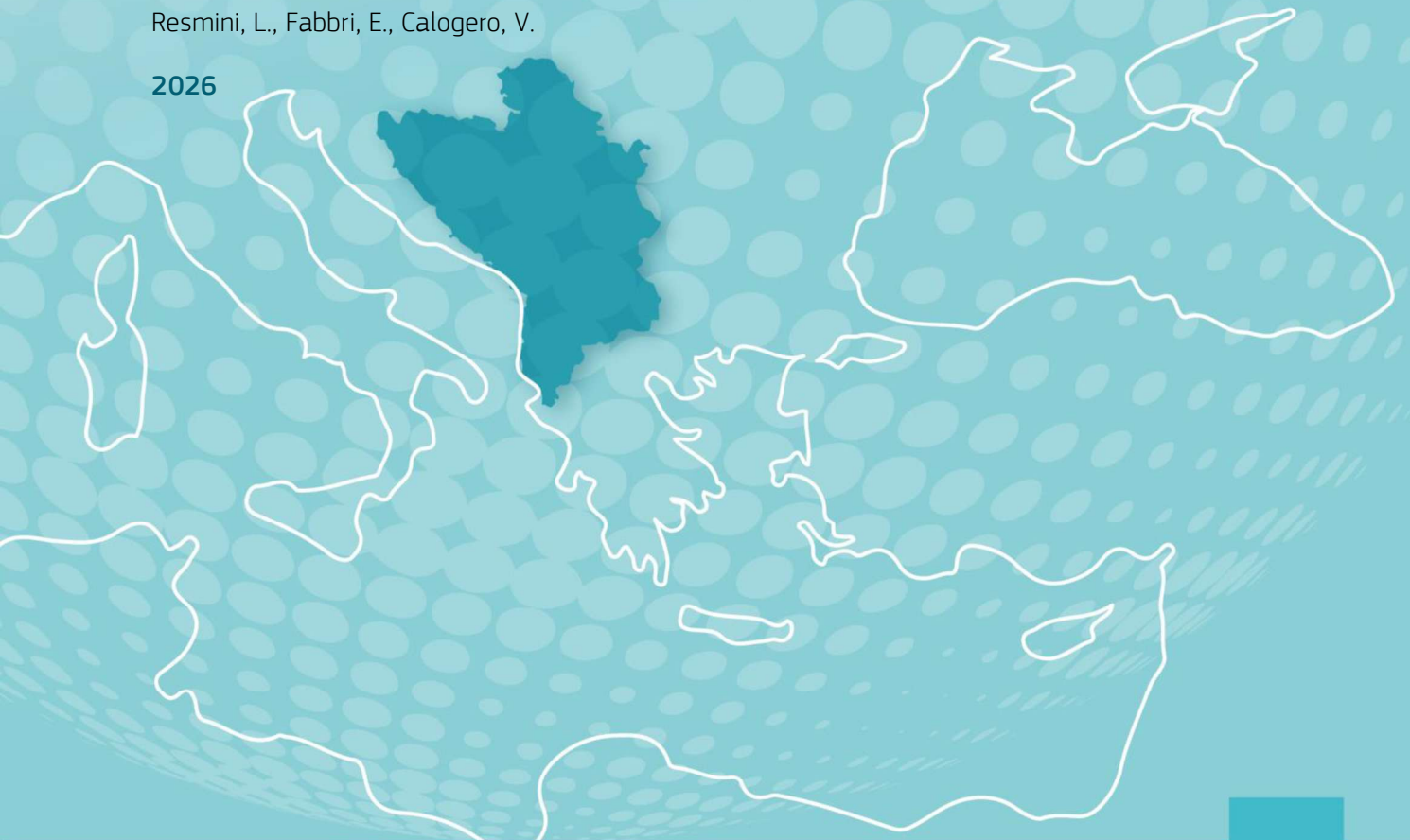


Western Balkans participation in GVCs and FDI potential in the context of Smart Specialisation

Resmini, L., Fabbri, E., Calogero, V.

2026



SMART SPECIALISATION



This document is a publication by the European Commission. The contents of this publication do not necessarily reflect the position or opinion of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Contact information

Name: Emanuele Fabbri

Email: emanuele.fabbri@ec.europa.eu

JRC145544

EUR 40633

PDF ISBN 978-92-68-37256-2 ISSN 1831-9424 doi:10.2760/7714353 KJ-01-26-060-EN-N

Luxembourg: Publications Office of the European Union, 2026

© European Union, 2026



The reuse policy of the European Commission documents is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Unless otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

For any use or reproduction of photos or other material that is not owned by the European Union permission must be sought directly from the copyright holders.

Cover design: Raffaella Manfredi and Laura Spirito

How to cite this report: Resmini, L., Fabbri, E. and Calogero, V., *Western Balkans participation in GVCs and FDI potential in the context of Smart Specialisation*, Publications Office of the European Union, Luxembourg, 2026, <https://data.europa.eu/doi/10.2760/7714353>, JRC145544.

Contents

Abstract	3
Executive summary	4
Policy context	4
Key conclusions	4
Main findings	5
Related and future Joint Research Centre work	5
1. Introduction	6
2. Measurement issues and data source	8
3. Inward FDI in the Western Balkan economies: descriptive evidence	10
3.1. Trends over time	10
3.2. Sectoral breakdown	14
3.3. Functional specialisation in GVCs	17
3.4. Foreign investments and S3 strategies	22
3.5. Key findings	27
4. The determinants of FDI: econometric analysis	29
4.1. Variables	29
4.2. Methodological approach	30
4.3. Baseline results: extensive vs intensive margins	31
4.4. The role of the integration process	36
4.5. Drivers of S3-Aligned Foreign Direct Investment	37
4.6. Robustness Checks	39
5. Conclusions	41
References	43
List of boxes	45
List of figures	45
List of tables	46
Annexes	47
Annex 1. Ownership networks	47
Annex 2. Validation of the data	47

Annex 3. Categorisation of NACE 4-digit sectors in macro-sectors.....	48
Annex 4. Categorisation of NACE sectors in value chain functions.....	50
Annex 5. From NACE sectors to S3 priorities/enablers.....	51
Annex 6. FDI by S3 priorities/enablers and function in GVCs.....	53
Annex 7. Multinomial CRE Specification for S3 Priority Alignment.....	55
Annex 8. Robustness.....	59

Abstract

This study examines the position of Western Balkan economies within global value chains (GVCs) and their capacity to attract foreign direct investment (FDI), linking the analysis with the broader framework of Smart Specialisation as a key pillar of the EU accession process and a strategic instrument for strengthening regional innovation ecosystems and deepening integration into the European Research Area. The results point to a steady increase in FDI between 2007 and 2022, accompanied by a growing role for services and knowledge-intensive activities, alongside differentiated trajectories of functional upgrading. Across multiple econometric specifications, the analysis shows that: (i) economic size, institutional proximity, EU integration and social connectedness are key drivers of international investment; (ii) obtaining EU candidate status increases FDI from EU countries by approximately 25-35% compared with non-EU sources; and (iii) while overall alignment with Smart Specialisation domains remains limited, it is more strongly driven by EU investors and reinforced by host-country R&D intensity and social connectedness. From a policy perspective, these findings suggest that more sophisticated economies – those more deeply embedded institutionally and relationally – are better positioned to attract strategic investment and support processes of functional upgrading and leverage Smart Specialisation as a mechanism for convergence within the EU integration process.

Executive summary

Over the past decade, Smart Specialisation (S3) has become a key pillar of EU innovation and industrial policy, providing a place-based framework to strengthen innovation systems, foster industrial diversification, and support structural transformation. Initially developed within cohesion policy, it has been extended to enlargement countries to strengthen innovation ecosystems and promote convergence with EU standards.

By 2018, all Western Balkan economies had committed to S3, and although progress varies, most are now implementing their strategies and developing priority domains. Within the broader EU enlargement context - which emphasises competitiveness, structural reforms, and integration into European and global value chains - multinational enterprises and foreign direct investment play a central role in driving growth, technology transfer, and functional upgrading.

Against this background, this report analyses how Western Balkans participate in Global Value Chains and attract foreign investment, using firm-level data and a gravity-based econometric framework. Key concepts include functional specialisation, Smart Specialisation (S3), institutional proximity, and threshold effects in regulatory quality. The methodology combines descriptive evidence and advanced econometric modelling to assess both FDI drivers and alignment with S3 priorities.

Policy context

The report supports the EU's enlargement agenda, cohesion policy, industrial strategy, and Smart Specialisation framework by providing new evidence on how Western Balkans attract and position foreign investments within GVCs. It was prepared for the European Commission's Joint Research Centre to inform policymaking on innovation, competitiveness, and regional development. The findings are relevant to ongoing debates on EU integration, the implementation of S3 in countries undergoing enlargement, and the design of policies related to FDI. They highlight structural vulnerabilities, institutional thresholds, and areas where policy alignment with EU standards can amplify investment upgrading. The insights also extend beyond enlargement, informing policies on industrial diversification, place-based innovation strategies, and GVC resilience.

Key conclusions

The findings have several policy-relevant implications:

- While FDI inflows to the Western Balkans have increased steadily, they remain concentrated in low-value activities. Policies should therefore promote upgrading by strengthening innovation systems, human capital, and the institutional environment that enables more knowledge-intensive investment.
- EU candidate status emerges as a powerful policy lever: its significant impact on EU-origin foreign investment confirms the importance of credible accession pathways and regulatory convergence. This reinforces the need for sustained reforms aligned with the EU acquis.
- Alignment with Smart Specialisation priorities is still limited, suggesting that existing S3 processes require stronger integration with industrial and investment policies. The identified institutional threshold for attracting S3-aligned FDI implies that incremental reforms may be insufficient: overcoming institutional traps will require substantial, coordinated improvements in regulatory quality and administrative capacity.

- New vulnerabilities arise from the uneven distribution of functional specialisation across the region, which may expose economies to external shocks or lock them into low-value segments of GVCs. Policies should consider diversification strategies, targeted incentives for dual-priority investments, and regional coordination to avoid harmful competition in shared S3 domains.
- Remaining uncertainties concern the long-term evolution of multinational strategies, the resilience of WBs to geopolitical shifts, and the capacity of domestic firms to benefit from spillovers. Addressing these gaps will be essential to refine future policy interventions and support sustainable, innovation-driven integration into European and global value chains.

Main findings

The main findings are linked with FDI trends, functional specialisation, determinants, and S3 alignment:

- FDI Trends in the Western Balkans - FDI inflows grew steadily between 2007 and 2022, with Serbia attracting nearly 70% of all foreign-owned firms. Service activities dominate, particularly trade, logistics, and knowledge-intensive services, while manufacturing FDI remains concentrated in low- and medium-tech industries.
- Functional Specialisation and Upgrading - Around half of foreign-owned firms operate in production-related activities, mainly intermediate production. Functional upgrading processes are underway, and new functional specialisation may emerge in the near future, according to the WBs' capacity to attract FDI in the high-value-added segments of the value chain.
- Determinants of FDI - Econometric analysis confirms the importance of economic mass, institutional proximity, regulatory integration, and social connectedness. EU candidate status increases FDI from EU investors by 25-35%, whereas SAAs have no comparable effect.
- S3 Alignment and Institutional Thresholds - Alignment of FDI with S3 priorities remains limited, but EU investors are significantly more likely to target priority sectors. A non-linear regulatory quality effect reveals a threshold above which countries attract dual-priority S3 investments, indicating potential institutional traps.

Related and future Joint Research Centre work

This work complements JRC research on the implementation of Smart Specialisation, GVC participation, and regional innovation dynamics in enlargement countries. Future work will refine the econometric analysis, explore sector-specific vulnerabilities, and support policy design for EU integration and industrial upgrading.

1. Introduction

Over the past decade, Smart Specialisation (S3) has become a core pillar of EU innovation and industrial policy, providing a place-based framework to strengthen innovation systems, support industrial diversification, and promote structural transformation. Originally developed within the cohesion policy, it has progressively been extended to EU enlargement countries, supporting innovation ecosystems and convergence with EU standards.

In particular, in the Western Balkans by 2018 all economies had committed to Smart Specialisation, and while progress varies across the region, most are now implementing their strategies and developing their priority domains.

Within the broader framework of EU enlargement policy - which increasingly emphasises competitiveness, structural reforms, and deeper integration into European and global value chains (GVCs) - multinational enterprises (MNEs) and foreign direct investment (FDI) play a crucial role as drivers of growth, technology transfer, and functional upgrading.

In this context, this report provides a preliminary exploration of the positioning of Western Balkan economies (WBs) – Albania (AL), Bosnia and Herzegovina (BA), Kosovo* (XK), Montenegro (ME), North Macedonia (MK), and Serbia (RS) – in the Global Value Chains (GVCs) and delves deeper into the FDI attractiveness of the region, at the sectoral level, with a special focus on the identified S3 or specialisation domains. More specifically, the following research questions are addressed: What is the position of WBs in GVCs? How attractive are WBs in terms of FDI? Are participation in GVCs and FDI attractiveness functional to their identified (or to be identified) S3 domains?

Over the past few decades, the emergence of GVCs has led to a more granular international division of labour (Stollinger, 2021; Timmer et al., 2019). Geographically dispersed production processes for manufactured goods have spread across many locations, according to their specialisation and the availability of specific or economically convenient local resources. Generally speaking, the production phases, particularly the most labour-intensive ones, tend to be located in places with lower wage levels, while the company's headquarters remain in its home country. Product marketing and distribution occur in (proximity to) the final consumer market, while the phases pertaining to the development of new products may be offshored to locations with advanced technological and knowledge-creating capabilities. Therefore, GVCs offer new opportunities to countries seeking participation in the global economy, as they need to be specialised in a specific stage of the production process rather than in the production of the entire final good. This implies that countries engage differently in GVCs. On the one hand, high-income countries tend to be in high-value-added stages, like R&D and product design, and represent the final markets for goods and services. Lower- and middle-income countries, on the other hand, focus on stages of the value chain that require lower skills and less value added, such as assembly or the production of parts and components. Upgrading processes may occur, implying both movement along the chain and upward movement of the chain (Pleticha, 2021).

GVCs are often created and exploited by Multinational Enterprises (MNEs) to improve their cost-cutting efficiency and to strengthen their competitiveness. They function as networks and carry out different stages of production process through their subsidiaries or via independent suppliers, i.e., on an intra-firm or arm's-length basis. In other words, MNEs manage the chain's value addition

* This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

and distribution, and with their investment decisions, affect where GVCs are established. Moreover, repeated interactions within the networks and the knowledge that results from them open the doors for improvements, which may have significant effects on the socioeconomic systems that the businesses involved in global production networks are a part of.

In the WBs, these dynamics can occur to a relatively significant extent, especially in smaller economies where local systems may express FDI attractiveness due to the lower cost of production factors (e.g., labour), and where the presence of multinational enterprises can exert a significant impact on national growth and productivity dynamics. At the same time, the lack of adequate skills and capabilities can hamper FDI flows and divert them towards industries with lower added value and development opportunities.

These challenges are intertwined with those posed by the EU accession process in general, and particularly by the transition towards a knowledge-based economy through the implementation of the Smart Specialisation Strategy (S3). Smart Specialisation is a place-based approach to economic development and innovation policies, based on the capacity of an economic system to focus on those sectors or economic domains embedded in the region/country and related to its existing strengths, so as to develop a competitive advantage and diversify in those domains (Deegan et al., 2021; Marrocu et al., 2020; Radovanović et al., 2024). All WB economies are currently working on advancing their innovation systems through the adoption of smart specialisation processes. Thus, promoting foreign investment in S3 domains or in specific areas of specialisation may enhance sustainable growth pathways and upgrading processes within GVCs.

This study aims to disentangle these issues. The study begins by discussing measurement issues (Section 2); it then presents new descriptive evidence on inward FDI in each Western Balkan economy, covering countries of origin, target industries, functional specialisation within GVCs, and S3 domains (Section 3). Based on this preliminary descriptive evidence, Section 4 empirically investigates the main drivers of inward FDI in the WBs, distinguishing factors that attract new investors from those that stimulate existing investors to further expand their presence in the region. Section 5 concludes by discussing the main policy implications of the findings and future lines of research.

2. Measurement issues and data source

The literature has developed two empirical approaches to measuring countries' engagement in GVCs. At the macro level, researchers rely on the concept of trade in value added, which is a statistical measure of the value a country adds to a product at each stage of its global production chain. Countries can participate in GVCs by engaging in backward and/or forward linkages. Backward participation refers to the value added contained in parts and components that a country imports from abroad, while forward participation counts the domestic value added produced by a country and embedded in its exports. An overall indicator of participation in GVCs considers both backward and forward dimensions. Operationally, it is the sum of backward and forward value-added trade, expressed as a share of total gross exports (Los et al., 2015; Johnson and Noguera, 2021; Timmer et al., 2015; Koopman et al., 2012).

At the micro level, researchers focus on how importing is connected to exporting at the firm level, and how multinational firms organize their production networks (e.g., Johnson, 2018). Trade firm-level data, however, are barely available across countries, and quite difficult to collect for a large sample of firms. Usually, they are collected from qualitative surveys at the country level, not always comparable with each other. A related growing literature examines the international activities of multinational firms to investigate the position, in terms of functional specialisation, and the intensity of participation in GVCs of countries and regions hosting such activities (Stollinger, 2019, Ascani et al., 2020; Resmini et al., 2024, Coveri et al., 2025). The underlying idea of this approach is that MNEs, through their foreign activities, determine where each task in the production process should be performed. Therefore, tracing ownership linkages between the parent house and its subsidiaries abroad provides information on the location of different stages of the production process and the geographical spread of GVCs driven by MNEs. Moreover, the activities performed by each subsidiary abroad indicate the firm's functional specialisation within the global production network. Thus, by aggregating data at - country and industry levels, it is possible to have a proxy for the functional specialisation of each country within the production network. Operationally, this approach implies first geocoding parent houses and affiliates and then counting the number of subsidiaries controlled by each parent company.

Although widely used in the empirical literature on GVCs and FDI, both approaches have some limitations. Input-output tables are published irregularly, often with long lags, and are available for only a select number of countries. Moreover, they are barely comparable across countries because of differences in computational years, as well as in technical characteristics, such as sector classifications. To overcome potential concordance issues, input/output tables have been constructed at a very high level of aggregation, covering on average 40-50 industries only (Johnson, 2018; Cigna et al., 2022).

Measures based on MNEs' production networks, on the other hand, can be computed at very disaggregated geographical and sectoral levels. However, they capture only partially the pervasiveness of GVCs, as they exclude arm's-length relations and assign the same weight to each firm belonging to the network.

