] Our definition of high-investing company ('serial investor') corresponds to firms having made more than 10 greenfield FDI over the period of analysis (2003–2017) in the full sample of European countries and regions. FDI from 'occasional investors' correspond to all other investment projects. While the threshold of 10 FDI projects used for this sub-division is admittedly arbitrary, it has been selected because it allows us to split our full bulk of FDI projects almost equally. In our sample of less developed regions, the average annual investment from the sub-group of 'serial investors' is $9.04 million, while the average annual investment from the much larger group of 'occasional investors' is $9.92 million.

re-computed (for all countries, regions and sectors) on the basis of this classification, obtaining six new dependent variables: a) two FDI dummies taking value 1 if a region-sector has received at least one investment from either a 'serial' or 'occasional' investor and 0 otherwise; b) two variables defined as the IHS sum of million dollar FDI investment by 'serial' and 'occasional' investors, respectively; c) two variables based on the new jobs created by 'serial' and 'occasional' investors, respectively. The models are re-estimated by using these modified dependent variables for the sample of less developed regions.[19] Results are reported in Table 3 (Panel B), Table A9 (Panel B), and Table A11, showing that IPAs are significantly more effective in the attraction of occasional investors. Regional IPA strategies in less developed areas are positively and significantly related with the probability of attracting FDI and with the value of FDI and number of jobs created by occasional investors, while they are not significantly related to FDI inflows from serial investors. This result supports the idea that IPAs attract FDI by helping the creation of favourable conditions for investors to operate on the ground.

Third, we can leverage information on the home market of investing companies. In particular, investors from within the EU Single Market face no legal barriers as they cannot be discriminated against domestic investors. In addition, we can safely assume that they also face significantly lower transaction costs when interacting with local institutions, suppliers, and workforce given their proximity with the host environment in terms of legal and institutional framework as well as managerial practices and labour relations. Conversely, non-EU investors face higher legal barriers and will be more in need of institutional bridging through the active involvement of local IPAs. Therefore, if the influence of IPAs is not limited to one group of investors, this will provide further support to the view of IPAs facilitating the implementation of FDI not only by addressing information asymmetries (ceteris paribus stronger for extra-EU investors), but also by removing operational barriers on the ground, likely to remain relevant for both EU and non-EU firms.

To test for this, we again divide the sample of FDI into two sub-samples based on the location of the company responsible for each FDI project, distinguishing between investing companies headquartered in the EU vis-à-vis extra-EU investors. Based on this sub-division we generate six more new dependent variables, following the same procedure described above for 'serial' and 'occasional' investors. Using these variables we calculate that, in less developed regions, FDI inflows before the establishment of regional IPAs (i.e. pre-treatment) equal on average 12.8 million dollars annually from EU-based companies, and 6.5 million dollars from non-EU companies. This confirms that FDI flows targeting less developed regions are most likely to take place between EU countries. Using as dependent variables the newly-created indicators of EU and non-EU investors, we re-estimate the models. The results are displayed in Panels C of Tables 3 and A9, and in Table A12. As the coefficient of regional IPAs is positive and significant both for EU FDI (columns (1)-(3, 7)-(9) of Panel C, Table 3) and for non-EU FDI (columns (4)-(6, 10)-(12) of Panel C, Table 3), we conclude that IPAs are equally capable of attracting investors from within and outside the EU. The magnitude of the coefficients of the treatment dummy is very similar for both groups of investors (in Table 3, Panel C, compare columns (1–3) with (4–6, 7–9) with (10−12)).

This suggests that IPAs play an additional and differential role in FDI attraction even where FDI would more naturally flow, i.e. within the EU Single Market. More intra-EU FDI in treated region-sectors during IPA targeting provides additional evidence for the hypothesis that IPAs go beyond the correction of information asymmetries and the attenuation of legal barriers – likely to constrain mainly the activity of non-EU investors – and supports the view of IPAs as investment-facilitators benefitting all investors.

5.3. Event study

In this section, we test for the direction of causality and demonstrate that the obtained finding is not driven by pre-existing trends in region-sectors. We perform an event study by verifying that treated and untreated region-sectors are similar and comparable in the pre-treatment period. In order to do this, we re-estimate our baseline model (both for the full sample and for the sub-sample of less developed regions) by including in the model a full set of leads and lags dummy variables referring to each year before the beginning of the targeting strategy and each year during the treatment. Additionally, we control for region-sector specific time trends. The model, which allows to observe the temporal dynamics of the treatment effect, is:

$$FDI_{r,c,s,t} = \sum_{\tau=2}^{q} \delta_{-\tau} D_{r,c,s,t-\tau} + \sum_{\tau=1}^{q} \delta_{+\tau} D_{r,c,s,t+\tau} + \vartheta_{r,t} + \vartheta_{s,t} + \vartheta_{r,s} + \vartheta_{c,s,t} + \varphi\, trend_{r,s,t} + \varepsilon_{r,c,s,t} \quad (3)$$

where q lags dummy variables ($D_{r,c,s,t-2}, D_{r,c,s,t-3}, \ldots, D_{r,s,t-q}$) and leads dummy variables ($D_{r,c,s,t+1}, D_{r,c,s,t+2}, \ldots, D_{r,c,s,t+q}$) are included in the model to check for anticipatory effects in investment flows, that is, to test for a significant difference in terms of the outcome variable, the FDI dummy, for treatment and control region-sectors in the period immediately before the treatment begins (Angrist & Pischke, 2008). We include the full set of dummies for pre-treatment and treatment years (up to 15 years) with the exclusion of the first-year lag, used as reference category. $trend_{r,s,t}$ are region-sector-year trends. If, as hypothesised, IPA strategies are determining changes in the inflow of FDI, and not vice versa, we should expect the leads dummy variables to return insignificant coefficients.

[19] The number of observations remains the same as in columns (1–3, 7–9) of Table 2 above, given that the dependent variables are still observed for the same sample of less developed regions. What differs in this case is that, for instance, the FDI dummy reports a higher number of zero values (i.e. more cases of no investment from either 'serial' or 'occasional' investors).

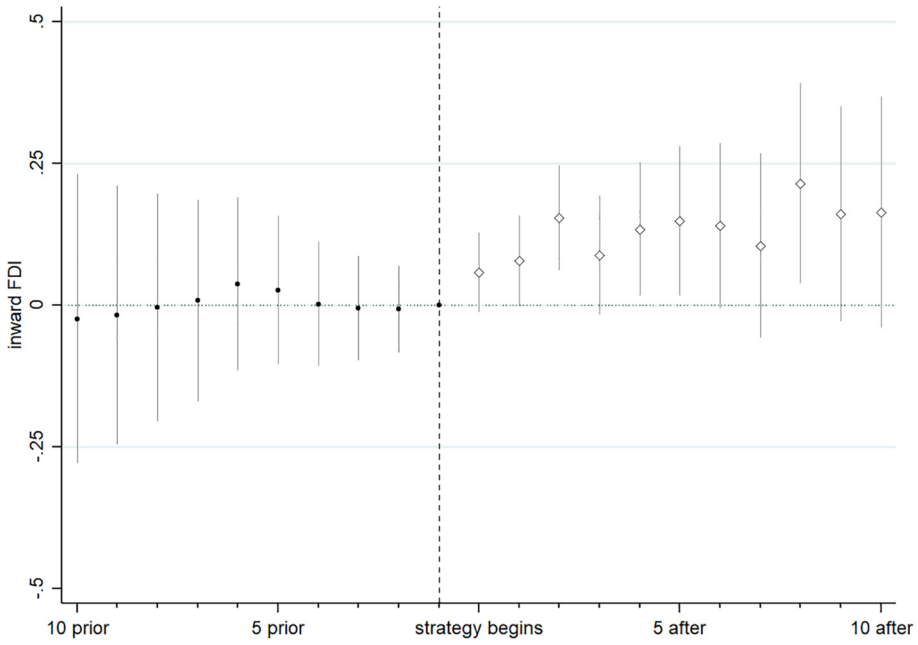

Fig. 3. Event study (full sample). Event study using t-1 (1 year before targeting strategy) as reference category. Grey spikes refer to 90% confidence intervals. Black dots: estimated coefficients of pre-treatment dummy variables. White diamonds: estimated coefficients of leads dummy variables. Dependent variable: FDI dummy. Sector-year, region-year, region-sector, country-sector-year dummies and region-sector-year time trends included in the model. Years after the end of targeting strategies excluded from sample.