Given the unavailability of input/output tables for WB economies, in the present study, we adopt the microeconomic approach. Indeed, at the core of our analysis are firm-level data from the Orbis dataset, a highly recognised, comprehensive, and reliable source of global corporate performance tracking companies over time.¹ More specifically, we utilize geolocated data on foreign-owned firms in the WBs from 2007 to 2022 to track patterns of inward FDI. Then, by using the Orbis identifier, we link each foreign-controlled company to its parent firm, to have a clear idea of the country of origin of foreign investors. This approach enables focusing on key actors in GVCs, i.e., MNEs and their network of foreign subsidiaries (Crescenzi and Harman, 2022), an invaluable advantage with respect to the macroeconomic approach, given the objective of the study. Ultimately, we are left with an operational sample of approximately 250,000 foreign-controlled companies, observed at both country and industry (NACE 4-digit) levels. A comprehensive description of our ownership mapping methodology and data validation strategy is provided in Annexes 1 and 2, respectively.

For the identification of functional specialisation patterns, we rely on information about host economies. In particular, an economy's specialisation in a specific value chain function is determined by the number of foreign-controlled firms that serve this function. To this purpose, we map the Nace 4-digit sectors of activity of foreign controlled firms operating in each WB economy into five groups of value chain functions – headquarters services, R&D and related activities, production, distribution and logistics, and marketing, sales and after sales services – further aggregated into three main groups, i.e. pre-production, production and post-production activities (Stollinger, 2019; Rungi del Prete, 2016). We follow the same procedure to investigate the presence of FDI in the S3 or specialisation domains of the WBs.² The details of the categorisation of the NACE sectors, value chain functions, and S3 domains are provided in Annexes 3-5. This strategy ensures a coherent and integrated picture throughout the report.

¹ Nonetheless, several limitations in Orbis data have been identified in the literature (Kalemli-Ozcan et al., 2019; Bajgar et al., 2020). It is important to consider that Orbis is an incomplete sample, since it covers only companies required by law to disclose their financial statements, so its coverage may vary across countries depending on national legislation. The provider (Moody's) commits to harmonizing and making comparable information across countries, while ensuring consistency over time. Other challenges with the data stem from its inclusion of consolidated accounts that may combine the financials of subsidiaries across different countries and industries, and from the absence of clear rules specifying which firms are covered. This means the numbers reported in this study may underestimate the true dimension of the phenomenon.

² Although conceptually dissimilar, in this Report we consider the cumulated number of active foreign-controlled companies over time as a proxy for inward FDI stocks. Indeed, it serves as an indicator of foreign investment penetration and attractiveness. To the same token, the year-by-year difference in the number of active foreign-controlled firms is a proxy for inward FDI flows.

3. Inward FDI in the Western Balkan economies: descriptive evidence

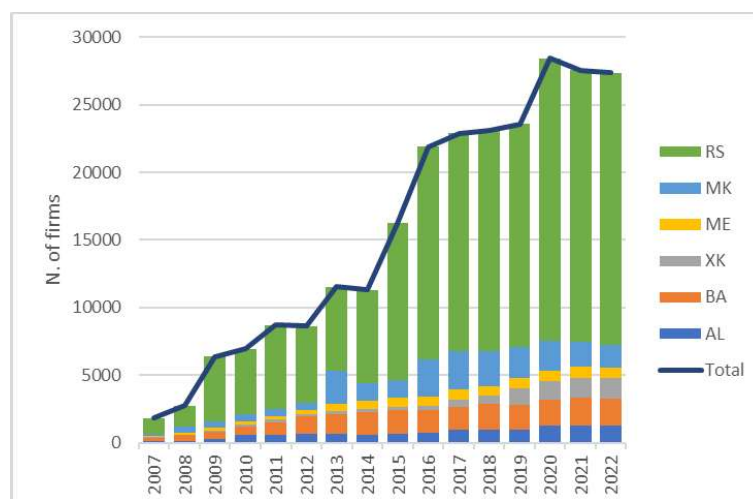
3.1. Trends over time

Between 2007 and 2022, 249,176 foreign-owned companies were established in the Western Balkan economies. At first glance, Serbia, the largest economy in the region, is the most important recipient of FDI (Figure 1), hosting approximately 70 percent of the foreign-controlled firms established in the Western Balkan economies during the considered period. It is followed by North Macedonia and Bosnia and Herzegovina, with about 10% and 9% of total foreign-owned firms located in the area. Albania, Kosovo*, and Montenegro are in the bottom half of the distribution, with percentages below 5%.

Figure 1 also suggests that the Western Balkans' capacity to attract foreign investment, although constantly increasing during the considered period, has improved significantly from 2014 onwards, while facing a slight slowdown after the COVID-19 pandemic shock.

If we weigh the number of foreign-owned controlled firms in the Western Balkan economies by population to account for the 'size' effect, Serbia remains the main recipient with, on average, about 1562 foreign firms per million inhabitants. Montenegro and North Macedonia follow, with 840 and 792 foreign-controlled firms per million inhabitants, while Bosnia and Herzegovina, Kosovo*, and Albania close the rank with 397, 290, and 263 foreign firms per million inhabitants, respectively.

Figure 1. Foreign-owned firms in WBs, 2007-2022 (number of firms)



Note: AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

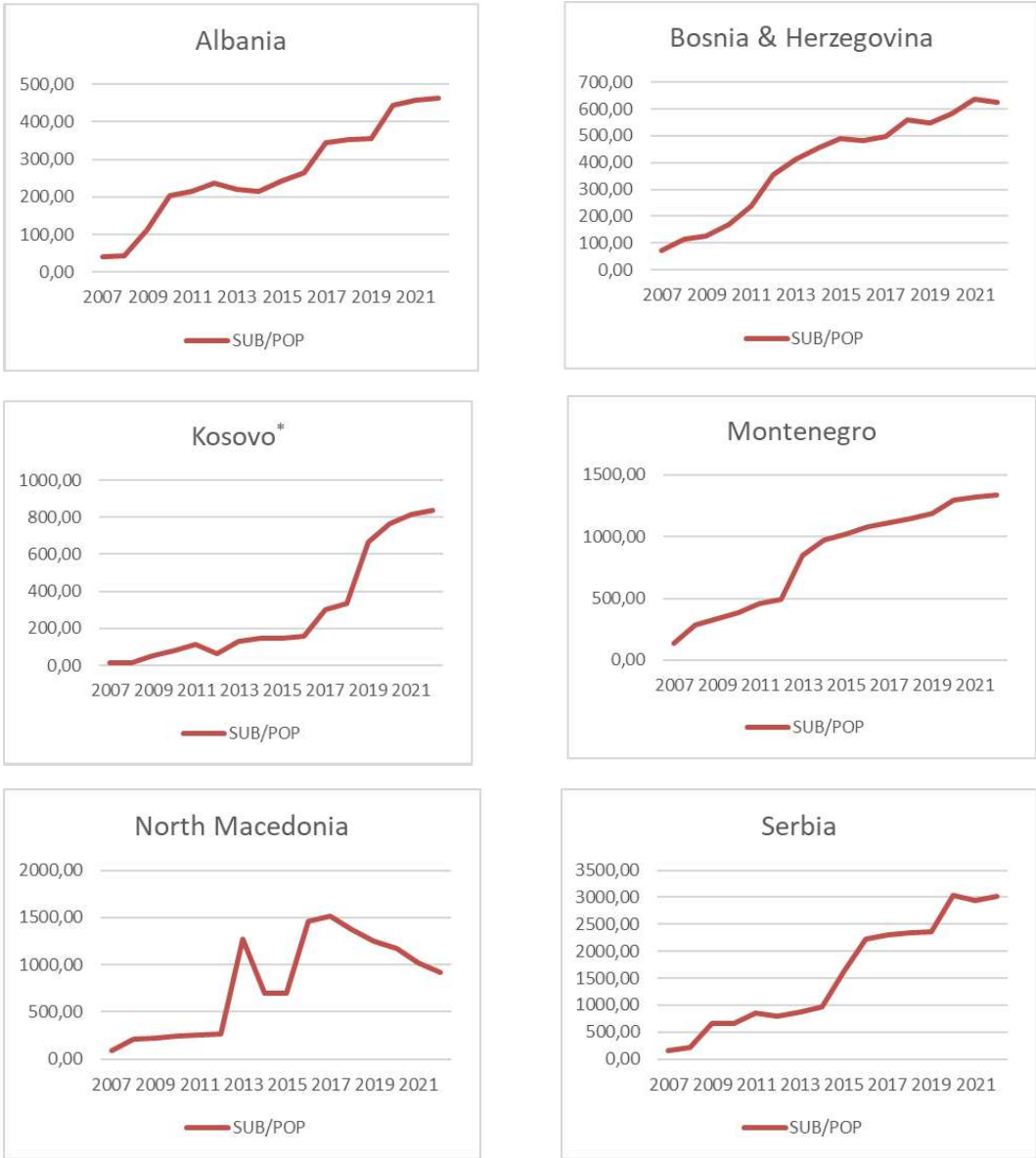
Source: Authors' own elaboration

Looking at the trends for each of the WBs, the following features emerge:

- the number of foreign-controlled firms has been growing throughout the years (Figure 2) in Albania, Bosnia and Herzegovina, and Serbia.
- Kosovo* started to attract consistent numbers of foreign firms only from the mid of the second decade of this century, probably following the entry into force of the Stabilisation and Association Agreement (SAA) with the EU (2016).

- Montenegro experimented an impressive growth of foreign investment from 2012 onwards, due to the privatisation process that interested many state-owned firms in different economic sectors, like energy, communication, financial services, and the incentives the Government granted to foster investment in the coastal area to enhance the development of the tourism sector.
- Lastly, the inward FDI trend in North Macedonia, in terms of newly established foreign-owned firms, experienced exponential growth in 2013. Following a peak in 2016, the trend shifted downward.

Figure 2. Foreign-controlled companies in each of the WBs



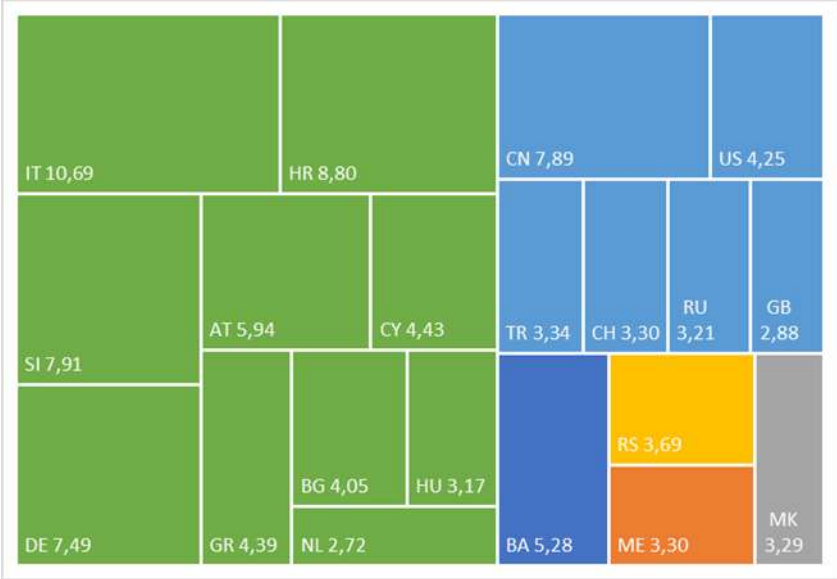
Note: SUB/POP= Number of firms per million of inhabitants in each hosting economy (2007-2022)

Source: Authors' own elaboration

Figure 3 reports the top 20 countries of origin of foreign-owned controlled firms in the Western Balkan economies. Overall, foreign investors from these 20 countries control about 80% of all

foreign-owned firms established in the region in the considered period.³ Three interesting facts emerge. First, in line with the WBs' pursuit of EU membership, EU companies are the largest investors, controlling approximately 60% of foreign direct investment from the top 20 investor countries. Secondly, the strategic geopolitical position of the Western Balkans has attracted the attention of all major regional and global powers, including China (CN), the USA (US), the Russian Federation (RU), and Turkey (TR). However, the magnitude of their investments differs substantially among them, with China playing the lion's share, and across the destination economies, while following different motivations. Altogether, these investors account for another 25% of the foreign-owned companies controlled by the top 20 investors. Last, but not least, Western Balkan economies invest in each other; overall, their companies control about 15% of foreign-owned firms in the region.

Figure 3. Origin of FDI into the WBs, top 20 investors (2007-2022)



Note: percentages of total foreign-controlled firms in the WBs

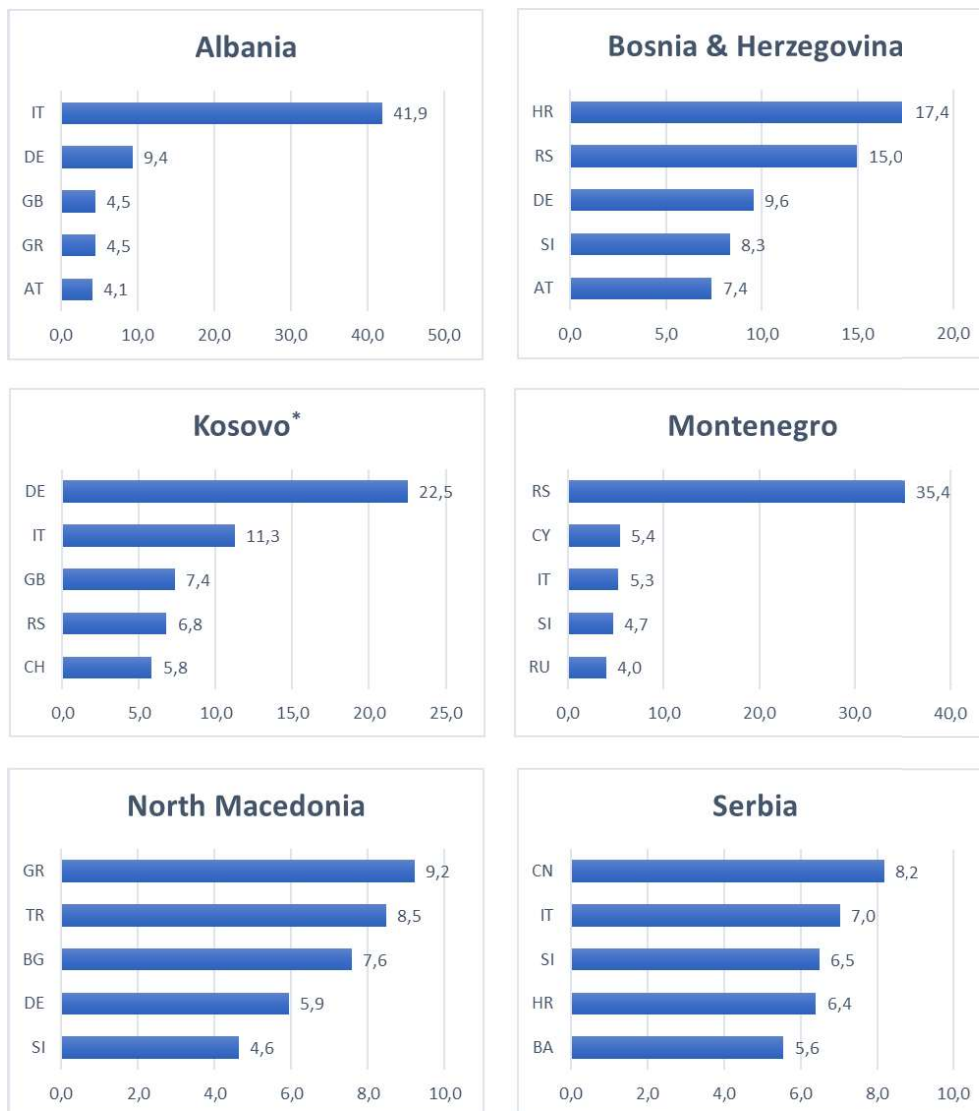
Source: Authors' own elaboration

³ WBs are not among the main destination economies of FDI from the top 20 sources of FDI projects. For example, in 2022, the WBs represented only 0.30% of the total value of extra-EU foreign outward investments of the EU. This percentage is slightly higher for Italy, whose investments in the WBs account for approximately 2.0% of the total value of its outward FDI stocks (Eurostat, Balance of payments - International transactions, BPM6)

Figure 4 shows the top 5 origin investor countries for each of the Western Balkan economies. It highlights several differences both among countries of origin and destination economies. In particular:

- Italy (IT) is the largest investor in the area, with a strong concentration of its interests in Albania, where Italian firms control more than 40% of foreign-owned firms. Italy is also the second-largest investor in Kosovo* and Serbia, controlling approximately 11% and 7%, respectively, of foreign subsidiaries located in these two economies. It is also among the top five investors in Montenegro. These shares reflect not only close geographical and institutional proximities but also the strong historical and cultural ties that link Italy to the Western Balkan region.
- Germany (DE), the other regional economic power, is present in four – Albania, Bosnia & Herzegovina, Kosovo*, and North Macedonia – out of the six Western Balkan economies. In Kosovo*, German firms control about 22% of foreign-owned companies. Germany, indeed, was among the first countries to recognise Kosovo* after its unilateral independence from Serbia.
- About 35% of foreign-owned firms in Montenegro are controlled by Serbian companies, a sign of the historical relationship between the two economies.
- Not surprisingly, Greece (GR) is the biggest investor in North Macedonia, another potential inheritance of historical and cultural ties.
- Among global powers, China is the largest investor in Serbia, controlling approximately 8% of the total foreign-owned companies, while Russia is the fifth-largest investor in Montenegro. Turkey concentrates its interests in North Macedonia. The need to strengthen diplomatic relationships with the Western Balkans and to extend their political influence in the Mediterranean area may partially explain the importance of FDI from these countries. Religious ties, at least in the case of Turkey, may also matter.
- Last but not least, it is worth noting that Serbia is among the top five investor countries in Bosnia & Herzegovina, Kosovo*, and Montenegro, while Bosnia & Herzegovina is among the top 5 investors in Serbia, thus confirming that the intra-regional dimension is relevant in inward FDI trends in the region. This consideration is further reinforced by the presence of other Balkan economies, such as Croatia (HR), Slovenia (SI), and Bulgaria (BG).

Figure 4. Top 5 investor countries in the WBs



Note: Percentages of total foreign-controlled firms in each hosting economy (2007-2022)

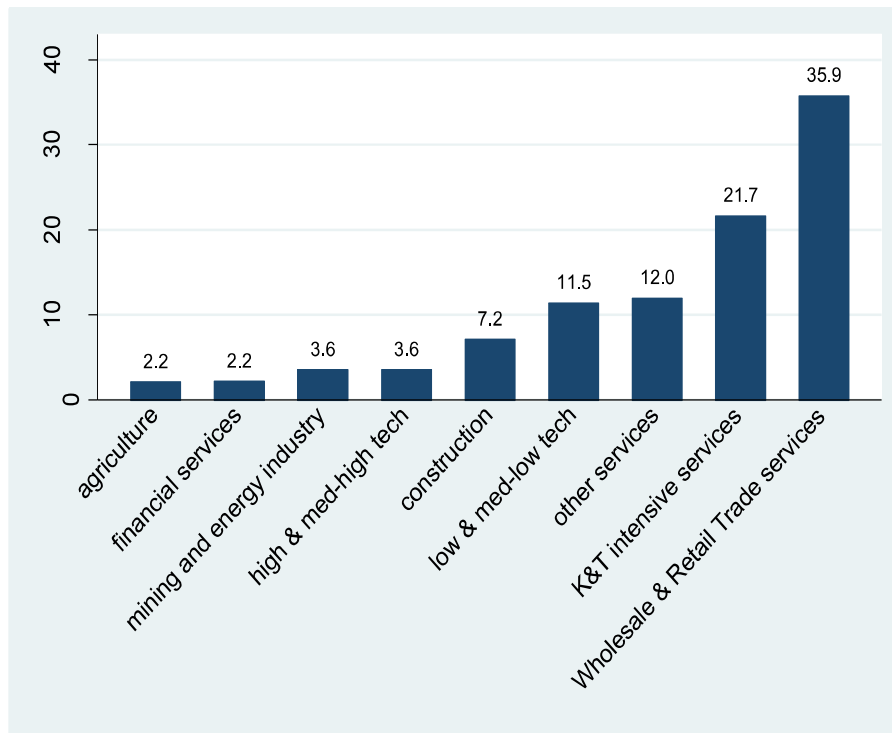
Source: Authors' own elaboration

3.2. Sectoral breakdown

By inspecting the concentration of foreign-controlled firms across sectors, it is possible to identify the most attractive industries. According to our data (Figure 5), inward FDI in the services sector accounts for about 70% of foreign affiliates in the Balkan economies, taken as a whole. Wholesale and retail trade services account for about 36% of foreign investments, followed by knowledge and technology-intensive services (about 22%) and other services (about 13%), which include the Tourism sector. The industry, broadly defined, receives approximately 26% of foreign investments, with a main concentration in traditional labour-intensive industries (around 12%) and the construction sector⁴.

⁴ See Annex 3 for the classification of NACE Rev. 2, 4-digit sectors into the macro-categories used in this Section.

Figure 5. Distribution of Foreign-controlled companies in the WBs by sector

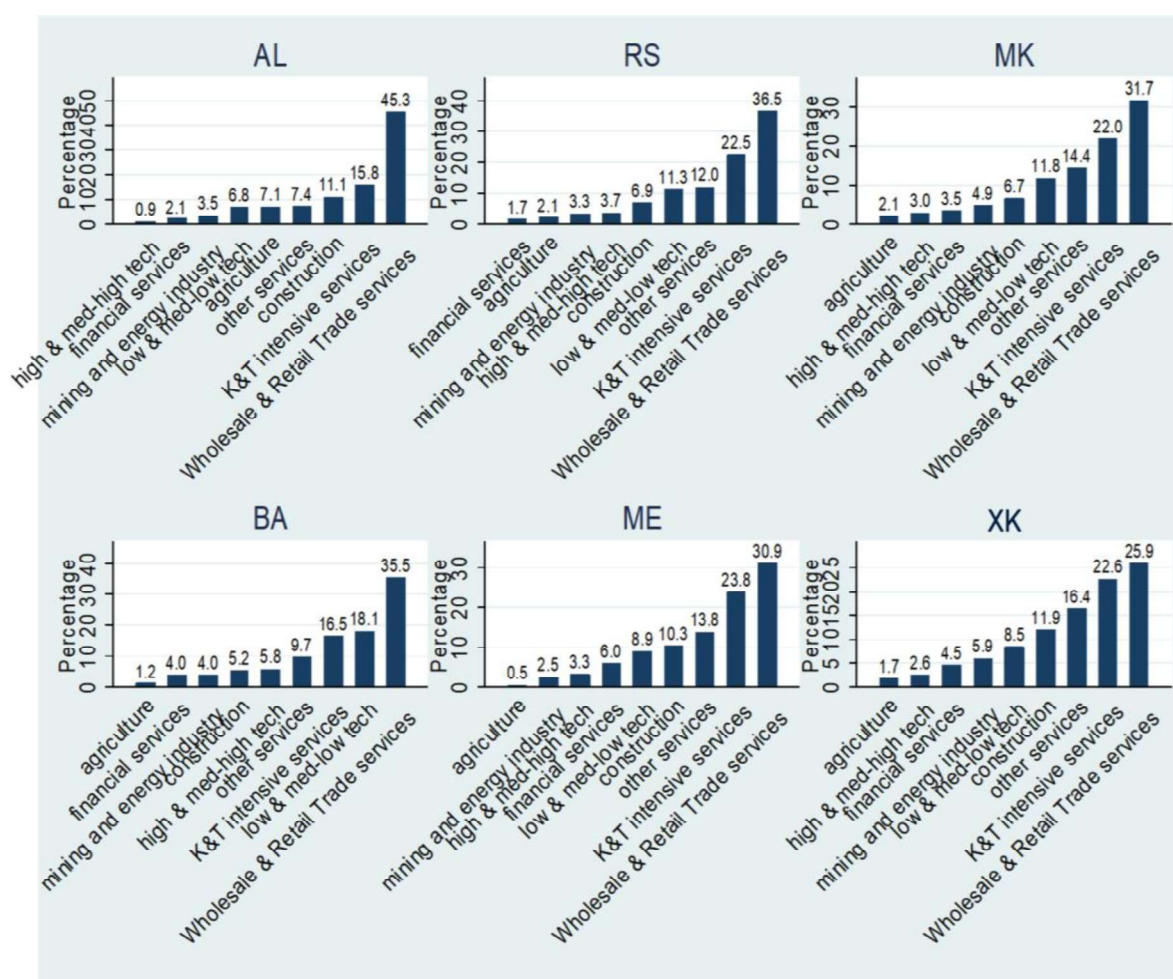


Note: Percentages of foreign-controlled firms (2007-2022)

Source: Authors' own elaboration

By considering the six Balkan economies separately (Figure 6), it becomes clear that foreign companies invest in a diverse range of industries across the region. Not considering the Wholesale and Retail trade service sector and K&T intensive sectors, which dominate in all the Balkan economies, in Albania, construction, manufacturing, and agriculture account for about 26% of foreign affiliates established in the country during the considered period, with quite similar percentages. In Bosnia & Herzegovina, manufacturing is the second-largest activity, accounting for 24% of foreign-owned companies. Not surprisingly, low- and medium-tech industries attract the majority of foreign affiliated companies. In Kosovo*, Montenegro, North Macedonia, and Serbia, the structure of foreign-owned companies is dominated by other services, Construction, and Low- and medium-low-tech manufacturing.

Figure 6. Distribution of foreign-controlled companies by sector and host economy



Note: Percentages of foreign-controlled companies by hosting economy and sector (2007–2022); AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration

Overall, these figures suggest that inward foreign direct investments have followed the pace of economic transformation in the Western Balkans, transitioning into modern market economies with a well-developed service sector and a robust industrial sector. Four facts stand out the most:

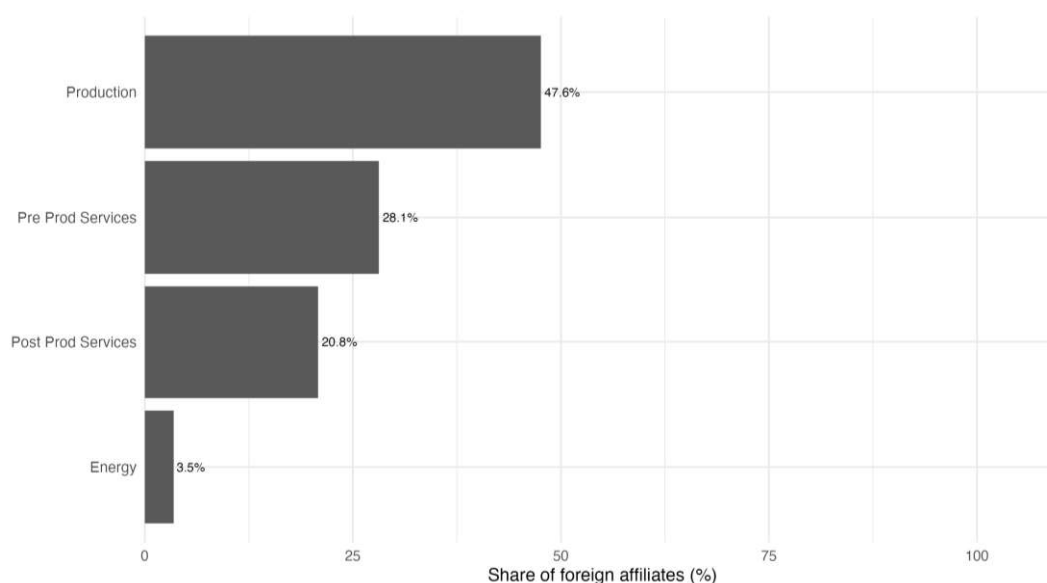
- The most represented service sector, besides trade and wholesale services, i.e., K&T intensive services, requires a high-skill labour force, while the most represented manufacturing sector, i.e., low- and medium-low tech manufacturing activities, does not.
- Despite the large concentration of foreign subsidiaries in K&T service sectors, high- and medium-high-tech manufacturing activities account for negligible percentages.
- Financial services are among the least internationalised service sectors in the Balkan economies, especially in Albania, Bosnia & Herzegovina, Kosovo*, and Serbia.
- Agriculture and the energy sector do not seem particularly attractive, with the exception of Albania, where the two sectors account for about 10% of foreign-owned firms, Kosovo*, and North Macedonia (7,6% and 7% of total foreign affiliates, respectively).

3.3. Functional specialisation in GVCs

Foreign-owned firms included in our sample belong to global production networks driven by MNEs. This implies that they do not undertake the entire production process, but only specific phases of it. Thus, comparative advantage should not be defined in terms of products or sectors, but in terms of tasks or functions. This new dimension of international specialisation, called functional specialisation, is strictly connected with the concept of the smile curve, according to which the two ends of the value chain (pre- and post-production activities) contribute higher value to the final product than the middle part, i.e., pure production activities (Shih, 1996; Stollinger, 2021; Rungi del Prete, 2018). Therefore, understanding a country or region's position in global production networks is crucial for understanding its potential for development. Given the objective of this study, we measure functional specialisation by examining the business functions carried out by foreign-owned firms within global production networks to which the WB economies belong (Stollinger, 2019).

Figure 7 shows the distribution of foreign-owned firms across the three main value chain functions and the energy sector in the six Balkan economies collectively. It indicates that almost half of the foreign-owned firms included in our sample are engaged in production activities, while the other half is involved in more value-added intensive chain functions, i.e., pre- and post-production activities. The share of foreign-owned companies engaged in the energy sector is marginal.

Figure 7. Distribution of Foreign-owned firms by GVC function

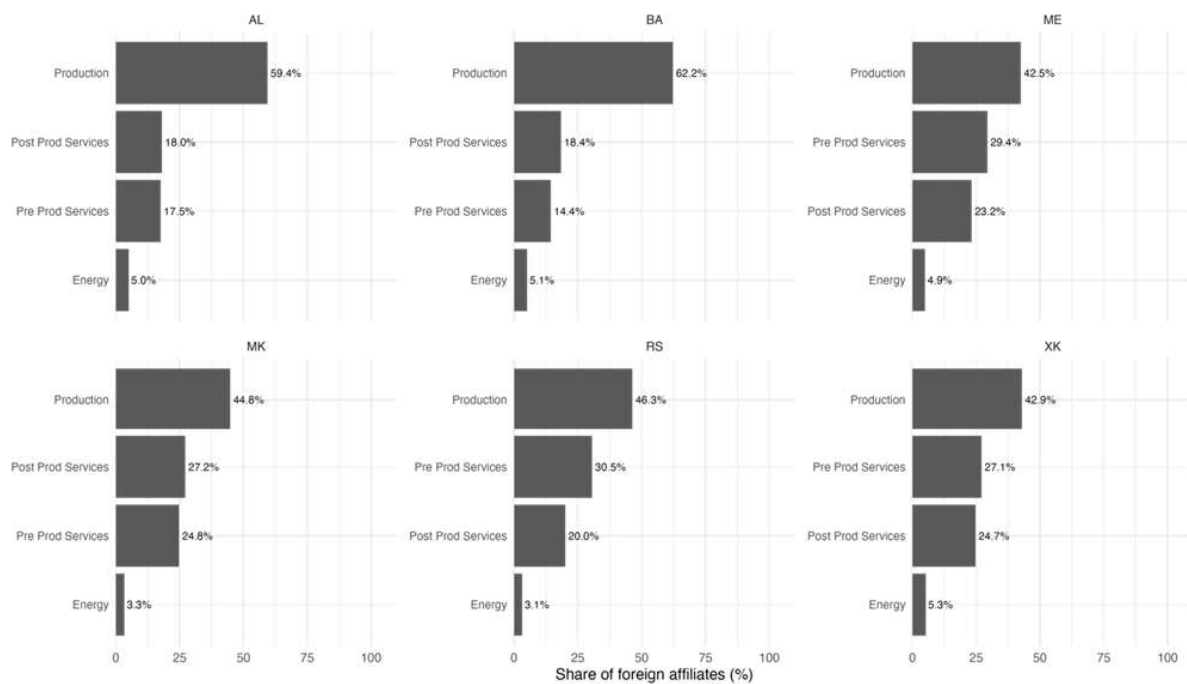


Note: Percentages of foreign-owned firms by GVC function and energy sector (2007-2022)

Source: Authors' own elaboration

The picture does not change substantially when the WBs are considered separately. However, a higher concentration of foreign-owned companies engaged in production is observed in Albania and Bosnia and Herzegovina, where they account for approximately 60% of total firms controlled by foreign investors (Figure 8). As for the extremes of the value chain, Serbia appears to be the most attractive country in the region in pre-production activities, as approximately 30% of foreign-owned companies active in the country operate in this segment of the value chain. The share of FDI projects in post-production activities ranges between 20% and 24% in all the WBs, except for Albania and Bosnia and Herzegovina.

Figure 8. Distribution of Foreign-controlled firms by hosting economy and GVC function



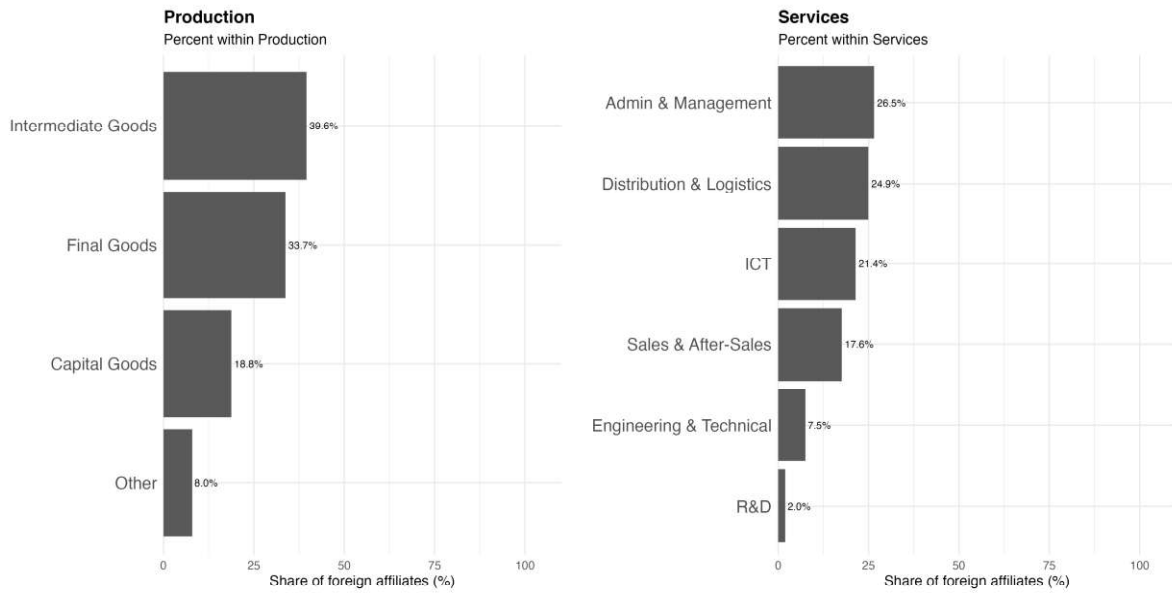
Note: Percentages of foreign-owned firms by GVC function and energy sector in each hosting economy (2007-2022); AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration

By further breaking down these three broad aggregates, a more nuanced picture emerges (Figure 9). More specifically, production activities primarily refer to the upstream stages of production, i.e., parts and components (almost 40%) and capital goods (19%), rather than to the final stage, such as the production of final goods (33%). If we examine the service activities at the extremes of the value chain, foreign-owned firms performing high-value-added activities, such as R&D, engineering, and technical services, are underrepresented, accounting for less than 10% of foreign affiliates hosted by the Balkan economies. Post-production activities, including distribution and logistics, sales, and after-sales services, account for approximately 43% of the foreign affiliates in the Balkan region. A relevant role is also played by ICT and administrative and managerial services, with shares of approximately 18% and 25%, respectively.

The composition of production and services activities in each WB mirrors the general trend, as shown by Figures 10 and 11, with a few exceptions. In particular, the breakdown of production activities remains in favour of intermediate products in Albania, Bosnia and Herzegovina, Serbia, and Kosovo* where foreign subsidiaries engaged in production activities are divided equally between the production of intermediate goods and final goods. In contrast, the majority of foreign-controlled firms active in Montenegro and North Macedonia produce final goods. The breakdown of service activities confirms the dominance of low-value-added activities, such as Distribution and logistics, across all WBs, and the underrepresentation of high-value-added service activities, such as R&D and engineering and technical services, which are consistently located at the bottom of the distribution of foreign-controlled firms. ICT services perform better in terms of FDI projects than other high value-added activities, with shares ranging from 13% of North Macedonia to 17% of Serbia.