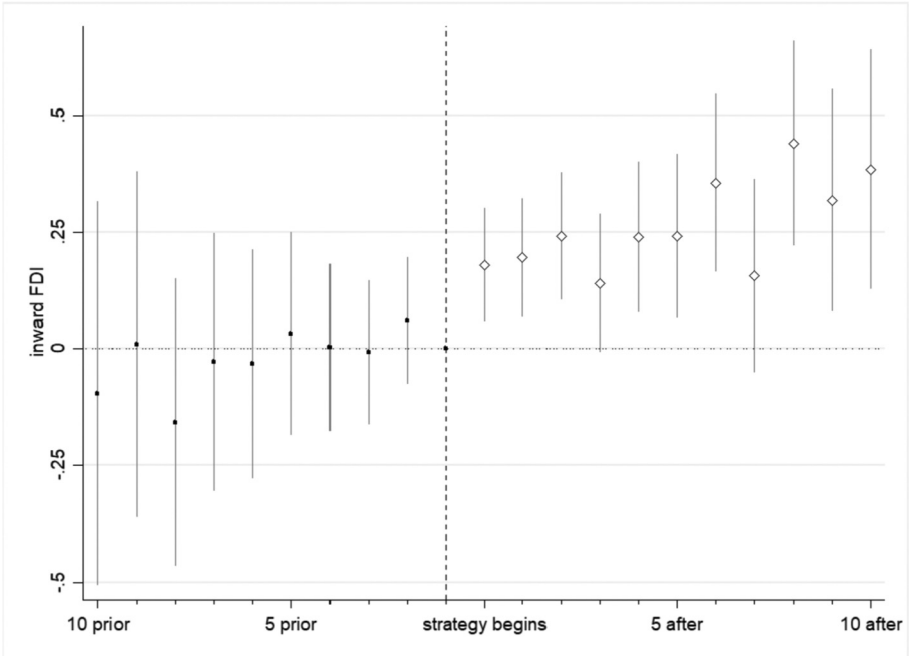

Fig. 4. Event study (less developed regions). Event study using t-1 (1 year before targeting strategy) as reference category. Grey spikes refer to 90% confidence intervals. Black dots: estimated coefficients of pre-treatment dummy variables. White diamonds: estimated coefficients of leads dummy variables. Dependent variable: FDI dummy. Sector-year, region-year, region-sector, country-sector-year dummies and region-sector-year time trends included in the model. Years after the end of targeting strategies excluded from sample.

The results of this test are shown in Fig. 3 (full sample) and in Fig. 4 (sub-sample of less developed regions), both displaying the coefficients of leads and lags with corresponding confidence intervals for each year, up to 10 years before and 10 after the beginning of regional strategies[20,21] It can be noted that no pre-treatment coefficient is statistically significant, providing evidence that the rich set of fixed effects included in the model performs well in ensuring that the parallel trend assumption holds. In the years prior to the beginning of a strategy, region-sectors about to be targeted by IPAs have the same probability of receiving FDI as untreated region-sectors. After the beginning of a regional IPA strategy, the probability of inward FDI increases significantly from the first year after a strategy has begun, remaining consistently higher for the following years. In other words, these tests confirm that the impact of regional IPAs is significant from the year in which targeting strategies are established, and long-lasting for several years.

5.4. Synthetic controls

As a final test to corroborate the results, we replicate the analysis using the synthetic control method. This methodology, proposed by Abadie and Gardeazabal (2003) and Abadie et al. (2010, 2015), allows to construct counterfactuals for treated region-sectors such that the treatment and control region-sectors follow the same trend before the sector-targeting strategy kicks in. This technique exploits a set of covariates measured in the pre-intervention period to build artificial region-sectors following similar pre-trends of those implementing IPA targeting strategies. Any difference in the evolution of the dependent variable during the pre-treatment is forcibly minimised, thus ensuring that the parallel trend assumption is met. In this way, any bias due to the high spatial dependence of sub-national units is largely accounted for (Gobillon and Magnac, 2016).

The synthetic control analysis is performed for the sample of regions for which we have information on the presence and targeting strategy of both national and regional agencies, namely: Belgium, Germany, Greece, Ireland, Italy, Poland, Spain, and Sweden. We define treatment region-sectors and their donor pools as follows: treated region-sectors are those in which a targeting has begun at some point in time, while the national agency of that country (if it exists) is never targeting the same sector. In addition, we focus exclusively on strategies targeting selected sectors, thus excluding regions whose agencies are not selective in terms of sectors to target with their strategies.

In order to facilitate the successful pre-treatment matching between artificial control and treatment units and produce the synthetic control analysis, we convert our FDI dependent variable from a flow into a stock, by constructing the cumulative sum of FDI into each region-sector from the beginning until the end of the analysed period.

Synthetic controls are constructed from a set of variables traditionally identified as FDI determinants, most of which are measured at the regional level. They are: log per capita GDP, share of tertiary educated individuals, unemployment rate, log population, log population density and log patent applications per million inhabitants. We also adopt as matching covariates the dependent variable measured both as a stock (log cumulative FDI) and as a flow (log FDI), as customary in this methodological approach (Abadie et al., 2010, 2015), as well as the number of FDI jobs created and the FDI dummy taking value 1 if at least one investment has been made in a region-sector in a given year. A summary of pre-intervention covariates for the synthetic control analysis, for both treated and donor region-sectors, is reported in Table A13 in the Appendix. The table shows the average value for all variables for the entire period of both treated and donor region-sectors, as well as pre-treatment values for region-sectors beginning a targeting strategy at any point during the sample period.

In contrast to traditional studies adopting the synthetic control method on single treated units (e.g. Abadie and Gardeazabal, 2003; Abadie et al., 2010), we have a large number of treated observations, i.e. region-sectors beginning an IPA targeting strategy. Following Gobillon and Magnac (2016), we perform the analysis by producing repeated estimations and, only thereafter, we aggregate the result over the various synthetic controls to yield the average treatment on the treated.

In addition, our setting entails that the treatment (sector targeting) may begin at any point in time. Hence, we replicate the synthetic control analysis for each and every unit and year of data beginning from 2005 – in order to have at least two pre-treatment periods – and ending in 2016 – in order to have at least one treatment period. The donor pool providing weights for the synthetic control of each region-sector beginning a targeting strategy is composed of regions that either do not have an agency, or, if they do, this agency is never targeting the sector in which the IPA targeting activity of the treated unit will begin. By definition, this procedure excludes from the treatment and donor groups any region-sector whose targeting begins prior to the start of the sample period, such that for each treated region and sector the synthetic control is obtained from all regions without a regional IPA operating in the same sector, on the basis of the pre-treatment observations. The number of treated region-sectors by year are reported in Tables A14 and A15 in the Appendix.

[20] The model is estimated with all pre/during treatment years included. This implies having 14 lags (for strategies beginning in 2017) and 14 leads (for strategies beginning in 2003). The Figure reports a lower number of coefficients because the simple size reduces as leads/lags increase, making long leads/lags' coefficients less reliable.

[21] Similar event-study estimates have been performed also for all our heterogeneity checks from the previous section (type of sector, type of investors, type of investing market), confirming the findings discussed in the text. Results available upon request.