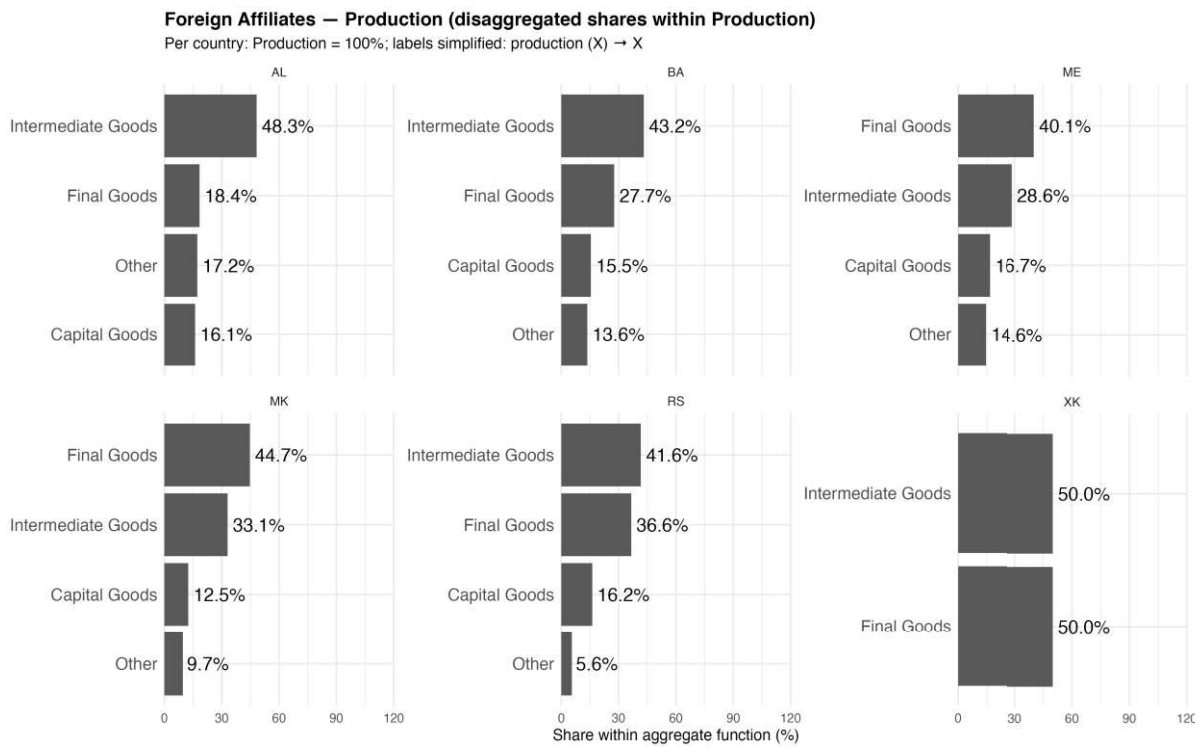
Figure 9. Distribution of foreign-owned firms in production and services activities



Note: Percentages of foreign-owned firms by GVC function (2007-2022)

Source: Authors' own elaboration

Figure 10. Distribution of foreign-controlled firms within production activities by hosting economy

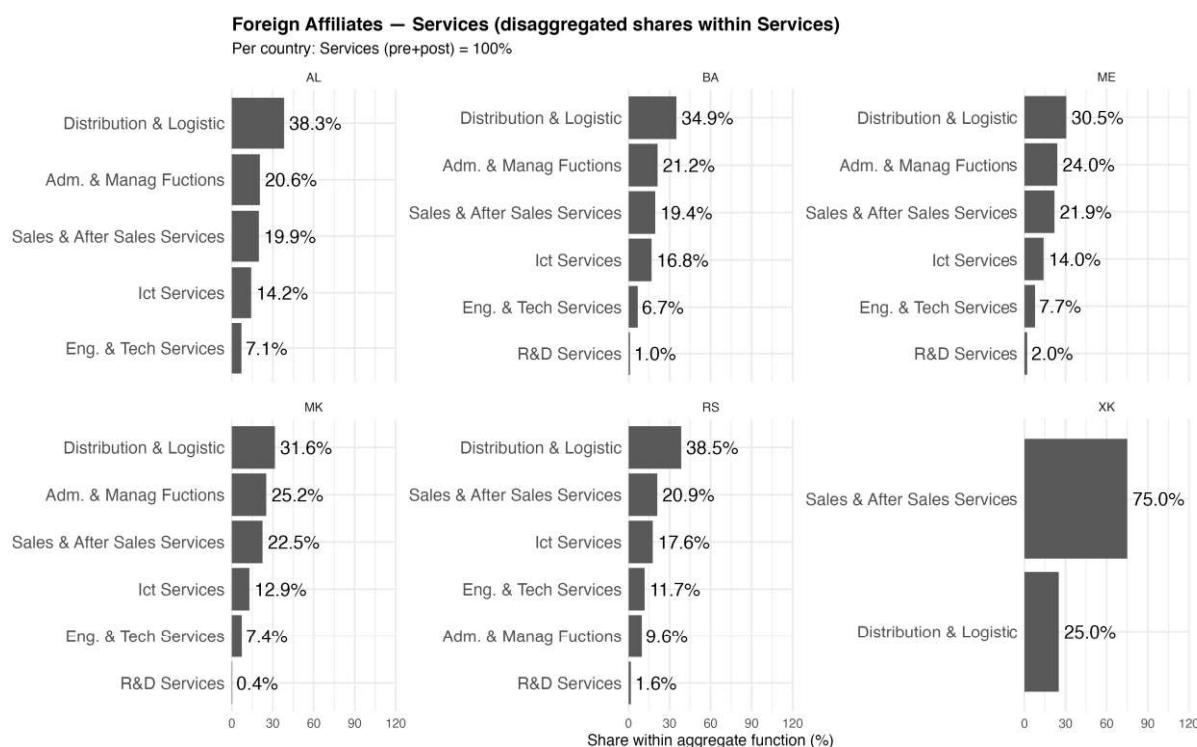


Note: Percentages of foreign-owned firms engaged in different production activities by hosting economy (2007-2022);

AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration

Figure 11. Distribution of foreign-controlled firms within services activities by hosting economy



Note: Percentages of foreign-owned firms engaged in different services activities by hosting economy (2007-2022); AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration.

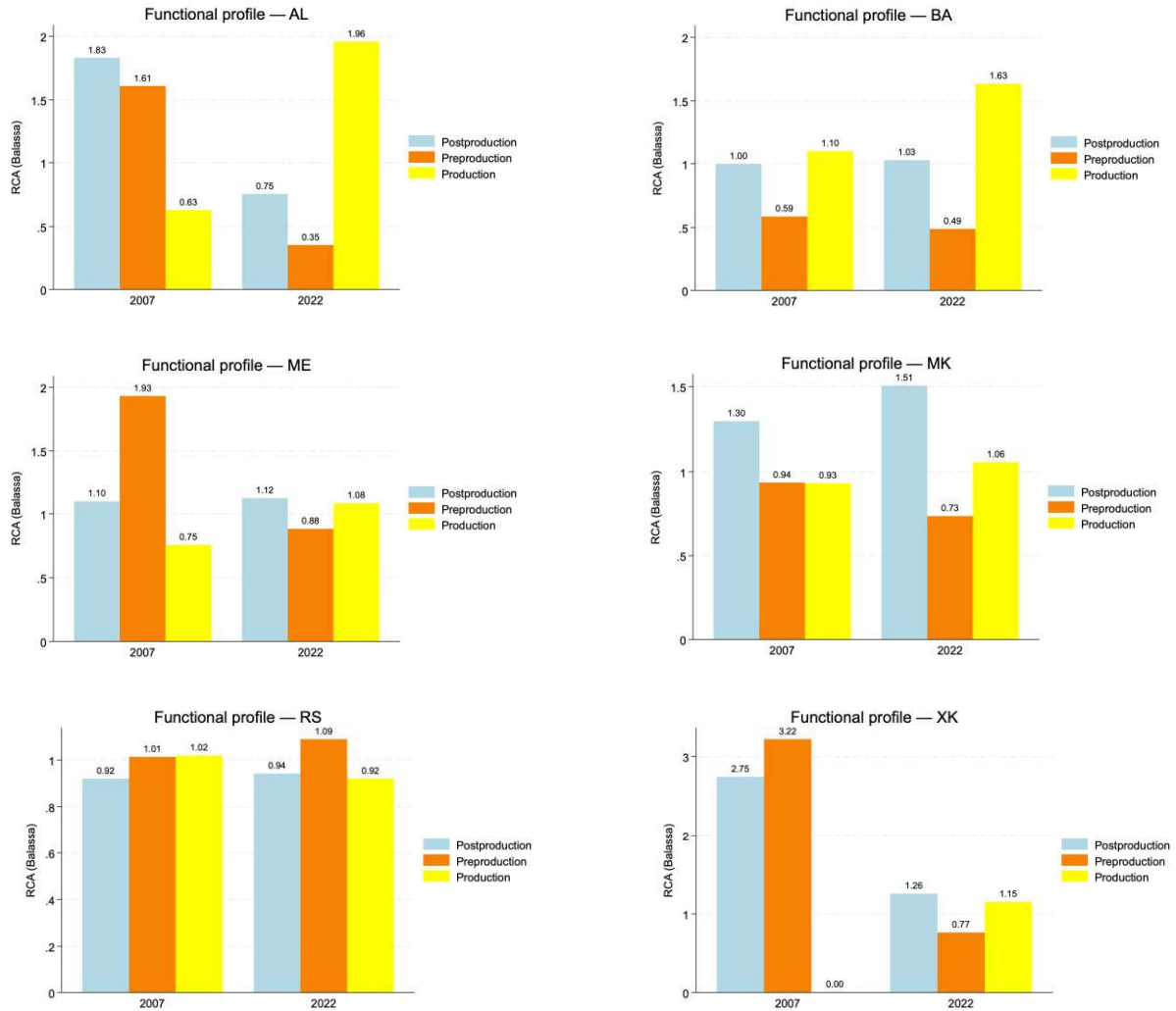
While the above analysis reveals the potential each WB may have within the GVC, relative shares offer insight into the specific strengths and abilities of WBs to outperform at each stage of the value chain. In this respect, we computed the Revealed Comparative Advantage (RCA) index based on the value chain functions. In other words, we considered the share of foreign-owned firms in each Balkan economy that serve a specific function relative to the total number of foreign projects in the country, compared with the corresponding share across the entire Balkan region. An $RCA > 1$ suggests that an economy has a stronger-than-average performance in that function of the value chain. In contrast, an $RCA < 1$ indicates a disadvantage, while an $RCA = 1$ implies that the economy's performance in that function mirrors the area's average, showing no particular advantage or disadvantage with respect to the other Western Balkan economies.

The functional revealed comparative advantage has been computed at the beginning (2007) and the end (2022) of the sample period to provide evidence of possible upgrading processes. Figure 12 summarises the main findings. Based on the activities performed by foreign-owned companies, only two economies have maintained their initial specialisation, i.e., Bosnia and Herzegovina, which has further strengthened its functional specialisation in production activities, and North Macedonia, which continues to be specialised in post-production services.

All the others have experimented with changes in functional specialisation, as foreign-owned companies have taken on new functions in the chain, sometimes abandoning existing ones, in order to increase the added value of the activities performed within global production networks. In particular, Serbia has transitioned from production to pre-production activities, while Kosovo* and Montenegro have deepened their specialisation in post-production services, losing competitiveness in pre-production activities. In contrast, Albania has shifted its functional specialisation from pre-

and post-production services to production activities.

Figure 12. Changes in Functional specialisation



Note: Functional specialisation index in 2007 and 2022 by economy. RCA is the functional revealed comparative advantage index computed as share of foreign-owned firms in each Balkan economy that serves a specific function in the total number of foreign projects in the hosting economy; AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration

A question that remains unanswered is what can explain these patterns of functional specialisation. Differences in factor endowments are likely to explain specialisation in low- and high-skill production activities, and R&D and related activities, which are skill-intensive, while marketing and other after-sales activities do not relate to a particular set of factor endowments. Other idiosyncratic factors may also influence countries' functional specialisation patterns, such as differences in country size, geographical characteristics, and the historical development of capabilities and networks. Moreover, functional specialisation may also depend on externalities between and across countries generated by co-located activities (Defever, 2006, 2012), as well as economic and social institutions, and the potential interaction among all those factors.

3.4. Foreign investments and S3 strategies

Smart Specialisation Strategies (S3) in the Western Balkans represent a key policy framework to foster innovation-led development by identifying and prioritising domains where regions and countries have the strongest potential to build competitive advantages. S3 is a place-based, evidence-driven approach that promotes collaboration among public authorities, businesses, research organisations, and civil society to support targeted investments in research and innovation.

In the Western Balkans, S3 processes play a crucial role in nurturing emerging innovation ecosystems, strengthening institutional capacities, and aligning national innovation priorities with EU policy frameworks, as well as supporting deeper integration into the European Research Area.

Within this context, MNEs can act as important catalysts by channelling investments, contributing knowledge, technology transfer, and competencies that reinforce the development of S3 priority domains across the region.

Moreover, foreign direct investment can further anchor local innovation potential to global value chains, enhancing spillovers to domestic firms, supporting skills development, and increasing the international visibility and competitiveness of the region's innovation ecosystems (Radovanovic et al., 2024).

The Western Balkans started committing to smart specialisation in 2026, and as by 2018 all six Balkan economies had deeply engaged in the process of developing, adopting, or implementing the S3 approach in line with the methodology developed by the JRC for the EU enlargement and neighbourhood region.

Across the region, S3 process development shows significant heterogeneity. Four economies (Albania, Montenegro, North Macedonia, and Serbia) have formally adopted their strategies and are currently in the implementation phase, whereas the remaining two (Kosovo* and Bosnia and Herzegovina) remain in the design phase.

In this context, economies have identified - or are in the process of identifying - their priorities, namely those specific industries or sectors targeted for development and investment, based on the existing competencies and potential.

To fully leverage existing capabilities and unlock their growth potential, economies typically define a set of strategic vertical priorities commonly complemented by horizontal priorities – if explicitly identified within the strategic log frame – or enablers - whether implicitly embedded in policy design. Together, these horizontal elements provide the foundational conditions for innovation ecosystems to thrive and strengthen the coherence and impact of strategic interventions. In this context, it is important to investigate FDI flows across all relevant domains - those formally identified in the S3 log-frames, the ones implicitly contributing to strategic priorities, and lastly those that are still under scrutiny. Based on official strategic documents and on the analyses carried out in the S3 design phase, Table 1 displays the areas that – for the purpose of this study - are considered critical in the Western Balkans for the development of smart specialisation strategies.

Table 1. Balkan economies' S3 vertical and horizontal priorities/enablers (identified or under investigation)

Country	Vertical priorities	Horizontal priorities/enablers
ALBANIA	Healthy and Sustainable Food Chain Sustainable and Health Tourism Renewal & clean energy, and natural resources	Human capital development Digitalisation and interconnectivity Improving national research & innovation ecosystems
BOSNIA & HERZEGOVINA ⁽¹⁾	ICT and Digitalisation Metal and Electrical Industry Wood industry Plastic production and processing Food & Beverage production and processing Tourism industry	ICT Energy and environmental protection
MONTENEGRO	Sustainable agriculture and food value chain Renewable energy and sustainable environment Sustainable and health tourism	ICT
NORTH MACEDONIA	Smart Agriculture and Food with Higher Added-Value ICT Mechanical and electrical industry Sustainable Materials and Smart Buildings	Energy for the future Tourism
KOSOVO* ⁽²⁾	Wood processing industry Green energy Agrifood processing Creative industry	ICT
SERBIA	ICT Food for the future Creative industries Future Machines and Manufacturing Systems	Energy Efficient and Eco-smart Solutions Key-enabling technology

Note: ⁽¹⁾ BA is still in the S3 design phase, these sectors emerged from the analyses conducted during the mapping phase. To the purpose of this study, ICT and Energy and environmental protection are considered as horizontal enablers; ⁽²⁾ Kosovo* is still in the S3 design phase, these sectors emerged from the stakeholder dialogue phase. To the purpose of this study, ICT is considered as horizontal enabler; ⁽³⁾ In the official S3 of Serbia, Energy Efficient and Eco-smart Solutions and Key-enabling technology are identified as 'horizontal supporting areas'. To the purpose of the study, they are labelled as horizontal enablers.

Source: Authors' own elaboration.

This section aims to provide fresh evidence on the presence of foreign-owned firms in the above-mentioned domains. The ultimate goal is to determine whether they have already attracted a substantial number of foreign investments, both in absolute terms and in relative terms. Indeed, sectoral concentrations of FDI may signal increasing opportunities for businesses and faster development towards a knowledge-based economy, as well as better integration into the EU economic space. On the other hand, FDI agglomeration in common priority domains may also intensify competitive pressures on attracting FDI among the Balkan economies that share these priorities, potentially penalizing less competitive economies if not coordinated at the regional level.

To achieve this research objective, the NACE Rev. 2 classification has been used to define the S3 (emerging) priority economic domains, as reported in Table 12 in Annex 5. Three caveats apply to this exercise. First, the boundaries of some of these domains are not clear-cut, as they encompass several related industries and competencies that exhibit strong inter-industry interdependencies and undergo rapid changes over time. Secondly, the mapping we provide is based on the NACE 3-digit classification. However, this level of granularity is not optimal for precisely identifying all the

elements of the ecosystem. Thirdly, while it is possible to identify companies operating in a specific economic sector, i.e. for example, NACE code 012, i.e., ‘cultivation of perennial crops’, it is not possible to say whether these companies carry out ‘sustainable’ or ‘green’ or ‘smart’ agriculture, i.e. adopt a farming approach that focuses on producing food in a way that is both environmentally sound and economically viable for the long term. Thus, the classification we adopt is just a proxy for the industries potentially involved in each ecosystem, which the Balkan economies rely on to develop a knowledge-based economy.

Taking these caveats into account, Table 2 presents the number of FDI projects by S3 (emerging) domains for each Western Balkan economy in 2022, the latest available year in our sample. Some interesting features emerge. First, foreign-owned companies potentially operating in prioritised areas account for about 16% of the foreign-controlled firms established in the Western Balkans in 2022. The distribution across economies is quite heterogeneous, ranging from 6% in Albania to about 26% in Bosnia and Herzegovina. In absolute terms, the most attractive (emerging) vertical domains are ICT (accounting for about 35% of total foreign projects accruing to S3 domains, adopted or in the process of being identified), followed by creative industries (24%) and green energy and the environment (approximately 11%).

Table 2. Foreign-owned companies by vertical S3 (emerging) domains and hosting economies, 2022 (number of firms and percentages)

Vertical domain	AL	BA	XK	ME	MK	RS	Total	% (column)
Agriculture	15	48	21	11	31	321	447	10.12
Creative industries			105			946	1,051	23.80
Green energy and environment	10	44	32	10			484	10.96
Future Machines and Manufacturing Systems						158	158	3.58
ICT		70			112	1212	1,549	35.08
Mechanical and Electrical Industry					207		207	4.69
Metal and Electrical Industry		265					265	6.00
Plastic production and processing		19					19	0.43
Sustainable and healthy tourism	53	39		43			193	4.37
Sust. Materials and Smart Buildings					4		4	0.09
Wood industry		27	12				39	0.88
Total FDI projects in S3 domain	78	512	170	64	354	2637	4416	100,00
Total FDI projects in the economy	1,287	1,998	1,482	827	1687	20,084	27,365	
% of FDI projects in S3	6.06	25.63	11.47	7.74	20.98	13.13	16.14	

Note: AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration

Similar considerations apply to foreign investment projects in horizontal (emerging) domains (Table 3). About half of foreign-owned firms concentrate in the energy industry, followed by the ICT and key-enabling technologies sectors. Quite surprisingly, the Tourism sector is not among the most attractive sectors, at least in absolute terms.