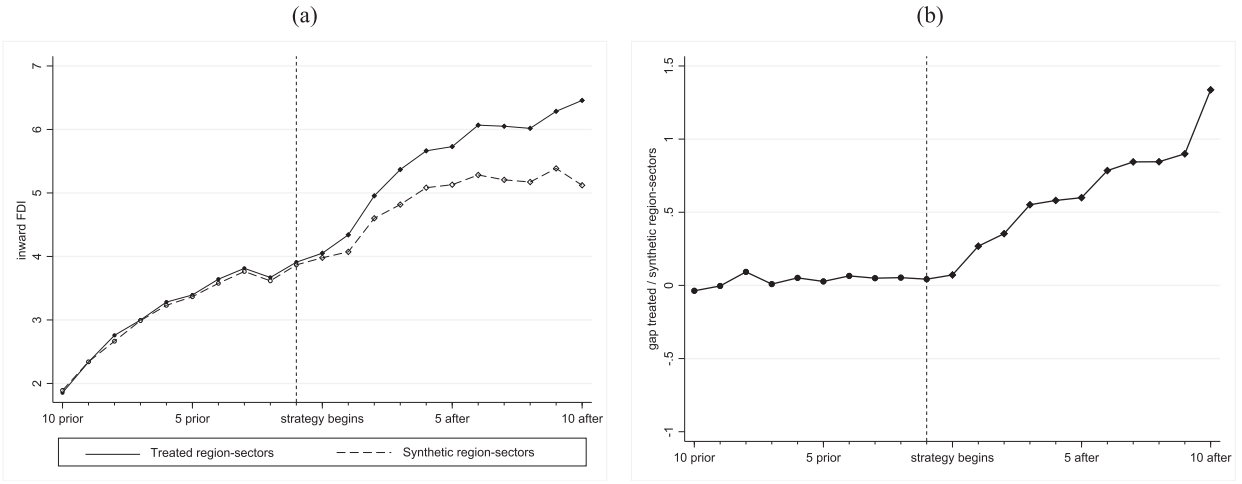

Fig. 5. Synthetic control estimates, 2003–2017. Figure (a): pooled treated/synthetic region-sectors by year before/during strategy. Dependent variable for synthetic control analysis: log cumulative FDI million dollars. Continuous line: treated region-sectors; dashed line: synthetic region-sectors. Circles: average pre-treatment values for treated (black) and synthetic (hollow) units by year pre-targeting. Diamonds: average treatment values for treated (black) and synthetic (hollow) units by year during targeting. The lower value of inward FDI in the year t-2 as compared with t-3 is due to the relatively high number of units whose treatment starts in the year 2005. Figure (b): gap between pooled treated region-sectors and synthetic controls. Circles: average pre-treatment gap by year pre-targeting; Diamonds: average treatment gap by year during targeting.

The graphical representation of the trajectories of pooled treated and synthetic counterparts is shown in Fig. 5 (panel (a)).[22] The two trends of treatment and synthetic region-sectors are constructed on the basis of the different point estimates by each period before/after the beginning of sector-targeting by each regional IPA.[23] Fig. 5 indicates that, as all periods and pairs are pooled together, for all 10 years before the beginning of the strategy the two groups follow a very similar trajectory. Panel (b) of Fig. 5, displaying the gap between the treatment and synthetic control line, shows how the parallel trend assumption is satisfied, with very little difference between the two lines in the pre-treatment period. A clear difference between treatment and synthetic controls' trajectories is visible from the first year following the start of a regional strategy. As shown in panel (b) of Fig. 5, this gap keeps growing over time, indicating that a higher proportion of FDI is flowing towards treated-region sectors, vis-à-vis untreated region-sectors, from the moment the strategy is initiated. This confirms the result obtained with the staggered difference-in-differences model, reporting a positive effect of IPA regional strategies on inward FDI.

Correspondent results for the sub-sample of less developed regions are reported in Fig. A3 of the Appendix.[24] The gap between treated and synthetic controls units estimated for the sub-sample is even larger than the one estimated for the full sample.

Given the relatively unbalanced number of treated region-sectors by period of targeting, with more treated units starting their targeting in the last years of sample (Table A14), as a robustness test we re-construct treated vs. synthetic control trajectories and gaps using reduced sample periods. We split the 155 treated units almost equally by focusing on the 2005–2012 and the 2013–2017 periods. The results of this robustness test, displayed in Fig. A4 and A5 in the Appendix, confirm the FDI gap between treated and synthetic region-sectors developing after the targeting strategies begin, with regions having started a sector-targeting strategy receiving more FDI than counterfactual region-sectors.

By leveraging a specific test which is standard in the application of synthetic control methods (leave-one-out test) we are also able to verify for potential confoundedness arising from neighbouring regions (spillovers): for this purpose we replicate the estimates for the full period 2003–2017 by excluding, from the donor pool of each treated region-sectors, the four closest/bordering regions. The results of this test are reported in Fig. A6 in the Appendix. The estimated gap is very similar to the one displayed in Panel (b), Fig. 6. If anything, excluding nearest neighbours makes the difference between treated and synthetic control-sectors slightly larger. Hence, this suggests that the estimated effect produced by FDI-attraction from regional IPAs is not driven by displaced FDI from neighbouring units.

[22] This result is obtained by trimming treated/synthetic control couples in order to drop the top 15% of the Root Mean Square Prediction Error (RMSPE) distribution and ensure the best possible pre-treatment match.

[23] By definition, point estimates on the central period ($t = 0$, i.e. around the moment at which the strategy begins) are obtained by pooling a larger number of treated-synthetic pairs of observations than for periods distant from the moment at which the treatment kicks in. To be precise, the moment of the start of a strategy is obtained from 131 treated region-sectors and their corresponding synthetic controls, as shown in Table A14 in the Appendix. The number of treated units reduces as we move away from the starting moment of a strategy. Given that for the synthetic control estimates we exclude units whose strategies begin earlier than 2005, there are no treated units observed 13 or more years after the beginning of the treatment.

[24] In this case, the number of treated region-sectors over time is much lower than in the full sample analysis, as can be noted from Table A15, and hence the estimated treated/synthetic control difference for periods far away from the beginning of the targeting strategies (e.g. t + 10) is obtained with fewer observations and less statistically reliable.

6. Conclusions

IPAs are increasingly popular tools leveraged by national and sub-national governments to attract foreign capital in both advanced and emerging economies. However, the evidence base supporting this relevant and expanding area of public policy remains rather limited. Major market failures, preventing the optimal allocation of capital, have emerged within (rather than between) countries both in advanced and emerging economies. The national-level focus of previous studies, the limited capability of their setting to control for other policy tools influencing foreign capital location (e.g. tax breaks or other locational incentives), together with the omission of sub-national investment promotion efforts, have so far masked relevant insights for public policies targeting global capital flows.

By leveraging granular sub-national FDI data in combination with an innovative *ad hoc* data collection on the activities of regional IPAs, our analysis has uncovered significant new patterns. The focus on economies that are part of the same EU Single Market (with stringent constraints on tax incentives and anti-competitive behaviour) has made it possible to minimise the influence on FDI location decisions of national-level factors and of alternative policies other than IPA efforts. When looking within countries, the robustness of the estimates increases and confounding factors, both at the national and at the sub-national level, become even less relevant.

Our results unveil that regional attractiveness to FDI responds to sub-national IPA strategies. Sub-national IPAs contribute to increasing inflows of foreign investment at the extensive margin – i.e. raising the probability of receiving FDI – and at the intensive margin – boosting the amount of total foreign investment received as well as jobs directly created by the investment. This impact is stronger in less developed regions, i.e. in sub-national economies where information asymmetries are more severe, markets less transparent and institutional conditions generally weaker. In this context, IPA targeting can translate into annual increases of up to 17 million $ FDI and 102 new directly created jobs in each prioritised sector.

According to these findings, IPAs help to counterbalance the difficulties of an economic environment characterised by low international attractiveness and competitiveness. The design of an investment promotion architecture should therefore reflect an accurate diagnosis of underlying market and institutional failures. In an attempt to isolate the importance of IPA functions enhancing the investment environment we look at heterogeneity across sectors and types of investing companies. Knowledge-intensive FDI are identified as those relying more on the connectivity of foreign investors with domestic firms and institutions, therefore benefitting the most from the improvement of the local business ecosystem triggered by IPAs. The stronger attractive capacity in knowledge-intensive sectors identified in our results provides support for the hypothesis that the highest returns from investment promotion efforts come from the removal of practical bottlenecks to investors' operations. Convergent evidence comes from the nature of the investors more likely to be attracted by IPAs. Smaller 'occasional' investors are more likely to benefit from IPAs, arguably due to their stronger reliance on local networks and resources that – contrary to 'serial' foreign investors – are more difficult to source in alternative locations. Investors from within the EU Single Market – that in principle should face no legal barriers and benefit from advanced integration in legal and operational standards – benefit equally from IPAs as non-EU investors. This supports the idea that even after removing most informational and legal barriers to capital mobility, localised market (e.g. for suppliers or suitably trained workers) and institutional failures remain a binding constraint successfully addressed by regional IPAs. Overall, this suggestive evidence also coheres with the explanation that regional IPAs are impactful because of their proximity to investors' operations on the ground.

These findings seem to suggest that the devolution of responsibilities for investment promotion in favour of dedicated agencies in less developed regions may be a viable policy option to improve their attractiveness to foreign investors, and, possibly, to stimulate their economic development. These results also suggest that the attractiveness of less advanced economies for global capital flows is conditioned not only upon their capacity to address information asymmetries in capital markets – as postulated by the existing literature – but also on the implementation of appropriate actions to address localised market and institutional failures.