Table 3. Foreign-owned companies by horizontal S3 (emerging) priorities/enablers and hosting economies, 2022 (number of firms and percentages)

Horizontal domains	AL	BA	XK	ME	MK	RS	Total	%
Renewable Energy and the Environment					36	352	388	46.52
ICT	4	70	115	36			225	26.98
Key-enabling technology						163	163	19.54
Tourism					58		58	6.95
Total	4	70	115	36	94	515	834	100.00
Total FDI projects in the economy	1,287	1,998	1,482	827	1687	20,084	27,365	
% of FDI projects in horizontal domains	0.31	3.50	7.76	4.35	5.57	2.56	3.04	

Note: AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia

Source: Authors' own elaboration

In relative terms, what emerges is a lack of concentration of foreign-owned firms in the S3 (emerging) domains, taken as a whole, in every Balkan economy, as indicated by the location quotient coefficients reported in the last row of Table 4. However, some agglomeration of FDI inward projects can be detected, such as sustainable and health tourism in Albania, Montenegro, and North Macedonia, as well as specific manufacturing sectors – e.g., the metal and electrical industry, mechanical and electrical industry, and wood industry – in Bosnia and Herzegovina, Kosovo*, Montenegro, and North Macedonia. These preliminary findings suggest that common, prioritized areas may penalize the Balkan economies. Indeed, the largest concentrations are found in S3 (emerging) domains that represent specific competencies.

Table 4. Relative concentration of FDI projects in S3 (emerging) priorities/enablers, 2022

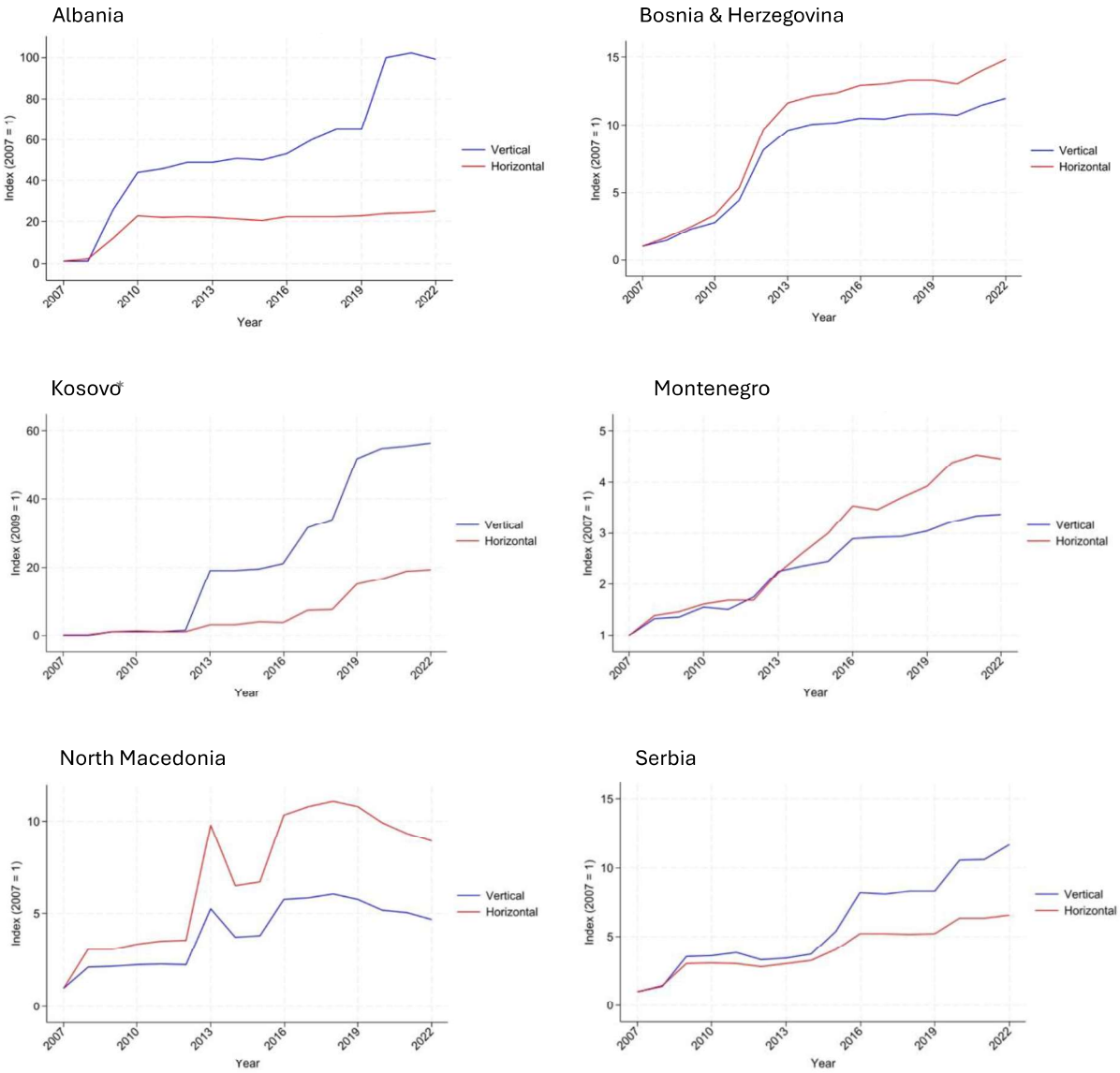
Domains	AL	BA	XK	ME	MK	RS
Agriculture and Food Processing	0.23	0.47	0.28	0.26	0.36	0.31
Creative Industries			0.59	0.00	0.00	0.39
Green energy and the Environment	0.14	0.40	0.39	0.22	0.38	0.32
Future Machines and Manufacturing Systems						0.43
ICT	0.02	0.20	0.44	0.24	0.37	0.34
Mechanical and Electrical Industry					5.16	
Metal and Electrical Industry		4.36				
Plastic production and processing		4.36				
Sustainable and Health Tourism	1.86	0.88	0.00	2.35	1.55	
Sustainable Materials and Smart Buildings					5.16	
Wood industry		3.02	1.81			
Key-enabling technology						0.43
Total FDI projects in S3 domains	0.12	0.49	0.37	0.23	0.51	0.30

Note: Coefficients are computed as the ratio of foreign subsidiaries in a specific domain of a given country to the total number of subsidiaries in that country, compared to the same share computed for the Balkan economies as a whole. AL=Albania, BA=Bosnia and Herzegovina, XK=Kosovo*, ME=Montenegro; MK=North Macedonia, RS=Serbia. In bold sectors with a concentration of foreign-owned firms above the average.

Source: Authors' own elaboration

Needless to say, an effective S3 strategy should integrate vertical and horizontal priorities to ensure that industry-focused strategies are supported by a strong, horizontal framework for innovation and business support. To understand whether WB economies have promoted FDI in vertical or horizontal priorities, and therefore whether FDI contributes more to creating comparative advantages in promising specific areas, or, instead, a supportive environment across the economy for innovation to thrive, we provide some evidence on trends in FDI in vertical and horizontal S3 domains by country. The results, shown in Figure 13, point to a heterogeneous picture, with Albania, Kosovo*, and Serbia primarily attracting FDI in vertical domains, and Bosnia and Herzegovina, North Macedonia, and Montenegro in horizontal priorities/enablers. It is also worth noting that, although trends are increasing in all economies, FDI projects have grown relatively more in Albania, especially in recent years, compared to the other WB economies. North Macedonia appears to be following an opposite trend, with a slowdown in its capacity to attract FDI since 2017.

Figure 13. Evolution of FDI in horizontal priorities/enablers vs vertical priorities 2007-2022 (2007=100)



Note: number of foreign-owned companies by hosting economies (2007=100)

Source: Authors' own elaboration

Given the objective of this report, we conclude this section by noting the presence of foreign-controlled firms in S3 domains within different stages of the value chain. The idea is to determine whether the transition towards a knowledge-intensive, innovative economy aligns with functional specialisation in GVCs.

Figure 16 in the Annex 6 presents the results, which do not indicate a clear association between FDI in vertical or horizontal S3 domains and patterns of functional upgrading/specialisation. Indeed, functional upgrading in Serbia – from production to pre-production activities – and in Kosovo* – from production to post-production activities – appears to have been driven by FDI projects in horizontal S3 domains, whereas in Montenegro – from production to post-production activities – it has been driven by FDI projects in vertical S3 domains. A strengthening of the initial functional specialisation, on the other hand, appears to be the result of an increase in the number of foreign-controlled companies active in vertical S3 domains in Bosnia and Herzegovina, as well as in horizontal S3 domains in North Macedonia. In this case, however, it is worth noting that while Bosnia & Herzegovina has a functional specialisation in production activities, North Macedonia has further deepened its specialisation in post-production activities. These results deserve further analysis.

3.5. Key findings

This section has presented fine-grained empirical evidence on how and to what extent Balkan economies participate in global production networks through FDI.

The findings indicate that the WBs' capacity to attract foreign investment has consistently increased over the considered period, with an acceleration in the second half of the current decade. Moreover, the analysis demonstrates that the majority of foreign-owned firms are controlled by European companies and that inward FDI has an interregional dimension, as WBs increasingly invest in one another. Overall, these facts suggest that geographical proximity may matter in attracting FDI. Despite that, all the world's major economic powers – the USA, China, Russia, and Turkey – are present in the region, with different percentages, indicating that other factors may shape inward FDI in the WBs. From a sectoral perspective, foreign-owned companies operate across a variety of industries, including services. The distribution, however, is unbalanced in favour of low-value-added sectors. This consideration also applies when the activities of foreign-owned companies within the value chain are considered. Indeed, nearly 50% of inward FDI projects were directed towards production-related activities, primarily the production of intermediate products.

The relationship between FDI-inward projects and the S3 strategy adopted or under development in the Balkan economies is instead ambiguous. None of the S3 (emerging) domains exhibits a concentration of FDI projects above the average. Therefore, it is unclear to what extent FDI in S3 sectors contributes to improvement processes in value chains.

Overall, the empirical evidence discussed so far suggests that further research is needed to better understand how Balkan economies can enhance their FDI attractiveness and, consequently, their growth, competitiveness, and prospects for EU integration. In particular, the following research questions need to be answered:

- What local factors better explain the Balkan economies' capacity to attract FDI? In this context, how does the integration process matter? Besides institutional and geographical proximity, are there other forms of aspatial proximity that drive FDI from non-EU investors?

- Does the position of the Balkan economies in the global production networks foster or hamper their capacity to attract FDI?
- Does the S3 approach represent a driver for FDI?

The next section of the research aims to provide an answer to the above questions.

4. The determinants of FDI: econometric analysis

4.1. Variables

In this section, we provide a deeper understanding of the factors that could encourage inward FDI into the Balkan economies, with a particular focus on the role of structural and institutional features. For this purpose, a gravity approach is adopted (Kleinert, Toubal, 2007; Dorakh, 2020; Nguyen, 2019; Bettarelli and Resmini, 2020), utilizing bilateral FDI data measured by the number of companies controlled by each investor country in the Balkan economies, as outlined in previous sections.

Following the literature, we include various sets of variables that may be potentially associated with FDI. More specifically:

- **Economic size.** We include the GDP of the destination and origin countries, as the economic ‘mass’ of both the source and host countries is a primary factor in the FDI tournament: larger economies tend to generate and attract more FDI than smaller ones.
- **Geographic distance.** Geographic distance usually serves as a proxy for transportation and trade costs. The further apart two countries are, the less FDI is expected to flow between them. We complement a traditional physical distance variable with a dummy variable for contiguous countries to control whether FDI is an intra-regional phenomenon, as indicated by the empirical evidence discussed in Section 3.
- **Cultural proximity.** Shared values, language, and norms facilitate smoother business operations, which can lead to higher investments. Indeed, cultural proximity reduces transaction costs, improves communication, and fosters trust between foreign investors and the host countries. We measure cultural proximity using different variables. More specifically, we include: a dummy variables indicating whether the home and host countries share a common language, as it is common in the gravity approach; a variable indicating diplomatic affinity, proxied by the (inverse of the) UN diplomatic disagreement score; a variable indicating the density of the informal social networks between the host and the home countries.
- **Structural characteristics of the host countries.** This set encompasses a diverse range of economic factors that may be potentially associated with FDI. First, well-functioning institutions and markets in the host country can encourage FDI, as they signal to foreign investors lower investment risks. We use as proxies for the WBs’ quality of institutions the regulatory quality index computed by the World Bank and the costs associated with creating a new business. Countries with better regulations and lower entry costs attract more FDI than others. Then we include bilateral manufacturing trade to capture each WB economy’s specialisation and industrial vocation. Finally, we include R&D expenditures as a share of total GDP as a proxy of the innovation capacity of the WBs. Both these variables are expected to be positively associated with inward FDI.

Table 5 below summarizes the main variables and sources.

Table 5. Main variables: description and sources

Variable	Measurement	Source
SUB	Number of foreign affiliates from origin to hosting economies	Orbis (ownership links)
invest	Dummy =1 if SUB>0	Orbis
lnSUB	Log of SUB (only for SUB>0)	Orbis
lnGDP_o	Log of origin GDP (current thousand USD)	CEPII Gravity (gdp_o)
lnGDP_d	Log of destination GDP (current thousand USD)	CEPII Gravity (gdp_d)
entry_cost_d	Cost of business start-up procedures (% of GNI per capita)	World Bank WDI
ln_manuf	Log of bilateral manufacturing trade (1,000 current USD)	CEPII BACI (manuf_tradeflow_baci)
diplo_disagreement	UN diplomatic disagreement score (absolute distance in ideal points)	CEPII Gravity
scaled_sci_2021	Social Connectedness Index (scaled, bilateral, 2021 snapshot)	CEPII Gravity
r_d_gdp_d	R&D expenditure as % of GDP (destination)	Eurostat
WGI_RQ_d	Regulatory Quality (continuous standardized score, approx. -2.5 to +2.5)	World Bank Worldwide Governance Indicators
z_WGI_RQ_d	Standardised Regulatory Quality (within-year z-score)	Constructed from WGI_RQ_d
ln_dist	Log of bilateral distance (km, harmonic population-weighted)	CEPII Gravity (distw_harmonic)
contig	Dummy =1 if countries share a border	CEPII Gravity
comlang_any	Dummy =1 if countries share an official or ethnic language	CEPII Gravity
wto_d	Dummy =1 if destination is WTO member	CEPII Gravity
eu_o	Dummy =1 if origin is EU member	CEPII Gravity

Source: Authors' own elaboration

4.2. Methodological approach

The analysis employs a two-part gravity model, inspired by Nguyen (2019), which distinguishes between two stages of the international investment process: the formation of the link and its intensity.⁵ This articulation enables the separate identification of factors that determine the likelihood of establishing an investment relationship (extensive margin) and those that affect the magnitude of such a relationship (intensive margin), while accounting for unobserved bilateral heterogeneity.

For the extensive margin, we estimate the probability of observing a positive bilateral investment flow using a panel random-effects probit model and its Correlated Random-Effects (CRE) extension in the Mundlak formulation (Mundlak, 1978). The random-effects approach captures pair-specific unobserved components, while the inclusion of the long-term means of the time-varying regressors (the Mundlak term) enables testing and, if necessary, correcting for the correlation between these

⁵ Technical details on the gravity specification and all the regression equations estimated in this Report are discussed in Box 1.

unobserved effects and the explanatory variables. All time-varying regressors enter the model in their lagged form to mitigate simultaneity concerns and to reflect the temporal sequencing of investment decisions.

The intensive margin examines the value of bilateral investments conditional on their presence, using panel fixed-effects (FE) and correlated random-effects (CMRE) models, both specified with lagged regressors. The FE model exploits within-dyad temporal variation, thereby controlling for all time-invariant bilateral characteristics, while the CMRE specification combines the flexibility of random effects with the Mundlak correction. This allows us to estimate coefficients for quasi-invariant variables, such as distance, and to assess the robustness of the results in the presence of potential correlations between unobserved effects and regressors.

In addition to the two-part model, we implement a dynamic event-study specification to examine how investors adjust around key steps in the EU integration process (Section 4.5). We estimate a structural gravity-type PPML model with high-dimensional fixed effects — dyad, origin year, and destination year — in line with the gravity literature on trade and FDI (Dorakh, 2020). Treatment intensity is captured by a set of relative-time indicators centred on the integration milestones (Stabilisation and Association Agreements and EU candidacy), interacted with an EU-origin dummy. These coefficients trace the dynamic differential response of EU investors relative to non-EU investors, while fully controlling for multilateral resistance terms and all time-invariant bilateral features.

Taken together, the combination of RE/CRE models for the extensive margin, FE/CMRE models for the intensive margin, and a PPML-based event-study design aligns closely with standard approaches in the gravity literature (Head and Mayer 2014; Yotov et al. 2016). This framework accommodates the prevalence of zeros, distinguishes clearly between the decision to invest and the intensity of the flow, controls for unobserved heterogeneity, and mitigates endogeneity through lag structures, the decomposition of within- and between-components, and the use of rich fixed-effects structures. The tables presented in the following subsections—based on Average Partial Effects (APEs) for the CRE and CMRE models and dynamic coefficients from the PPML event-study—represent our preferred estimations. Additional RE, FE, and lagged/contemporaneous variants serve as robustness checks, consistently confirming the stability of the main empirical patterns.

4.3. Baseline results: extensive vs intensive margins

At the extensive margin – linked to the number of active investment relationships – the results reported in Table 6 indicate that the economic size of both the origin and the destination economies foster the formation of investment links, with a stronger effect on the destination side. Significant entry costs in the host country reduce the probability of investment, while geographic distance acts as a robust negative determinant of investment.

More importantly, institutional integration variables — such as EU membership of the origin country and, to a lesser extent, WTO participation of WB economies — are positively associated with the likelihood of attracting new investment, meaning that members of the EU invest on average more than other countries in the sample, as well as WB economies formally members of the WTO attract more FDI projects than non-members. Overall, these findings underscore the role of shared regulatory frameworks in facilitating cross-border flows.

The social connectedness variable also emerges as a key factor, with a positive and significant effect, suggesting that denser interpersonal and informal networks contribute to reducing uncertainty and transaction costs, thereby promoting new bilateral investment relationships. As for the other characteristics of the host economies, absolute specialisation in manufacturing

and innovation capacity increases the probability of attracting new investors. The regulatory quality of WB economies, *per se*, does not appear to be a crucial driver of FDI, as indicated by the positive but insignificant estimated coefficient.