Our analysis has important limitations that should be carefully considered when drawing policy conclusions. First, the analysis only captures the impact of IPAs in the attraction of additional foreign investments versus what would have happened in the absence of the policy. As such, the analysis is silent on whether the additional investment successfully attracted through the activity of IPAs have multiplicative or spillover effects in the host economies. In this regard we can offer only indirect evidence, given that our analysis has shown how IPAs tend to attract FDI of higher technological intensity, which are more likely to trigger positive knowledge spillovers for the local economy (Javorcik, 2004; Branstetter, 2006). Second, our analysis does not attend to the retention capabilities of IPAs, i.e. as to whether and to what extent they can prevent foreign companies from divesting and moving their activities elsewhere. Third, even if regional data are significantly more detailed than national data commonly used in this literature, stronger results would be obtained by a firm-level analysis comparing individual investment benefitting from IPA support with non-beneficiary investments. Fourth, it remains to be seen how a possible restructuring of global investment flows and global value chains in the context of new global geo-political equilibria triggered by Covid-19 will affect investment promotion and its impacts. New industrial policy paradigms have emerged in response to the pandemic. In most advanced economies a growing emphasis has been placed on the domestic re-shoring of foreign activities justified on strategic, security or domestic employment grounds, generating unprecedented new challenges for investment promotion (and retention) strategies. All these issues are in our agenda for future research.

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Appendix A

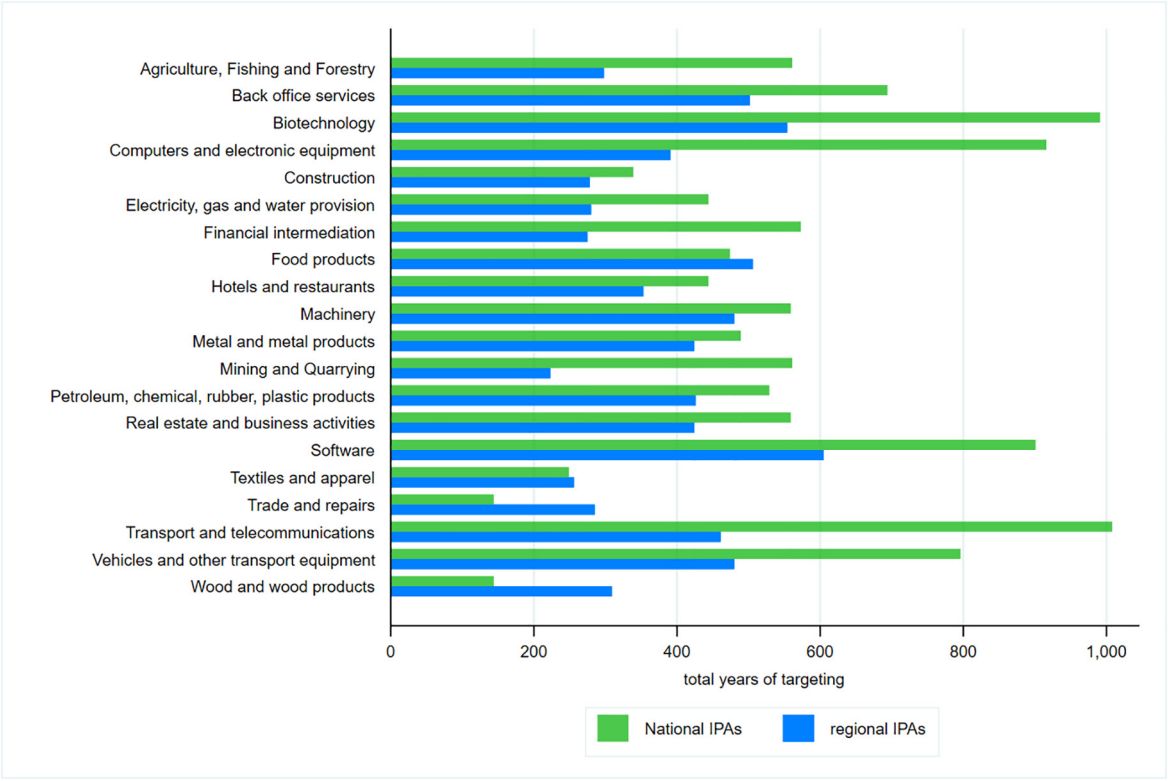

Fig. A1. Total years of targeting, regional and national agencies. Note: sample of regions for which information on both national and regional IPA is available. Source: LSE-ERC Survey of IPAs 2018.

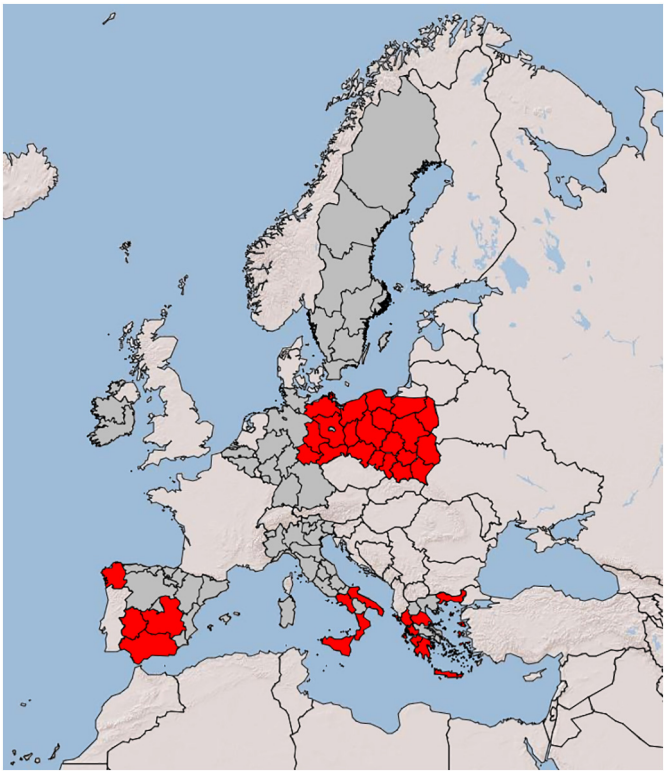

Fig. A2. Less developed / advanced regions. Red: 'less developed regions' in our sample, according to 2007–2013 EU classification; Grey: regions in sample not classified as 'less developed' according to 2007–2013 EU classification.

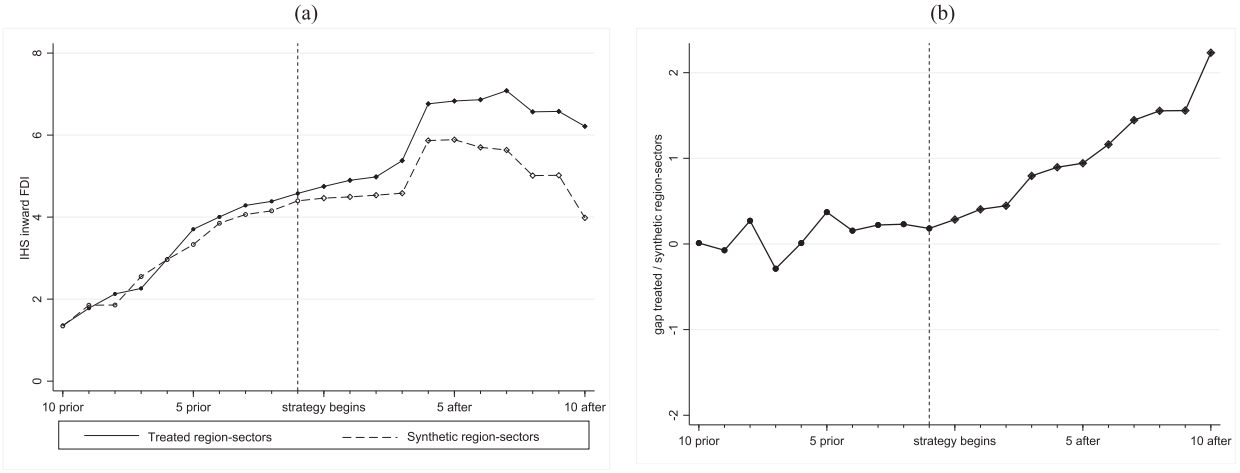

Fig. A3. Treated/synthetic region-sectors and estimated gap, 2003–2017 (less developed regions). Figure (a): pooled treated/synthetic region-sectors by year before/during strategy. Dependent variable for synthetic control analysis: log cumulative FDI million dollars. Continuous line: treated region-sectors; dashed line: synthetic region-sectors. Circles: average pre-treatment values for treated (black) and synthetic (hollow) units by year pre-targeting. Diamonds: average treatment values for treated (black) and synthetic (hollow) units by year during targeting. The lower value of inward FDI in the years t + 8 to t + 10 as compared with t + 7 is due to the low number of units whose treatment starts in the years 2007, 2008, 2009, 2010. Figure (b): gap between pooled treated region-sectors and synthetic controls. Circles: average pre-treatment gap by year pre-targeting; Diamonds: average treatment gap by year during targeting.