Box 1. Empirical Strategies: Technical Specifications

This section describes the empirical specifications used to estimate the determinants of foreign investments in the WBs. The dependent variable is the number of foreign affiliates from origin country o located in destination country d , in year t , denoted SUB_{odt} . Following a two-part (extensive vs. intensive margin) gravity approach in the spirit of Nguyen (2019), we separately model: (i) the probability that a bilateral affiliate link exists and (ii) the number of affiliates conditional on a positive link. All time-varying regressors enter with a one-year lag to mitigate simultaneity concerns and to align covariates with pre-decision conditions.

Let o denote the origin country, d the destination (WBs), and t the year.

Extensive margin outcome. Define:

$$\text{invest}_{odt} = 1(SUB_{odt} > 0)$$

indicating whether a positive affiliate link exists.

Intensive margin outcome. For observations with $SUB_{odt} > 0$:

$$\ln SUB_{odt}.$$

Regressor sets. Time-varying covariates are:

$$X_{odt}^{tv} \in \left\{ \ln GDP_{o,t}, \ln GDP_{d,t}, \text{entry_cost}_{d,t}, \ln \text{manuf_baci}_{od,t}, \text{diplo_disagreement}_{od,t}, \text{scaled_sci_2021}_{od,t}, r_d_gdp_{d,t}, z_WGI_RQ_{d,t} \right\}.$$

Bilateral or quasi time-invariant controls:

$$X_{od}^{ti} \in \{ \ln \text{dist}_{od}, \text{contig}_{od}, \text{comlang_any}_{od}, \text{wto}_{d,t}, \text{eu}_{o,t} \}.$$

All time-varying regressors enter lagged:

$$LX_{odt}^{tv} = X_{od,t-1}^{tv}.$$

Year fixed effects enter as γ_t .

Extensive margin: RE probit and CRE

The baseline random-effects probit is:

$$\Pr(\text{invest}_{odt} = 1) = \Phi\left(\alpha + (LX_{odt}^{tv})'\beta + (X_{od}^{ti})'\delta + \gamma_t + u_{od}\right),$$

where u_{od} is a dyad-specific random effect.

To allow u_{od} to correlate with time-varying regressors, Mundlak dyad-means of the lagged covariates are added:

$$\overline{LX}_{od}^{tv} = \frac{1}{T_{od}} \sum_t LX_{odt}^{tv}.$$

The correlated random-effects version becomes:

$$\Pr(\text{invest}_{odt} = 1) = \Phi\left(\alpha + (LX_{odt}^{tv})'\beta + (X_{odt}^{ti})'\delta + \gamma_t + (\overline{LX}_{od}^{tv})'\theta + u_{od}\right).$$

Average partial effects. APEs summarise how the probability of observing a positive affiliate link responds when a covariate increases marginally. For log-transformed variables, APEs capture the effect of a 1% change in the variable; for variables in levels, they reflect the effect of a one-unit change.

Intensive margin: FE and CRE

For $\text{SUB}_{odt} > 0$, the fixed-effects estimator is:

$$\ln \text{SUB}_{odt} = \alpha + (LX_{odt}^{tv})'\beta + wto_{d,t}\eta + \epsilon u_{o,t}\kappa + \gamma_t + \mu_{od} + \varepsilon_{odt},$$

where μ_{od} are dyad fixed effects. Time-invariant bilateral controls are absorbed.

The CRE version adds dyad-means of lagged covariates:

$$\ln \text{SUB}_{odt} = \alpha + (LX_{odt}^{tv})'\beta + (X_{odt}^{ti})'\delta + \gamma_t + (\overline{LX}_{od}^{tv})'\theta + u_{od} + \varepsilon_{odt}.$$

Standard errors are clustered at the dyad level (o, d).

Event-study design for EU candidacy effects. To trace the dynamic response of cross-border affiliate activity around the moment in which a Western Balkan country d obtains the official status of EU candidate, we estimate an event-study specification on the global origin-destination panel of affiliate counts. Let SUB_{odt} denote the number of subsidiaries from origin o operating in destination d , in year t , without restricting d to the WBs. For each WB economy we define the variable $\text{relCand}_{dt} = t - c_d$, where c_d is the official candidacy year, and construct a saturated set of time bins $k \in [-6, +10]$ centred on the candidacy milestone. The estimating equation is:

$$\text{SUB}_{odt} = \exp\left(\sum_k \beta_k \mathbf{1}(\text{relCand}_{dt} = k) \times EU_{o,t} + \gamma_{od} + \gamma_{o,t} + \gamma_{d,t}\right) + \varepsilon_{odt},$$

where $EU_{o,t}$ indicates whether the origin is an EU member in year t . Dyad fixed effects γ_{od} absorb all time-invariant bilateral determinants, while origin-year and destination-year effects ($\gamma_{o,t}, \gamma_{d,t}$) flexibly control for shocks specific to origins or destinations. Estimation is performed via Poisson pseudo-maximum likelihood with high-dimensional fixed effects (PPML-HDFE), with standard errors clustered at the dyad level. The base category is the year immediately preceding candidacy ($k = -1$), so all coefficients β_k trace deviations relative to the pre-candidacy baseline. The interaction structure allows the event-time profile for EU-origin investors to be compared directly with that of non-EU origins.

Robustness. As a robustness check, we re-estimate the event study specification using a log-linear model for $\ln(\text{SUB}_{odt} + 1)$ with the same set of dyad, origin-year, and destination-year fixed effects.

This may depend on the fact that consistent improvements have already been obtained during the transition phase towards a market economy and the EU.⁶

Table 6. The determinant of FDI. Extensive margin

VARIABLES	(1) (RE)	(2) (CRE)
(log of) GDP origin country (lagged one year)	0.0538*** (0.00645)	-0.0107 (0.0310)
(log of) GDP destination economy (lagged one year)	0.118*** (0.0212)	-0.0792 (0.0979)
Entry cost (destination economy lagged one year)	-0.00196** (0.000888)	-0.00140 (0.00149)
(log of) Bilateral manufacturing trade (lagged one year))	0.00881*** (0.00271)	0.00552* (0.00299)
Diplomatic disagreement (lagged one year)	-0.0265 (0.0228)	-0.00741 (0.0298)
Social connectedness Index (2021)	4.90e-07** (2.19e-07)	4.63e-07 (3.30e-07)
R&D (% of GDP, lagged one year)	0.114*** (0.0347)	0.134*** (0.0458)
Institutional quality (lagged one year)	0.0113 (0.0113)	0.0149 (0.0125)
(log of) Distance	-0.0793*** (0.0144)	-0.0725*** (0.0177)
contiguity	0.0853 (0.0980)	0.0733 (0.0800)
common language	-0.171 (0.128)	-0.186* (0.112)
Members of WTO (destination economies)	0.0636* (0.0330)	0.114* (0.0589)
Members of the EU (origin country)	0.169*** (0.0389)	0.140*** (0.0338)
Observations	6,602	6,602
Dyad effects	YES	YES
Dyad type	Random	Random
Year FE	YES	YES
Mundlak dyad means	NO	YES
Clustered SE	pair_id	pair_id

Note: The table reports average partial effects. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' elaboration

At the intensive margin - concerning the magnitude of investments with existing partners the results presented in Table 7, which focus on the volume of investments conditional on positive flows, show that social connectedness and regulatory quality of the destination country display consistent and positive effects. These results indicate that relational and institutional proximity enhances trust and supports the expansion of existing investment links. Distance remains a strong

⁶ Moving from the standard random-effects specification to the Mundlak-corrected model does not alter the qualitative results: distance, integration, and social connectedness remain strongly significant, while macroeconomic variables show a moderate attenuation, as expected when allowing for correlation between dyad effects and regressors.

deterrent, while territorial contiguity and institutional integration – through EU and WTO membership – are positively associated with higher investment volumes.⁷

Table 7. The determinant of FDI. The intensive margin

VARIABLES	(1) Intensive margin	(2) Intensive margin (MUNDLAK)
(log of) GDP (origin country, lagged one year)	-0.153 (0.169)	-0.192 (0.166)
(log of) GDP (destination economies, lagged one year)	-0.491 (0.519)	-0.462 (0.517)
Entry cost (destination economies, lagged one year)	-0.00373 (0.008)	-0.003 (0.008)
(log of) Bilateral manufacturing trade (lagged one year)	-0.0218 (0.026)	-0.0190 (0.025)
Diplomatic disagreement (lagged one year)	-0.180 (0.131)	-0.156 (0.131)
Social Connectedness Index (2021)		1.25e-06*** (3.56e-07)
R&D (% of GDP, destination economies, lagged one year)	1.771*** (0.216)	1.732*** (0.217)
Institutional Quality (lagged one year)	0.136** (0.0538)	0.125** (0.0540)
(log of) Distance		-0.497*** (0.112)
Contiguity		1.230*** (0.328)
Common language		-1.169*** (0.430)
Members of WTO (destination economy)	1.473*** (0.280)	1.449*** (0.280)
Members of EU (origin country)	-0.111 (0.0961)	0.220** (0.103)
Mundlak means:		
(log of) GDP (origin)		0.380** (0.180)
(log of) GDP (destination)		1.638*** (0.511)
Entry cost		-0.0434* (0.0263)
Manufacturing trade		0.150*** (0.0554)
Diplomatic disagreement		0.201 (0.200)
R&D (% GDP)		-2.013*** (0.780)
Institutional quality		-0.660*** (0.186)
Constant	11.75 (9.093)	-19.77*** (3.224)
Observations	2,422	2,422
R-squared	0.496	
Number of pair_id	311	311
Dyad effects	YES	YES
Dyad type	Fixed	Random
Year FE	YES	YES
Mundlak means	NO	YES
Clustered SE	pair_id	pair_id
Pseudo R-squared		0.514

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' own elaboration

⁷ The common-language variable, by contrast, shows a negative sign, suggesting that more 'natural' or culturally proximate ties may already be saturated, and that firms tend to channel higher volumes toward larger or more institutionally integrated markets.

Model fit is stable and high across specifications, with a squared correlation between predicted and observed values of around 0.51, confirming the robustness of the estimated relationships. These patterns are particularly clear in the CMRE specification, which allows us to identify the effects of quasi-time-invariant variables such as distance, contiguity, and EU membership.

Overall, the findings align with the structural gravity literature: the formation of bilateral investment links is driven by economic size, institutional integration, and social connectedness, whereas their intensity is reinforced by relational and institutional proximity and remains hindered primarily by geographic distance.

4.4. The role of the integration process

To investigate how foreign investors have adjusted their behaviour around key steps of the EU integration process, we estimate a set of event-study specifications that trace the dynamic response of FDI before and after the entry into force of the Stabilisation and Association Agreements (SAA) and the attainment of EU candidate status. The analysis is carried out using a PPML estimator with high-dimensional fixed effects (pair, investor-year, destination-year), which enables us to remove all time-invariant bilateral characteristics and fully absorb yearly macroeconomic shocks affecting either the origin or destination countries.⁸

The results (Figure 14) show a clear contrast between the SAA and the subsequent candidacy stage. For the SAA, the dynamic profile remains close to unity throughout the post-agreement period, and the pre-treatment bins exhibit some volatility but no significant acceleration. EU investors do not display a sustained or systematic increase in the establishment of new affiliates relative to non-EU investors after the agreement enters into force. In other words, the SAA does not appear to produce an immediate or persistent change in the investment behaviour of EU investors.

By contrast, the dynamics around EU candidacy exhibit a markedly different pattern. Following the baseline year, the interaction terms rise sharply: the estimated incidence rate ratios increase to roughly 1.25–1.35 in the years immediately after candidacy, with several coefficients statistically significant at the conventional level. This implies that EU investors expand their affiliates in the WBs by 25–35% more than non-EU investors, relative to the year preceding their candidacy. The adjustment persists for several years, suggesting that candidacy is perceived as a credible and strategically relevant signal of institutional commitment, stability, and convergence towards EU norms.

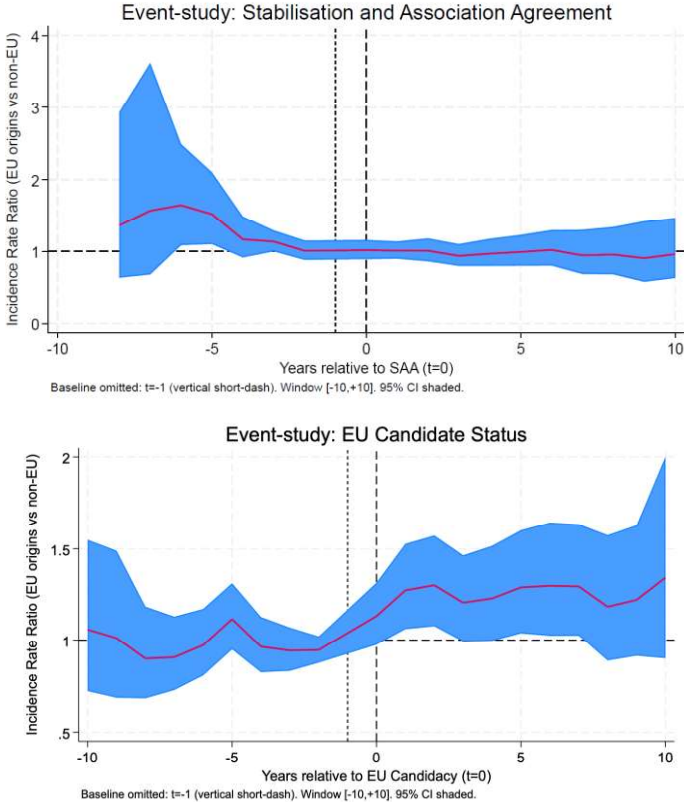
The event-study graphs also show no evidence of differential pre-trends between EU and non-EU investors prior to either the SAA or EU candidacy milestones. Coefficients in the pre-treatment period are statistically indistinguishable from zero, supporting the parallel trends assumption. In contrast, EU candidacy is associated with a persistent post-treatment increase in EU-origin investments, whereas the SAA alone yields weaker, less precisely estimated effects.

Taken together, the event-study profiles indicate that EU investors respond strongly to the political signal conveyed by candidate status, whereas the SAA alone does not elicit a comparable behavioural

⁸ In this approach, the treatment intensity is captured by a series of relative-time indicators (`rel_saa_bin` and `rel_cand_bin`), which identify each year before and after the policy milestone, normalised so that $t = -1$ is the baseline period. These indicators interact with a dummy for EU-origin investors. As a result, the coefficients represent the dynamic differential response of EU investors relative to non-EU investors. By construction, non-EU investors form the reference group and therefore do not have their own time-varying coefficients in this model.

shift. These dynamics reinforce the interpretation that the credibility, depth, and institutional bindingness of the integration milestones are key determinants of EU investors' responsiveness.

Figure 14. Event study: EU investors' response to integration steps



Note: SAA=Stabilisation and Association Agreement;
Source: Authors' own elaboration

4.5. Drivers of S3-Aligned Foreign Direct Investment

To examine the determinants of the strategic allocation of FDI across Smart Specialisation (S3) priority domains, we depart from the standard PPML gravity specification and estimate a correlated-random-effects multinomial logit model. Whereas the PPML framework is appropriate for modelling the volume of bilateral investment (extensive and intensive margins), the multinomial approach captures where individual FDI projects are allocated across four mutually exclusive S3 outcomes: no priority (0), vertical priority (1), horizontal priority (2), and dual vertical–horizontal priorities (3). Because these outcomes represent qualitatively distinct strategic choices rather than ordered intensities, a multinomial structure is essential.⁹

The regression results presented in Table 8 reveal several robust mechanisms that govern the strategic orientation of FDI. Host-country R&D intensity and social connectedness (*scaled_sci_2021*) strongly increase the likelihood that investment aligns with S3 priorities, with the largest coefficients observed for dual-priority alignment. These findings indicate that more sophisticated, relationally embedded regions are better positioned to attract investors engaged in technological

⁹ Dyad-level random effects absorb unobserved bilateral heterogeneity, while Mundlak corrections ensure consistency by modelling the correlation between regressors and these effects. Year fixed effects control for common macro-regional shocks. The full econometric specification and the complete regression table are reported in Annex 7.

upgrading activities. Crucially, EU-origin investors emerge as a dominant driver of priority-sector FDI. Projects originating in EU member states systematically exhibit a higher probability of entering vertical, horizontal, and – most markedly – dual-priority sectors. The predicted-probability bar charts (Figure 17 in Annex 7) make this pattern explicit: while non-EU investors overwhelmingly fall into the ‘no-priority’ category, EU investors display a more balanced distribution, with a pronounced shift towards dual-priority alignment.

Table 8. Summary Table of Main Coefficients

Variable	Vertical (1)	Horizontal (2)	Dual (3)
Log GDP (destination)	-1.030	-6.480	3.076
Entry cost (destination)	-0.026	0.134	0.261**
Log manufacturing bilateral trade l	0.101	0.121	0.125
Social connectedness index	0.000***	0.000**	0.000***
R&D intensity (host)	3.080**	5.324**	13.536***
Institutional quality	-0.736*	-1.216**	-1.374**
Log distance	-0.153	-0.423	-0.406
EU-origin investor	2.437**	4.144***	6.771***

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' elaboration

Scatterplots and fitted-value trends (Figure 18 in Annex 7) further reinforce this pattern, showing that the combination of strong host-country R&D capacity and EU origin is associated with the highest likelihood of dual alignment. This suggests that EU investors are more responsive to policy-driven industrial priorities and more likely to engage in activities that reinforce the technological upgrading ambitions embedded in S3 strategies. In other words, EU investors appear more sensitive to the institutional logic of S3, more embedded in EU knowledge and production networks, and more attuned to the strategic complementarities that S3 domains seek to cultivate.

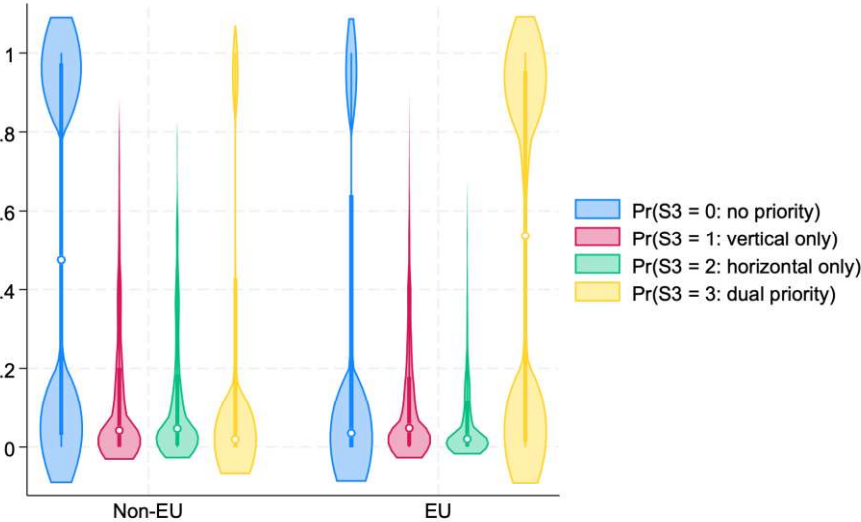
The graphical diagnostics in Annex 7 (Figure 19) support and refine the interpretation of the regression coefficients. The probability-smoother figures reveal several non-linearities not fully captured by the multinomial point estimates: (i) distance shows a declining but oscillating effect, with a sharp drop for highly distant pairs; (ii) host-country GDP displays a threshold above which dual priority rises disproportionately; (iii) social connectedness presents a steep increase for high-connectivity dyads; (iv) R&D intensity exhibits a strongly convex profile, with predicted probabilities rising sharply at higher values—consistent with the idea that strategic investments cluster where innovation ecosystems are already dense; and v) institutional quality shows a clear non-linear pattern: after an initial decline, the probability of dual-priority alignment rises again beyond a threshold of regulatory quality. This U-profile may reflect the specific institutional–technological configuration of Western Balkan economies, where medium-quality institutional settings may be associated with administrative burdens or partial reforms that deter strategic FDI, while very high-quality regulatory environments recreate the expected positive effect. These non-linearities suggest that S3-aligned FDI is not merely the outcome of linear gravitational forces but responds to thresholds and complementarities between innovation, institutions, and relational embeddedness.

Finally, the violin plot in Figure 15 offers a distributional perspective that complements both the regression table and the probability-smoother diagnostics. By contrasting the entire distribution of predicted probabilities for EU vs non-EU investors across the four S3 categories, the plot reveals that non-EU investors are heavily concentrated at the bottom of the vertical, horizontal, and dual-priority distributions, whereas EU investors display thicker, higher-density mass in all priority categories—especially in the dual-priority domain. This confirms that EU investors are not only more

likely, on average, to target S3 domains (as shown in the bar charts) but also that the shape of their probability distribution is fundamentally different: more dispersed towards high-priority outcomes, indicating greater strategic variance and selectivity.

Taken together, the evidence shows that the strategic geography of FDI across S3 domains is shaped by a combination of innovation capacity, relational connectedness, institutional thresholds, and investor origin. These mechanisms differ substantially from those identified in the baseline PPML gravity models, suggesting that the determinants of FDI volume and those of FDI strategic alignment are distinct.

Figure 15. Predicted Probability Distributions of S3 Alignment (EU vs Non-EU)



Source: Authors' elaboration

4.6. Robustness Checks

To assess the robustness of our findings, we conduct a set of additional checks using alternative estimators and augmented specifications commonly employed in gravity literature. Across all exercises, the main patterns documented in the baseline results remain broadly stable, confirming that our conclusions are not driven by functional-form assumptions, restrictive distributional choices, or omitted multilateral resistance forces. Full results are reported in Annex 8.

First, we estimate a conditional fixed-effects logit model for the extensive margin (Table 14). This estimator relies exclusively on within-dyad variation and therefore retains only those country pairs that exhibit at least one transition from zero to a positive investment over time. As a result, the sample shrinks dramatically (from more than 6,600 observations to around 1,800, covering only 170 dyads), and virtually all cross-sectional information—where most of the identifying variation in gravity models originates—is purged. As expected, the coefficients become substantially less stable and several lose significance. This behaviour is fully consistent with the well-known properties of the conditional logit estimator in gravity settings, rather than evidence against our main results. Importantly, the signs of the key determinants remain broadly aligned with those in the baseline.

Second, we augment both the extensive (Table 15) and intensive margin (Table 16) models with origin- and destination-specific measures of *remoteness* constructed from harmonic distances. These variables capture time-varying multilateral resistance forces that may not be fully absorbed

by origin-year or destination-year fixed effects. The inclusion of remoteness leaves the magnitude and significance of the main covariates essentially unchanged in both RE/CRE and FE/CMRE specifications, indicating that our findings are not sensitive to residual multilateral resistance.

Third, for the intensive margin, we estimate a Poisson/PPML fixed-effects specification (Table 17) using the same set of lagged covariates and dyad fixed effects. This model provides an alternative formulation that is robust to heteroskedasticity and does not rely on the log-normality assumption inherent in linear models. The coefficients of the main drivers—social connectedness, institutional quality, and integration—remain positive and statistically significant, further reinforcing the reliability of the baseline estimates.

Finally, we replicate the event-study specification used to analyze the dynamic effects of EU candidacy within a log-linear fixed-effects framework, based on the same dyad, origin year, and destination-year controls (Table 18). Although several event-time indicators are absorbed by the high-dimensional fixed effects, the identifiable coefficients reproduce the key features of the PPML-HDFE baseline: the profile shows no upward pre-trend for EU-origin investors and becomes positive and statistically significant only in the medium-to-long run (roughly eight to ten years after candidacy). This alignment confirms that the observed post-candidacy dynamics are not an artefact of the PPML functional form but reflect a structurally persistent adjustment in EU investment behaviour.

Taken together, the consistency in sign, magnitude, and statistical significance of the core variables across all robustness checks indicate that our main results are not sensitive to estimator choice, identifying variation, or functional-form assumptions.

5. Conclusions

Over the past decade, Smart Specialisation (S3) has become a core pillar of EU innovation and industrial policy, providing a place-based framework to strengthen innovation systems, support industrial diversification, and promote structural transformation, and by 2018 all Western Balkan economies had committed to S3; while progress varies across the region, most are now implementing their strategies and developing priority domains, with multinational enterprises and foreign direct investment playing a central role in driving growth, technology transfer, and functional upgrading within the broader EU enlargement context, which increasingly emphasises competitiveness, structural reforms, and integration into European and global value chains.

The analysis presented in this report highlights a complex yet promising landscape for the Western Balkan economies in terms of their integration into Global Value Chains and their capacity to attract foreign direct investment. The evidence shows a steadily increasing ability to attract FDI between 2007 and 2022, with a marked acceleration from the mid-2010s onward. Serbia stands out as the dominant destination, hosting around 70% of all foreign-owned firms in the region, while the remaining economies follow more diverse trajectories, often shaped by key institutional milestones such as the entry into force of the Stabilisation and Association Agreements.

From a sectoral perspective, FDI inflows are predominantly concentrated in services, notably trade, logistics, and knowledge-intensive services, mirroring the transition of Western Balkan economies towards increasingly service-oriented structures. Manufacturing investment is mainly directed toward low- and medium-low-tech activities, whereas high-value-added functions remain marginal. Nevertheless, important signals of functional specialisation are emerging: roughly half of foreign-owned firms operate in pre- or post-production activities, suggesting that the WBs are gradually positioning themselves in more knowledge-intensive segments of the value chain.

Functional upgrading trajectories differ across countries. Serbia is shifting towards pre-production activities; Kosovo* and Montenegro have strengthened their specialisation in post-production services; and Bosnia and Herzegovina has consolidated its production-oriented profile. These patterns, although heterogeneous, reflect the strategies of multinational companies and the interplay between local capabilities, institutional proximity, and various forms of relational embeddedness.

The econometric results confirm that the formation of new investment links is driven by economic size, institutional proximity, regulatory integration, and the density of social connectedness. In contrast, the intensity of existing links increases with regulatory quality, cultural proximity, and relational embeddedness. A particularly relevant finding concerns EU integration: obtaining EU candidate status generates a significant and persistent increase in FDI from EU investors, whereas SAAs do not produce comparable effects.

Regarding Smart Specialisation (S3) domains, the evidence is more nuanced. Only a minority of FDI projects fall within priority S3 sectors, and systematic alignment has not yet emerged, aside from specific cases such as tourism and creative industries. However, EU investors display a significantly higher likelihood of allocating projects to S3-related sectors, especially those with dual (vertical and horizontal) priorities, indicating complementarities among EU integration, institutional capacity, and the strategic orientation of foreign investment.

A further key result concerns the non-linear effect of regulatory quality. The analysis reveals a clear threshold dynamic: intermediate levels of institutional quality reduce the probability of attracting S3-aligned FDI, whereas regulatory quality exerts a positive effect only beyond a certain threshold, particularly for dual-priority investments. This pattern suggests the presence of institutional traps

that require targeted and substantial interventions to overcome the threshold, as incremental or partial improvements may be insufficient to trigger the necessary shift.

Overall, the findings suggest that Western Balkan economies are becoming increasingly attractive to foreign investors; however, FDI remains heavily concentrated in lower-value functions and sectors. It is therefore necessary, on the one hand, to implement successful FDI promotion policies to attract foreign investors in high-value-added sectors, and, on the other hand, to further explore the untapped potential for diversification.

Smart Specialisation (S3) can further strengthen the potential of FDI and GVC participation by providing a structured, evidence-based approach to innovation and industrial development. Beyond supporting innovation ecosystems and fostering convergence with EU standards, S3 can guide functional upgrading and deeper integration into European value chains

Its emphasis on stakeholder dialogue and entrepreneurial discovery allows economies to identify strategic investment opportunities, better tailor targeted support, and coordinate industrial and innovation policies with the role that multinational enterprises can play. In this way, S3 not only aligns investment with regional priorities but also enhances the capacity of Western Balkan economies to move into higher value-added activities and achieve sustainable, knowledge-intensive growth.

Stronger institutional convergence with the EU may support a reorientation of investment towards strategic S3 domains. However, for FDI and GVC participation to fully contribute to the region's Smart Specialisation objectives, a closer alignment between industrial policies, local innovation capabilities, and multinational firms' strategies will be essential. This calls for promoting and strengthening further opportunities for regional collaboration.

References

- Ascani A., Bettarelli L., Resmini L., Balland P-A (2020), Global networks, local specialisation and regional patterns of innovation, *Research Policy*, 49 (8): 104031.
- Bajgar, M. et al. (2020), "Coverage and representativeness of Orbis data", OECD Science, Technology and Industry Working Papers, No. 2020/06, OECD Publishing, Paris, <https://doi.org/10.1787/c7bdaa03-en>.
- Bettarelli, L., & Resmini, L. (2022). The determinants of FDI: a new network-based approach. *Applied Economics*, 54(45), 5257–5272.
- Cigna S., Gunnella V., Quaglietti L. (2022). Global value chains: measurement, trends and drivers. ECB Occasional Paper Series No. 289.
- Crescenzi R., Harman O. (2022). Climbing up global value chains: leveraging FDI for economic development. Hinrich Foundation, June 2022.
- Deegan J., Broekel T., Fitjar R.D. (2021). Searching through the haystack: the relatedness and complexity of priorities in smart specialisation strategy. *Economic Geography*, 97 (5): 497-520.
- Defever F. (2006). Functional fragmentation and the location of multinational firms in the enlarged Europe. *Regional Science and Urban Economics*, 36 (5): 658-677
- Defever F. (2012). The spatial organisation of multinational firms. *Canadian Journal of Economics*, 45: 672-697.
- Dorakh, A. (2020). A gravity model analysis of FDI across EU member states. *Journal of Economic Integration*, 35(3), 426-456.
- Head, K. and Mayer, T., 2014. Gravity equations: Workhorse, toolkit, and cookbook. In *Handbook of International Economics* (Vol. 4, pp. 131-195). Elsevier.
- Johnson R. (2018). Measuring global value chains. *Annual Review of Economics*, 10: 207-236
- Johnson R., Noguera (2021). Accounting for Intermediates: Production Sharing and Trade in Value Added. *Journal of International Economics*, 86 (2): 224-236
- Kalemli-Özcan, Şebnem, Bent Sørensen, Carolina Villegas-Sanchez, Vadym Volosovych, and Sevcan Yeşiltaş. 2019. 'How to Construct Nationally Representative Firm Level Data from the ORBIS Global Database'. Working Paper 21558. National Bureau of Economic Research. <https://doi.org/10.3386/w21558>.
- Kleinert, J. and Toubal, F. (2007): Gravity for FDI, Tübinger Diskussionsbeiträge, No. 313, Eberhard Karls Universität Tübingen, Wirtschaftswissenschaftliche Fakultät, Tübingen
- Koopman R., Zhi W., Shang-Jin W. (2012). Tracing Value-Added and Double Counting in Gross Exports. *American Economic Review*, 104(2): 459-494.
- Marrocu E., Paci R., Usai S. (2020). Smart specialisation strategy: any relatedness between theory and practice?; Working Paper CRENoS 202004, Centre for North South Economic Research, University of Cagliari and Sassari.
- Mundlak Y. (1978). On the pooling of time series and cross-sectional data. *Econometrica*, 46 (1): 69-85.
- Nguyen, A.T., 2019. A global analysis of factors impacting the intensive and extensive margins of bilateral foreign direct investment. *The World Economy*, 42(9), pp.2649-2667.

- Pleticha P. (2021). Who benefits from global value chain participation? Does functional specialisation matter?. *Structural Change and Economic Dynamics*, 58: 291-299.
- Radovanovic, N., Fabbri, E., Matusiak, M., Conte, A., Salotti, S., Dosso, M., Hollanders, H., Merkelbach, I., Toliás, Y., Duran Silva, N., Fuster Martí, E., Massucci, F.A. and Plazas, A. (2024). *Smart Specialisation in the Western Balkans: potential for knowledge-based economic cooperation*, Radovanovic, N., and Fabbri, E., editors, Publications Office of the European Union, Luxembourg, JRC136606.
- Resmini L., Bettarelli L., Calogero V., Comi S., Grasseni M. (2024). One-size-does-not-fit-all: The heterogeneous impact of BITs on regions participating in GPNs. *Papers in Regional Science*, 103 (2): 100020.
- Rungi A. del Prete D. (2018). The smile curve at the firm level: where value is added along supply chains. *Economics Letter*, 164: 38-42
- Shish S. (1996). Me-Too is not my Style: Challenge difficulties, break through bottlenecks, create value. The Acer Foundation, Taipei.
- Stollinger R. (2021). Testing the smile curve. Functional specialisation and value creation in global value chains. *Structural Change and Economic Dynamics*, 56: 93-116
- Stollinger R. (2019). Functional specialisation in global value chains and the middle-income trap. WIIW Research Report 441.
- Timmer M., Miroudot S., de Vries G.J. (2019). Functional specialisation in trade. *Journal of Economic Geography*, 19: 1-30.
- Timmer M., Dietzenbacher E., Los B., Stehrer R., de Vries G. (2015). An Illustrated User Guide to the World Input-Output Database: the Case of Global Automotive Production. *Review of International Economics*, 23(3), 575-605.
- Yotov, Y.V., Piermartini, R. and Larch, M., 2016. *An advanced guide to trade policy analysis: The structural gravity model*. WTO iLibrary.

List of boxes

Box 1. Empirical Strategies: Technical Specifications.....	32
---	----

List of figures

Figure 1. Foreign-owned firms in WBs, 2007-2022 (number of firms).....	10
Figure 2. Foreign-controlled companies in each of the WBs	11
Figure 3. Origin of FDI into the WBs, top 20 investors (2007-2022).....	12
Figure 4. Top 5 investor countries in the WBs.....	14
Figure 5. Distribution of Foreign-controlled companies in the WBs by sector.....	15
Figure 6. Distribution of foreign-controlled companies by sector and host economy	16
Figure 7. Distribution of Foreign-owned firms by GVC function.....	17
Figure 8. Distribution of Foreign-controlled firms by hosting economy and GVC function	18
Figure 9. Distribution of foreign-owned firms in production and services activities	19
Figure 10. Distribution of foreign-controlled firms within production activities by hosting economy	19
Figure 11. Distribution of foreign-controlled firms within services activities by hosting economy..	20
Figure 12. Changes in Functional specialisation	21
Figure 13. Evolution of FDI in horizontal priorities/enablers vs vertical priorities 2007-2022 (2007=100).....	26
Figure 14. Event study: EU investors' response to integration steps.....	37
Figure 15. Predicted Probability Distributions of S3 Alignment (EU vs Non-EU).....	39
Figure 16. Time evolution of horizontal priorities/enablers vs vertical priorities by GVC function 2007-2022.....	53
Figure 17. Predicted Probability Distribution of S3 Priority Alignment: EU vs Non-EU Investors.....	56
Figure 18. Scatterplots of Key Determinants of S3-Aligned FDI Across All Dyads.....	57
Figure 19. Predicted Probabilities of S3 Priority Alignment Across Core Determinants	58

List of tables

Table 1. Balkan economies' S3 vertical and horizontal priorities/enablers (identified or under investigation).....	23
Table 2. Foreign-owned companies by vertical S3 (emerging) domains and hosting economies, 2022 (number of firms and percentages).....	24
Table 3. Foreign-owned companies by horizontal S3 (emerging) priorities/enablers and hosting economies, 2022 (number of firms and percentages).....	25
Table 4. Relative concentration of FDI projects in S3 (emerging) priorities/enablers, 2022	25
Table 5. Main variables: description and sources.....	30
Table 6. The determinant of FDI. Extensive margin.....	34
Table 7. The determinant of FDI. The intensive margin.....	35
Table 8. Summary Table of Main Coefficients.....	38
Table 9. Pearson Correlation Coefficients (Rankings of Main Investor Countries).....	47
Table 10. Categorisation of NACE 4-digit sectors in macro-sectors.....	48
Table 11. Categorisation of NACE sectors in value chain functions.....	50
Table 12. From NACE sectors to S3 priorities/enablers (adopted or under scrutiny).....	51
Table 13. Multinomial Logit Coefficients for S3 Priority Categories.....	56
Table 14. Extensive Margin Robustness: Conditional Logit Fixed-Effects Estimates.....	59
Table 15. Extensive Margin Robustness: Probit RE and CRE Specifications with Remoteness.....	60
Table 16. Intensive Margin Robustness: Fixed-Effects and Correlated Random-Effects Models with Remoteness.....	61
Table 17. Intensive Margin Robustness: Poisson and PPML Fixed-Effects Estimates.....	62
Table 18. Dynamic Effects of EU Candidacy on FDI to the Western Balkans: PPML-HDFE vs. Log-Linear FE Estimates.....	62

Annexes

Annex 1. Ownership networks

To identify foreign-controlled companies in each of the six Western Balkan economies, we utilize Orbis Historical Datahub, which tracks control relationships between each subsidiary and its Global Ultimate Owner (GUO), i.e., the independent company at the top of the corporate structure, with the highest direct or total ownership percentage. The minimum percentage that must characterise the path from the subject company to its Global Ultimate Owner is 25.01%.