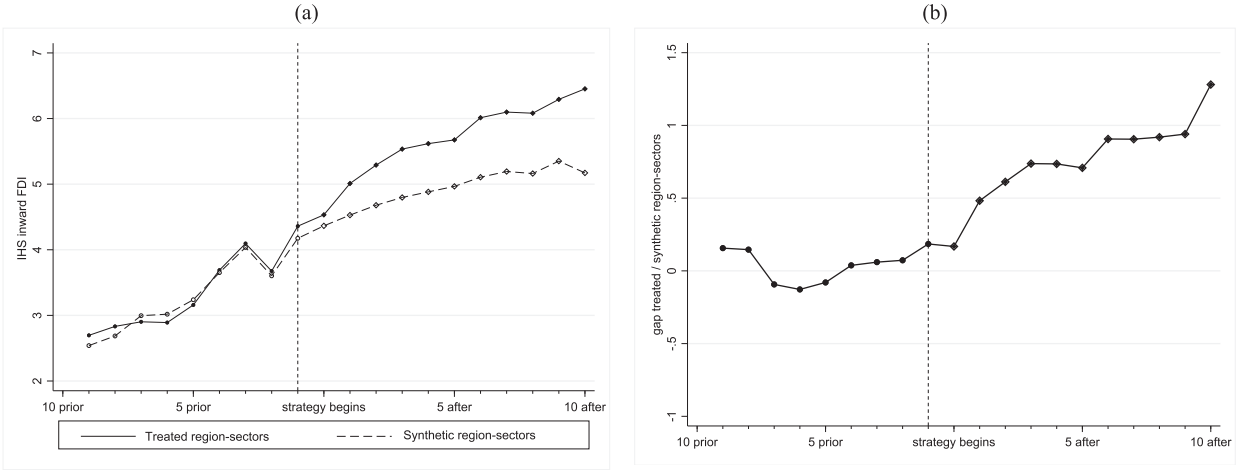

Fig. A4. Treated/synthetic region-sectors and estimated gap, 2005–2012. Figure (a): pooled treated/synthetic region-sectors by year before/during strategy. Dependent variable for synthetic control analysis: log cumulative FDI million dollars. Continuous line: treated region-sectors; dashed line: synthetic region-sectors. Circles: average pre-treatment values for treated (black) and synthetic (hollow) units by year pre-targeting. Diamonds: average treatment values for treated (black) and synthetic (hollow) units by year during targeting. Figure (b): gap between pooled treated region-sectors and synthetic controls. Circles: average pre-treatment gap by year pre-targeting; Diamonds: average treatment gap by year during targeting.

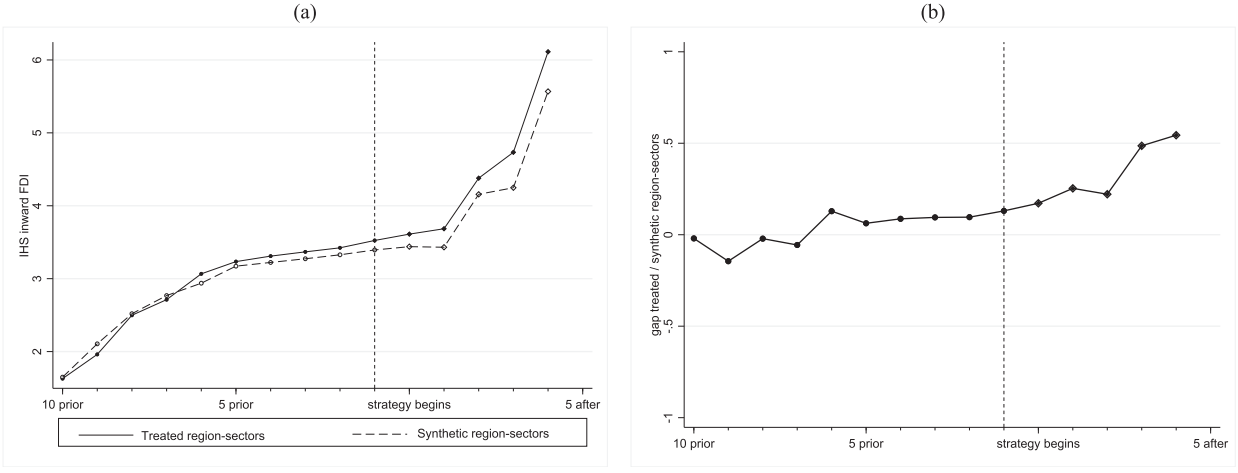

Fig. A5. Treated/synthetic region-sectors and estimated gap, 2013–2017. Figure (a): pooled treated/synthetic region-sectors by year before/during strategy. Dependent variable for synthetic control analysis: log cumulative FDI million dollars. Continuous line: treated region-sectors; dashed line: synthetic region-sectors. Circles: average pre-treatment values for treated (black) and synthetic (hollow) units by year pre-targeting. Diamonds: average treatment values for treated (black) and synthetic (hollow) units by year during targeting. Figure (b): gap between pooled treated region-sectors and synthetic controls. Circles: average pre-treatment gap by year pre-targeting; Diamonds: average treatment gap by year during targeting.

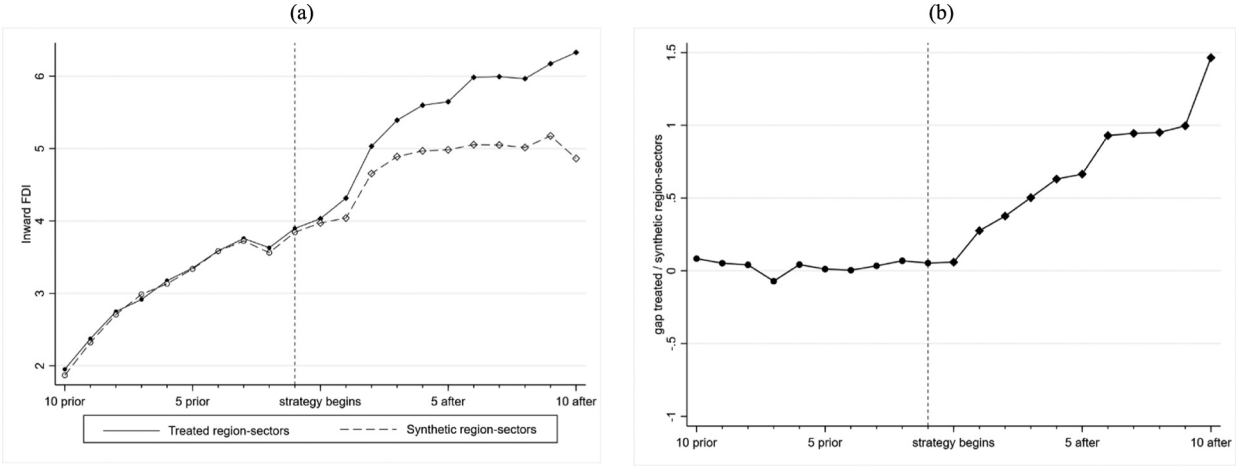

Fig. A6. Treated/synthetic region-sectors and estimated gap, 2003–2017 (excluding k-4 neighbours). Figure (a): pooled treated/synthetic region-sectors by year before/during strategy. Donor pool excludes k-4 nearest neighbouring regions of each treated regions-sector. Dependent variable for synthetic control analysis: log cumulative FDI million dollars. Continuous line: treated region-sectors; dashed line: synthetic region-sectors. Circles: average pre-treatment values for treated (black) and synthetic (hollow) units by year pre-targeting. Diamonds: average treatment values for treated (black) and synthetic (hollow) units by year during targeting. Figure (b): gap between pooled treated region-sectors and synthetic controls. Circles: average pre-treatment gap by year pre-targeting; Diamonds: average treatment gap by year during targeting.

Table A1
Descriptive statistics.

Data available:	Only national IPA			Both national and regional IPA					
Sample:	All regions			All regions			Less developed regions		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
FDI dummy	75,000	0.26	0.44	28,800	0.28	0.45	11,100	0.24	0.43
Million current $ FDI	75,000	26.70	162.3	28,800	28.42	125.7	11,100	24.39	126.8
FDI-related jobs	75,000	0.31	0.46	28,800	0.39	0.49	11,100	0.44	0.50
National IPA strategy	73,680	0.13	0.34	27,480	0.28	0.45	10,680	0.33	0.47
Regional IPA strategy	73,680	0.07	0.25	27,480	0.14	0.34	10,680	0.11	0.32
Regional strategy – selected sectors	73,680	0.06	0.24	27,480	0.15	0.36	10,680	0.21	0.41
Regional strategy – all sectors	75,000	81.01	570.0	28,800	85.06	379.3	11,100	96.05	483.9
FDI dummy – ‘serial investors’	75,000	0.09	0.29	28,800	0.12	0.32	11,100	0.11	0.31
Million current $ FDI – ‘serial investors’	75,000	0.36	1.23	28,800	0.50	1.44	11,100	0.44	1.36
FDI-related jobs – ‘serial investors’	75,000	0.48	1.58	28,800	0.65	1.83	11,100	0.61	1.82
FDI dummy – ‘occasional investors’	75,000	0.17	0.37	28,800	0.16	0.37	11,100	0.13	0.34
Million current $ FDI – ‘occasional investors’	75,000	0.63	1.56	28,800	0.59	1.50	11,100	0.52	1.43
FDI-related jobs – ‘occasional investors’	75,000	0.84	1.96	28,800	0.76	1.85	11,100	0.70	1.86
FDI dummy – EU companies	75,000	0.16	0.37	28,800	0.20	0.40	11,100	0.18	0.39
Million current $ FDI from EU companies	75,000	0.62	1.54	28,800	0.77	1.71	11,100	0.74	1.70
FDI-related jobs – EU companies	75,000	0.83	1.98	28,800	1.02	2.16	11,100	1.01	2.23
FDI dummy – non-EU companies	75,000	0.16	0.37	28,800	0.18	0.38	11,100	0.12	0.32
Million current $ FDI from non-EU companies	75,000	0.62	1.57	28,800	0.67	1.61	11,100	0.45	1.35
FDI-related jobs – non-EU companies	75,000	0.82	1.97	28,800	0.88	2.01	11,100	0.63	1.79
Log GDP per capita	53,780	9.92	0.56	26,880	9.93	0.57	10,360	9.40	0.47
Unemployment rate	64,440	9.28	5.34	28,680	11.47	6.43	11,100	13.74	6.52
Tertiary educated	64,980	5.10	1.12	28,720	5.18	1.16	11,100	5.05	0.99
Log population	64,200	14.30	0.95	28,800	14.35	1.00	11,100	14.34	0.88
Log population density	65,860	4.69	1.18	26,720	4.80	1.17	10,360	4.56	0.64
Log patent applications	40,600	3.48	1.61	18,380	3.44	1.55	6760	2.19	1.11

Table A2
Baseline results, FDI-related jobs as dependent variable.

	FDI-related jobs			
	(1)	(2)	(3)	(4)
National IPA strategy	0.0307			−0.136*
	(0.0504)			(0.0813)
Regional IPA strategy		0.197*	0.216*	0.205*
		(0.115)	(0.115)	(0.115)
Country-sector-year dummies			✓	
Region-year dummies	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓
Observations	74,923	27,441	27,441	27,441
Region-sectors	5000	1920	1920	1920
R-squared	0.587	0.602	0.645	0.602

Clustered standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Dependent variable: inverse hyperbolic sine jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Years after the end of targeting strategies excluded from sample.

Table A3
Dynamic baseline model.

	(1)	(2)	(3)	(4)
		Panel A: FDI dummy		
Lagged FDI dummy	−1.030***	−1.033***	−1.043***	−1.033***
	(0.00565)	(0.00902)	(0.00904)	(0.00902)
National IPA strategy	0.0126			−0.0183
	(0.00956)			(0.0152)
Regional IPA strategy		0.0504**	0.0434*	0.0515**
		(0.0241)	(0.0245)	(0.0242)
		Panel B: million $ FDI		
Lagged million $ FDI	−1.019***	−1.029***	−1.044***	−1.029***
	(0.00588)	(0.00947)	(0.00950)	(0.00947)
National IPA strategy	0.0514			−0.0601
	(0.0420)			(0.0688)
Regional IPA strategy		0.237**	0.226**	0.241**
		(0.0980)	(0.102)	(0.0981)
		Panel C: FDI-related jobs		
Lagged FDI-related jobs	−1.021***	−1.022***	−1.038***	−1.022***
	(0.00572)	(0.00919)	(0.00937)	(0.00919)
National IPA strategy	0.0439			−0.145*
	(0.0526)			(0.0816)
Regional IPA strategy		0.246**	0.245**	0.255**
		(0.120)	(0.123)	(0.120)
Country-sector-year dummies			✓	
Region-year dummies	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓
Observations	69,923	25,481	25,481	25,481
Region-sectors	5000	1920	1920	1920

Clustered standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Dependent variables: panel A: dummy variable for inward FDI towards region-sector in given year; panel B: inverse hyperbolic sine million $ inward FDI towards region-sector in given year; panel C: log jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Years after the end of targeting strategies excluded from sample.

Table A4
IPAs sector targeting vs. no sector targeting.

Dep. var.:	FDI dummy		million $ FDI		FDI-related jobs	
	(1)	(2)	(3)	(4)	(5)	(6)
Regional IPA – selected sectors	0.0484**	0.0487**	0.180**	0.185**	0.229**	0.234**
	(0.0189)	(0.0205)	(0.0772)	(0.0825)	(0.0983)	(0.103)
Regional IPA – all sectors	−0.0251	−0.0207	−0.0978	−0.0654	−0.139	−0.115
	(0.0237)	(0.0281)	(0.0918)	(0.103)	(0.127)	(0.146)
Lagged dependent variable		−1.032***		−1.031***		−1.022***
		(0.00915)		(0.00961)		(0.00943)
Country-sector-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓
Observations	27,441	25,481	27,441	25,481	27,441	25,481
Region-sectors	1920	1920	1920	1920	1920	1920
R-squared	0.562	0.575	0.601	0.577	0.618	0.574

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: dummy variable for inward FDI towards region-sector in given year (columns (1–2)), inverse hyperbolic sine million $ inward FDI towards region-sector in given year (columns (3–4), log jobs created by FDI investment in region-sector in given year (columns (5–6)). Treatment dummy variables: 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA; 'Regional IPA – selected sectors' takes value 1 from the beginning of a strategy if a regional strategy is only targeting some sectors. 'Regional IPA – all sectors' takes value 1 from the beginning of a strategy for all sectors of a region if a regional strategy targets all sectors. Years after the end of targeting strategies excluded from sample.

Table A5
More and less developed regions, FDI-related jobs as dependent variable.

	Less developed regions			Advanced regions		
	(1)	(2)	(3)	(4)	(5)	(6)
National IPA strategy			−0.174			−0.118
			(0.179)			(0.0929)
Regional IPA strategy	0.535**	0.706***	0.552**	0.0698	0.0468	0.0757
	(0.240)	(0.255)	(0.241)	(0.128)	(0.130)	(0.128)
Country-sector-year dummies		✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓
Observations	10,680	10,680	10,680	16,761	16,761	16,761
Region-sectors	1920	1920	1920	1920	1920	1920
R-squared	0.551	0.605	0.552	0.642	0.693	0.642

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variable: inverse hyperbolic sine jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average); Advanced regions: all other regions in sample. Years after the end of targeting strategies excluded from sample.

Table A6
More and less developed regions, dynamic model.

	Less developed regions			Advanced regions		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: FDI dummy						
Lagged FDI dummy	−1.028***	−1.044***	−1.028***	−1.039***	−1.046***	−1.039***
	(0.0151)	(0.0162)	(0.0151)	(0.0112)	(0.0111)	(0.0112)
National IPA strategy			−0.00860			−0.0186
			(0.0340)			(0.0175)
Regional IPA strategy	0.115**	0.146***	0.116**	0.0262	0.00904	0.0271
	(0.0498)	(0.0508)	(0.0500)	(0.0272)	(0.0284)	(0.0273)
Panel B: million $ FDI						
Lagged million $ FDI	−1.024***	−1.038***	−1.024***	−1.033***	−1.052***	−1.033***
	(0.0154)	(0.0171)	(0.0154)	(0.0121)	(0.0117)	(0.0121)
National IPA strategy			−0.0601			−0.0815
			(0.0688)			(0.0798)
Regional IPA strategy	0.539***	0.600***	0.541***	0.122	0.0735	0.126
	(0.203)	(0.213)	(0.204)	(0.110)	(0.119)	(0.110)
Panel C: FDI-related jobs						
Lagged FDI-related jobs	−1.014***	−1.031***	−1.014***	−1.029***	−1.047***	−1.029***
	(0.0151)	(0.0166)	(0.0151)	(0.0115)	(0.0111)	(0.0115)
National IPA strategy			−0.152			−0.143
			(0.178)			(0.0935)
Regional IPA strategy	0.610**	0.750***	0.625**	0.112	0.0645	0.119
	(0.252)	(0.266)	(0.252)	(0.133)	(0.140)	(0.133)
Country-sector-year dummies		✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓
Observations	9940	9940	9940	15,541	15,541	15,541
Region-sectors	1920	1920	1920	1920	1920	1920

Clustered standard errors in parentheses. *** p < 0.01, ** $p < 0.05$, * $p < 0.1$. Dependent variables: panel A: dummy variable for inward FDI towards region-sector in given year; panel B: inverse hyperbolic sine million $ inward FDI towards region-sector in given year; panel C: inverse hyperbolic sine jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average); Advanced regions: all other regions in sample. Years after the end of targeting strategies excluded from sample.

Table A7
Baseline results, control for EU Regional Policy (full sample).

	FDI dummy				million $ FDI			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
National IPA strategy	0.00522			−0.0137	0.00256			−0.0578
	(0.0109)			(0.0150)	(0.0480)			(0.0679)
Regional IPA strategy		0.0393*	0.0384*	0.0401*		0.201**	0.201**	0.204**
		(0.0221)	(0.0223)	(0.0222)		(0.0930)	(0.0940)	(0.0931)
EU Regional Policy	0.00959**	0.00611	0.00142	0.00595	0.0539**	0.0180	−0.00387	0.0173
	(0.00474)	(0.00629)	(0.0109)	(0.00628)	(0.0210)	(0.0290)	(0.0477)	(0.0290)
Country-sector-year dummies			✓				✓	
Region-year dummies	✓	✓	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓	✓	✓
Observations	61,723	27,441	27,441	27,441	61,723	27,441	27,441	27,441
Region-sectors	4120	1920	1920	1920	4120	1920	1920	1920
R-squared	0.527	0.546	0.592	0.546	0.577	0.584	0.630	0.584

Clustered standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Dependent variables: dummy variable for inward FDI towards region-sector in given year (columns (1–3)), inverse hyperbolic sine million $ inward FDI towards region-sector in given year (columns (4–6)). Treatment dummy variables: 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country. EU Regional Policy: Inverse hyperbolic sine thousand € of annual Cohesion Policy expenditures in region and sector. 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Observations of Albania, Norway, and Turkey are not included in the sample since they were not part of the European Union during 2003–2017 and did not benefit from Cohesion Policy.

Table A8
Less developed / advanced regions, control for EU Regional Policy.

	FDI dummy						million $ FDI					
Sample:	Less developed regions			Advanced regions			Less developed regions			Advanced regions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
National IPA strategy			−0.0133			−0.0108			−0.0451			−0.0698
			(0.0333)			(0.0173)			(0.147)			(0.0788)
Regional IPA strategy	0.104**	0.138***	0.105**	0.0152	0.00545	0.0158	0.446**	0.531***	0.450**	0.106	0.0688	0.109
	(0.0452)	(0.0455)	(0.0455)	(0.0250)	(0.0257)	(0.0250)	(0.189)	(0.199)	(0.190)	(0.105)	(0.110)	(0.105)
EU Regional Policy	0.00405	−0.0104	0.00382	0.00880	0.00797	0.00880	−0.0244	−0.0757	−0.0252	0.0454	0.0212	0.0454
	(0.0099)	(0.0183)	(0.00989)	(0.0128)	(0.0161)	(0.0128)	(0.0463)	(0.0812)	(0.0463)	(0.0607)	(0.0720)	(0.0607)
Country-sector-year dummies		✓			✓			✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	10,680	10,680	10,680	16,761	16,761	16,761	10,680	10,680	10,680	16,761	16,761	16,761
Region-sectors	740	740	740	1180	1180	1180	740	740	740	1180	1180	1180
R-squared	0.506	0.569	0.506	0.573	0.629	0.573	0.530	0.589	0.530	0.620	0.675	0.620

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: dummy variable for inward FDI towards region-sector in given year (columns (1–3)), inverse hyperbolic sine million $ inward FDI towards region-sector in given year (columns (4–6)). Treatment dummy variables: 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country. 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. EU Regional Policy: inverse hyperbolic sine thousand € annual Cohesion Policy expenditures in region and sector. Less developed regions: EU regions in our sample for which information is available for both national and regional IPAs, classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). Advanced regions: EU regions in our sample for which information is available for both national and regional IPAs, not classified as 'Less developed' by the EU.

Table A9
FDI heterogeneity, FDI-related jobs as dependent variable.

	FDI-related jobs					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: FDI sector type	Knowledge-intensive sectors			Low knowledge-intensive sectors		
National IPA strategy			−0.0692			−0.321
			(0.296)			(0.213)
Regional IPA strategy	0.929**	1.278***	0.930**	0.171	0.253	0.200
	(0.438)	(0.473)	(0.439)	(0.339)	(0.335)	(0.340)
Observations	3738	3738	3738	6942	6942	6942
Region-sectors	259	259	259	481	481	481
Panel B: investor type	Serial investors			Occasional investors		
National IPA strategy			−0.0467			−0.110
			(0.130)			(0.138)
Regional IPA strategy	0.0622	0.254	0.0668	0.463**	0.440*	0.474**
	(0.209)	(0.200)	(0.212)	(0.224)	(0.236)	(0.224)
Observations	10,680	10,680	10,680	10,680	10,680	10,680
Region-sectors	740	740	740	740	740	740
Panel C: FDI origin	EU investors			Non-EU investors		
National IPA strategy			−0.0747			−0.178
			(0.177)			(0.131)
Regional IPA strategy	0.311	0.458*	0.319	0.413*	0.420*	0.431*
	(0.225)	(0.248)	(0.227)	(0.238)	(0.236)	(0.238)
Observations	10,680	10,680	10,680	10,680	10,680	10,680
Region-sectors	740	740	740	740	740	740
Country-sector-year dummies		✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variable: inverse hyperbolic sine FDI-related jobs (*panel B*: from either larger – columns (1)–(3) – or smaller – columns (4)–(6) – investor; *panel C*: from either EU countries – columns (1–3) – or non-EU countries – columns (4–6)) towards region-sector in given year;. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Sample of less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). High-knowledge intensive sectors: 'Biotechnology', 'Computers and electronic equipment', 'Software', 'Machinery', 'Transport and telecommunications', 'Vehicles and other transport equipment', 'Financial intermediation'. Serial investors: companies having performed more than 10 FDI over 2003–2017 in our sample; Occasional investors: companies having performed 10 or less FDI over 2003–2017 in our sample. EU investors: companies whose headquarter is in the EU; non-EU investors: companies whose headquarter is outside the EU. Years after the end of IPA targeting strategies excluded from sample.

Table A10
More and less knowledge intensive, dynamic model (less developed regions).

	Knowledge-intensive sectors			Low knowledge-intensive sectors		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: FDI dummy						
Lagged FDI dummy	−1.047***	−1.046***	−1.047***	−1.017***	−1.044***	−1.017***
	(0.0283)	(0.0309)	(0.0283)	(0.0180)	(0.0194)	(0.0180)
National IPA strategy			0.0606			−0.0500
			(0.0596)			(0.0412)
Regional IPA strategy	0.150*	0.207***	0.150*	0.0740	0.0973	0.0790
	(0.0810)	(0.0779)	(0.0808)	(0.0718)	(0.0728)	(0.0724)
Panel B: million $ FDI						
Lagged million $ FDI	−1.013***	−1.006***	−1.013***	−1.026***	−1.051***	−1.026***
	(0.0294)	(0.0338)	(0.0294)	(0.0185)	(0.0201)	(0.0185)
National IPA strategy			0.0316			−0.104
			(0.267)			(0.176)
Regional IPA strategy	0.866**	1.048***	0.865**	0.341	0.337	0.351
	(0.361)	(0.383)	(0.361)	(0.281)	(0.277)	(0.282)
Panel C: FDI-related jobs						
Lagged FDI-related jobs	−1.012***	−1.010***	−1.012***	−1.013***	−1.042***	−1.014***
	(0.0283)	(0.0319)	(0.0283)	(0.0183)	(0.0199)	(0.0183)
National IPA strategy			−0.0660			−0.266
			(0.302)			(0.212)
Regional IPA strategy	0.955**	1.271***	0.956**	0.304	0.341	0.331
	(0.451)	(0.474)	(0.451)	(0.354)	(0.352)	(0.354)
Country-sector-year dummies		✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓
Observations	3479	3479	3479	6461	6461	6461
Region-sectors	1920	1920	1920	1920	1920	1920

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: panel A: dummy variable for inward FDI towards region-sector in given year; panel B: inverse hyperbolic sine million $ inward FDI towards region-sector in given year; panel C: inverse hyperbolic sine jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Sample of less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). High-knowledge-intensive sectors: 'Biotechnology', 'Computers and electronic equipment', 'Software', 'Machinery', 'Transport and telecommunications', 'Vehicles and other transport equipment', 'Financial intermediation'. Years after the end of targeting strategies excluded from sample.

Table A11
Serial and occasional investors (less developed regions) – dynamic model.

	Serial investors			Occasional investors		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: FDI dummy						
Lagged FDI dummy	−1.040***	−1.059***	−1.040***	−1.037***	−1.043***	−1.037***
	(0.0159)	(0.0164)	(0.0159)	(0.0146)	(0.0160)	(0.0145)
National IPA strategy			−0.00570			−0.00297
			(0.0247)			(0.0269)
Regional IPA strategy	0.0165	0.0517	0.0170	0.0990**	0.0940**	0.0993**
	(0.0430)	(0.0437)	(0.0436)	(0.0451)	(0.0447)	(0.0451)
Panel B: million $ FDI						
Lagged million $ FDI	−1.043***	−1.063***	−1.043***	−1.017***	−1.020***	−1.017***
	(0.0171)	(0.0174)	(0.0171)	(0.0171)	(0.0184)	(0.0171)
National IPA strategy			0.0444			−0.0257
			(0.0978)			(0.125)
Regional IPA strategy	0.0561	0.155	0.0518	0.437**	0.416**	0.439**
	(0.198)	(0.190)	(0.200)	(0.196)	(0.201)	(0.197)
Panel C: FDI-related jobs						
Lagged FDI-related jobs	−1.040***	−1.061***	−1.040***	−1.006***	−1.009***	−1.006***
	(0.0170)	(0.0176)	(0.0170)	(0.0156)	(0.0170)	(0.0156)
National IPA strategy			−0.0487			−0.0825
			(0.130)			(0.143)
Regional IPA strategy	0.121	0.266	0.125	0.466**	0.455*	0.474**
	(0.221)	(0.227)	(0.223)	(0.229)	(0.242)	(0.230)
Country-sector-year dummies		✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓
Observations	9940	9940	9940	9940	9940	9940
Region-sectors	740	740	740	740	740	740

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: panel A: dummy variable for inward FDI (from either larger – columns (1–3) – or smaller – columns (4–6) – investor) towards region-sector in given year; panel B: inverse hyperbolic sine million $ inward FDI towards region-sector in given year; panel C: inverse hyperbolic sine jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Sample of less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). Larger investors: companies having performed more than 10 FDI over 2003–2017 in our sample; Smaller investors: companies having performed 10 or less FDI over 2003–2017 in our sample.

Table A12
EU and non-EU investors (less developed regions) – dynamic model.

	EU investors			Non-EU investors		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: FDI dummy						
Lagged FDI dummy	−1.017***	−1.033***	−1.017***	−1.067***	−1.072***	−1.067***
	(0.0138)	(0.0143)	(0.0138)	(0.0153)	(0.0165)	(0.0154)
National IPA strategy			0.00586			−0.0275
			(0.0328)			(0.0292)
Regional IPA strategy	0.0801*	0.0993**	0.0796*	0.0885	0.0878	0.0912
	(0.0457)	(0.0487)	(0.0460)	(0.0571)	(0.0569)	(0.0572)
Panel B: million $ FDI						
Lagged million $ FDI	−1.016***	−1.028***	−1.016***	−1.063***	−1.067***	−1.063***
	(0.0145)	(0.0158)	(0.0145)	(0.0177)	(0.0187)	(0.0177)
National IPA strategy			0.0522			−0.132
			(0.146)			(0.115)
Regional IPA strategy	0.293	0.332*	0.288	0.379*	0.351*	0.392*
	(0.185)	(0.198)	(0.186)	(0.210)	(0.204)	(0.209)
Panel C: FDI-related jobs						
Lagged FDI-related jobs	−1.013***	−1.028***	−1.013***	−1.052***	−1.056***	−1.052***
	(0.0145)	(0.0154)	(0.0145)	(0.0168)	(0.0184)	(0.0168)
National IPA strategy			−0.0431			−0.170
			(0.177)			(0.142)
Regional IPA strategy	0.385	0.477*	0.389	0.466*	0.474*	0.483*
	(0.239)	(0.264)	(0.239)	(0.269)	(0.274)	(0.270)
Country-sector-year dummies		✓			✓	
Region-year dummies	✓	✓	✓	✓	✓	✓
Sector-year dummies	✓	✓	✓	✓	✓	✓
Region-sector dummies	✓	✓	✓	✓	✓	✓
Observations	9940	9940	9940	9940	9940	9940
Region-sectors	740	740	740	740	740	740

Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: panel A: dummy variable for inward FDI (from either EU companies – columns (1–3) – or non-EU companies – columns (4–6) – investor) towards region-sector in given year; panel B: inverse hyperbolic sine million $ inward FDI towards region-sector in given year; panel C: inverse hyperbolic sine jobs created by FDI investment in region-sector in given year. 'National IPA strategy' takes value 1 from the beginning of a strategy of a national IPA for all regions of a country; 'Regional IPA strategy' takes value 1 from the beginning of a strategy of a regional IPA. Sample of less developed regions: regions classified as 'Less developed' for EU funds allocation (GDP pc < 75% EU average). EU investors: companies whose headquarter is in the EU; non-EU investors: companies whose headquarter is outside the EU.

Table A13
Descriptive statistics, treated and donor region-sectors.

Variable	Treated region-sectors				Donor pool region-sectors	
	2003–2017		Pre-treatment years		2003–2017	
	Obs	Mean	Obs	Mean	Obs	Mean
Log FDI (cumulative stock)	5145	4.11	1492	2.87	19,830	2.63
Log FDI (flow)	5145	1.78	1492	2.11	19,830	0.90
Log FDI-related jobs	5145	2.25	1492	2.59	19,830	1.15
FDI dummy	5145	0.42	1492	0.32	19,830	0.21
log GDP pc	4802	10.06	1480	10.02	18,508	9.94
Tertiary educated	5093	0.25	1466	0.21	19,802	0.24
Unemployment rate	5093	10.61	1466	9.56	19,762	12.14
Log population	5145	14.64	1492	14.53	19,830	14.16
Log population density	4750	4.96	1428	4.60	18,840	4.75
Log patent applications	3417	3.89	1277	3.86	12,419	3.33

Table A14
Number of treated/donor region-sectors by year and treated/synthetic by period.

A14.1 Treated by year		A14.2 Observations for pooled data by period	
Year	Treated region-sectors	Year before / during strategy	Treated and synthetic region-sectors
2005	18	−14	5
2006	0	−13	31
2007	7	−12	48
2008	9	−11	65
2009	3	−10	72
2010	2	−9	91
2011	7	−8	96
2012	22	−7	98
2013	10	−6	101
2014	20	−5	109
2015	21	−4	116
2016	30	−3	116
2017	6	−2	131
Total	155	−1	131
		0	131
		1	126
		2	100
		3	83
		4	66
		5	59
		6	40
		7	35
		8	33
		9	30
		10	22
		11	15
		12	15

Table A15
Number of treated/donor region-sectors by year and treated/synthetic by period (less developed regions).

A15.1 Treated by year		A15.2 Observations for pooled data by period	
Year	Treated region-sectors	Year before / during strategy	Treated and synthetic region-sectors
2005	0	−12	5
2006	0	−11	15
2007	2	−10	15
2008	1	−9	16
2009	2	−8	22
2010	2	−7	24
2011	7	−6	24
2012	1	−5	25
2013	0	−4	27
2014	14	−3	27
2015	6	−2	27
2016	1	−1	27
2017	0	0	27
Total	36	1	27
		2	27
		3	22
		4	12
		5	12
		6	11
		7	5
		8	3
		9	3
		10	2

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jinteco.2021.103497.

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