We implement some adjustments to the original dataset. In particular, we dropped observed firms with incomplete firmographics or ownership information, observations for which the subject company and the GUO were located in the same country, and observations involving a GUO with an unknown country code or an obvious error in the country assignment. Lastly, since we are interested in investigating the participation of Western Balkan economies in global production networks, we excluded subject companies whose GUO is not a company.

After these cleanings, we end up with an operational panel sample of 249,203 foreign-owned companies located in the Western Balkan economies and their GUOs. For each of these companies, we retrieved information on the sector of activity (NACE Rev. 2.2, 4-digit code). As for the GUOs, we retrieved information on the country of origin and the sector of activity (NACE Rev. 2.2 – 4-digit code).

Annex 2. Validation of the data

Although Orbis is widely used in the literature on FDI, we wonder whether and to what extent our data reflect true patterns of inward FDI in the six Balkan economies. To answer this crucial question, we compared the number of foreign affiliates recorded in our database with official inward FDI stock data (IMF, CDIS query). More specifically, we ranked investor countries by the number of foreign subsidiaries in each Balkan economy and by inward FDI stocks and computed Pearson rank correlation statistics to assess the strength and direction of the linear relationship between the two distributions. It ranges from -1 to +1. A value of +1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates no linear correlation. Results are shown in Table A2.1. The Pearson correlation coefficients are all positive and above 0.8. This implies that our database is a good representation of inward FDI stocks in the selected economies.

Table 9. Pearson Correlation Coefficients (Rankings of Main Investor Countries)

Country	Pearson's correlation coefficient
Albania	0.87
Bosnia & Herzegovina	0.94
Kosovo*	0.93
Montenegro	0.87
North Macedonia	0.87
Serbia	0.92

Source: Authors' own elaboration

Annex 3. Categorisation of NACE 4-digit sectors in macro-sectors

Table 10. Categorisation of NACE 4-digit sectors in macro-sectors

Macro-sector	NACE codes	Description
High and medium-high tech-intensive industries	21	Pharmaceutical products and preparations
	25.4	Manufacture of weapons and ammunition
	26	Electronics, medical and surgical equipment, optical instruments
	30.3	Aircraft and Spacecraft
	32.5	Medical devices
	20	Chemicals
	27.1-27.3	Manufacture of motors and electrical equipment
	27.4	Lighting fixtures
	27.5	Household appliances
	27.9	Manufacture of other electrical equipment
	28	Machinery and other Mechanical equipment
	29	Motor vehicles, trailers and semi-trailers
	30.1-30.2	Ships and boats; locomotives and railway rolling stock
	30.4	Military vehicles
	30.9	Other means of transport
Low- and medium-low tech industries	33	Repair, maintenance and installation of machinery and equipment
	25.2-25.3	Metal products, tanks, boilers
	25.5-25.6	Forging, treatment and coating of metals
	19	Coke and refined petroleum products
	22	Rubber and plastic products
	23.1-23.2	glass, glass and refractory products
	23.5-23.9	Bricks, cement, concrete, stones and other non-metallic products
	24	Manufacture of basic metals
	25.1	Manufacture of structural metal products
	23.3-23.4	Building materials and ceramic products
	25.7-25.9	Cutlery, tools and other metal products
	17	Paper pulp, paper and paper products
	18	Printing and reproduction of recorded media
	10-12	Food, beverages and tobacco
	13-15	Textiles, clothing and leather products
16	Wood and wood and cork products	
31-32 (-32.5)	Furniture and other artifacts	
Mining and energy industries	05-09	Mining and quarrying
	35, 36-39	Energy, water, and environment
Constructions	41-43	Constructions

Macro-sector	NACE codes	Description
Knowledge and technology-intensive services	53	Postal services and the courier business
	58, 60-63	Information and communication services
	72	Scientific research and development
	50	Sea and water transport services
	51	Air transport services
	68	Real estate activities
	69-71	Professional and consulting activities
	73-74	Market research and other professional activities
	77-78, 80-82	Rental activities and other business services
Financial services	84-88	Public admin. services; instruction; healthcare, social residential services
	66	Activities auxiliary to financial services and insurance activities
Wholesale and Retail services	64-65	Financial, banking, insurance and pension fund services
	45	trade, maintenance and repair of cars and motorcycles
	46	Wholesale and brokerage trade
Other services	47	Retail trade
	49	Land transport and transport via pipelines
	52	Warehousing and support activities for transportation
	55	Accommodation
	56	Food and beverage service activities
	59	Motion picture, video, and television programme production, sound recording, and music publishing activities
	75	Veterinary activities
79	Travel agencies and related activities	
90-93	Arts, entertainment, and recreation	

Source: EUROSTAT

Annex 4. Categorisation of NACE sectors in value chain functions

Table 11. Categorisation of NACE sectors in value chain functions

Economic activity	GVC function (narrow categories)	GVC function (broad categories)
R&D services	R&D and related services	Pre-production services
Engineering and related technical services		
Specialised design services		
Business services	Headquarter services	
ICT services		
Manufacturing	Production	
Recycling		
Extraction		
Freight transport services (agency included)	Distribution and logistics	Post-production services
Cargo handling services		
Storage and warehousing services		
Marketing services	Marketing, sales and after-sales services	
Advertising and related services		
Market research and public opinion polling services		
Trade show assistance & organisation services		
Call centre services		

Source: Stollinger (2019)

Annex 5. From NACE sectors to S3 priorities/enablers

Table 12. From NACE sectors to S3 priorities/enablers (adopted or under scrutiny)

Country	Priority/enabler type	Priority/enabler domain	NACE 3-digit
AL	Horizontal	Digitalisation and interconnectivity	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
AL	Vertical	Healthy and Sustainable Food Chain	011, 012, 013, 101, 102, 103, 104, 105, 106, 108, 110
AL	Vertical	Tourism (health tourism)	551, 552, 553, 559, 561, 563, 791
AL	Vertical	Renewal & clean energy & natural resources	351, 352, 360, 381, 382
BA	Horizontal	ICT	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
BA	Vertical	ICT and Digitalization	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
BA	Vertical	Metal and Electrical Industry	241, 242, 243, 244, 245, 251, 252, 253, 255, 256, 257, 259, 271, 272, 273, 274, 275, 279, 281, 282, 283, 284, 289, 291, 292, 293, 301, 302, 303, 304, 309, 331, 411, 412, 421, 422, 429, 431, 432, 433, 711
BA	Vertical	Wood industry	161, 162
BA	Vertical	Plastic production and processing	222
BA	Vertical	Food & Beverage production and processing	101, 102, 103, 104, 105, 106, 108, 110
BA	Vertical	Tourism	551, 552, 553, 559, 561, 563, 791
BA	Vertical	Energy and environment	351, 352, 360, 381, 382
XK	Horizontal	ICT	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
XK	Vertical	Creative industries	181, 321, 322, 476, 581, 582, 591, 602, 639, 711, 741, 742, 743, 855, 900, 910
XK	Vertical	Wood processing industry	161, 162
XK	Vertical	Green energy	351, 352
XK	Vertical	Agrifood processing	011, 012, 013, 101, 102, 103, 104, 105, 106, 108, 110
XK	Vertical	Creative industry	476, 581, 711, 855, 900
ME	Horizontal	ICT	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
ME	Vertical	Sustainable agriculture and food value chain	011, 012, 013, 101, 102, 103, 104, 105, 106, 108, 110
ME	Vertical	Renewable energy sources and energy efficiency	351, 352, 360
ME	Vertical	Sustainable environment	381, 382
ME	Vertical	Sustainable and health tourism	551, 552, 553, 559, 561, 563, 791
MK	Horizontal	Energy for the future	351, 352, 360
MK	Horizontal	Tourism	551, 552, 553, 559, 561, 563, 791

Country	Priority/enabler type	Priority/enabler domain	NACE 3-digit
MK	Vertical	Information and Communication Technologies (ICT)	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
MK	Vertical	Mechanical and Electrical Industry	241, 242, 243, 244, 245, 251, 252, 253, 255, 256, 257, 259, 271, 272, 273, 274, 275, 279, 281, 282, 283, 284, 289, 291, 292, 293, 301, 302, 303, 304, 309, 331, 411, 412, 421, 422, 429, 431, 432, 433, 711
MK	Vertical	Smart Agriculture and Food with Higher Added-Value	011, 012, 013, 101, 102, 103, 104, 105, 106, 108, 110
MK	Vertical	Mechanical and electrical industry	241, 251, 255, 271, 273, 411, 412, 421, 422, 429, 431, 432, 433, 711
MK	Vertical	Sustainable Materials and Smart Buildings	231, 233, 236, 251
RS	Horizontal	Energy Efficient and Eco-smart Solutions	351, 352, 360, 381, 382
RS	Horizontal	Key-enabling technology	201, 261, 262, 268, 721
RS	Vertical	ICT	261, 262, 263, 264, 268, 465, 582, 611, 612, 620, 631, 951
RS	Vertical	Creative industries	181, 321, 322, 476, 581, 582, 591, 602, 639, 711, 741, 742, 743, 855, 900, 910
RS	Vertical	Food for the future	011, 012, 013, 101, 102, 103, 104, 105, 106, 108, 110
RS	Vertical	Future Machines and Manufacturing Systems	256, 265, 279

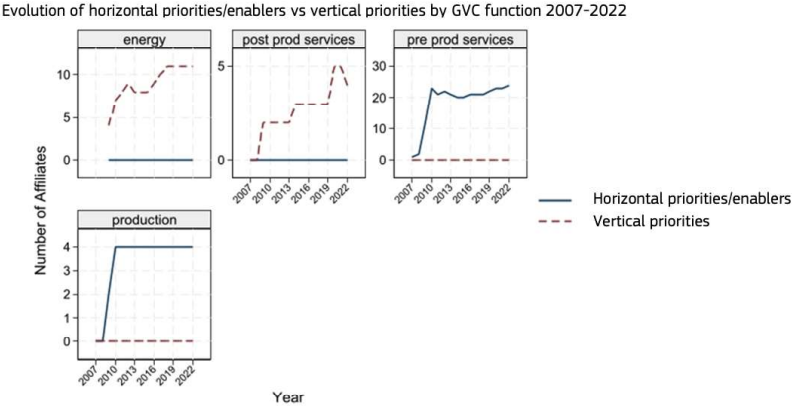
Note: AL=Albania, BA=Bosnia and Herzegovina; XK=Kosovo*; ME=Montenegro; MK=North Macedonia; RS=Serbia.

Source: Authors' own elaboration

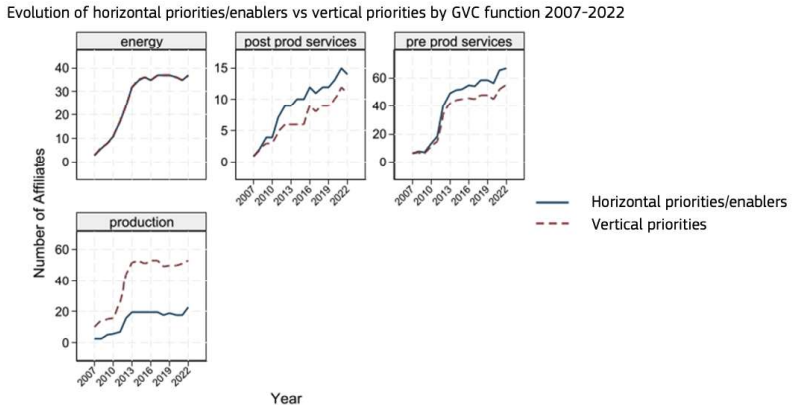
Annex 6. FDI by S3 priorities/enablers and function in GVCs

Figure 16. Time evolution of horizontal priorities/enablers vs vertical priorities by GVC function 2007-2022

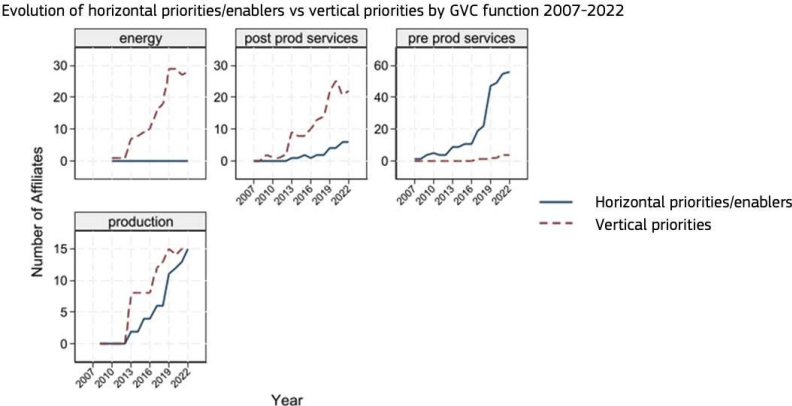
a) Albania



b) Bosnia and Herzegovina

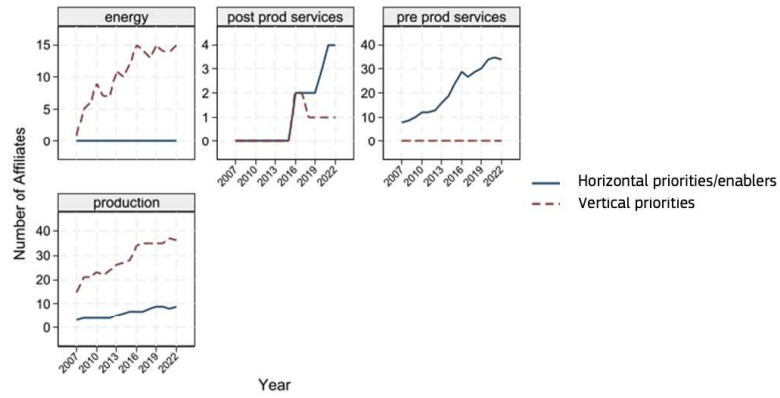


c) Kosovo*



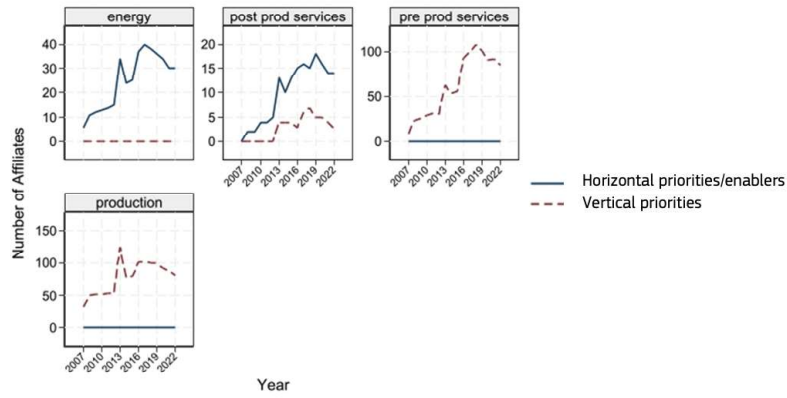
d) Montenegro

Evolution of horizontal priorities/enablers vs vertical priorities by GVC function 2007-2022



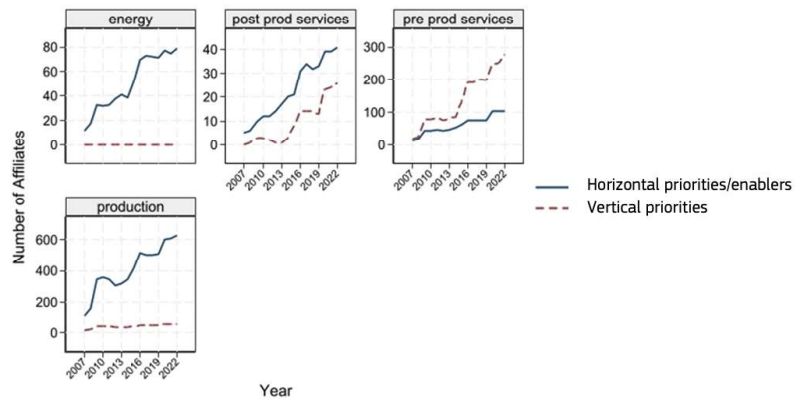
e) North Macedonia

Evolution of horizontal priorities/enablers vs vertical priorities by GVC function 2007-2022



f) Serbia

Evolution of horizontal priorities/enablers vs vertical priorities by GVC function 2007-2022



Source: Authors' own elaboration

Annex 7. Multinomial CRE Specification for S3 Priority Alignment

This Annex provides the technical details of the correlated–random–effects multinomial logit model used to study the determinants of the strategic allocation of foreign direct investment (FDI) across Smart Specialisation (S3) priority domains. The outcome variable $s3_cat_{odt}$ takes four mutually exclusive values:

$$s3_cat_{odt} \in \{0 \text{ (no priority)}, 1 \text{ (vertical)}, 2 \text{ (horizontal)}, 3 \text{ (dual priority)}\},$$

where o denotes the origin country of the investor, d the host (WB6) country, and t the year.

Model structure. Let category 0 be the baseline. The probability that a bilateral FDI project falls in category $j \in \{1, 2, 3\}$ is:

$$\Pr(s3_cat_{odt} = j) = \frac{\exp(\alpha_j + (LX_{odt}^{tv})' \beta_j + (X_{od}^{ti})' \delta_j + \gamma_{t,j} + u_{od,j})}{1 + \sum_{k \in \{1,2,3\}} \exp(\alpha_k + (LX_{odt}^{tv})' \beta_k + (X_{od}^{ti})' \delta_k + \gamma_{t,k} + u_{od,k})}$$

The regressor sets follow those in Section 4.3. Time-varying covariates X_{odt}^{tv} enter with a one-year lag, i.e., $LX_{odt}^{tv} = X_{od,t-1}^{tv}$, while time-invariant bilateral controls X_{od}^{ti} include geographical, cultural, and institutional features. Year fixed effects $\gamma_{t,j}$ account for macro shocks common to all dyads.

Random effects and Mundlak correction. To model unobserved dyad-level heterogeneity in project allocation, we specify a random effect $u_{od,j}$ for each category j . To allow for correlation between $u_{od,j}$ and the lagged time-varying regressors, we include Mundlak dyad-means:

$$\overline{LX}_{od}^{tv} = \frac{1}{T_{od}} \sum_t LX_{odt}^{tv}.$$

The full CRE specification is:

$$\Pr(s3_cat_{odt} = j | u_{od,j}) = \frac{\exp(\alpha_j + (LX_{odt}^{tv})' \beta_j + (X_{od}^{ti})' \delta_j + \gamma_{t,j} + (\overline{LX}_{od}^{tv})' \theta_j + u_{od,j})}{1 + \sum_{k \in \{1,2,3\}} \exp(\alpha_k + (LX_{odt}^{tv})' \beta_k + (X_{od}^{ti})' \delta_k + \gamma_{t,k} + (\overline{LX}_{od}^{tv})' \theta_k + u_{od,k})}$$

The random effects are assumed mutually independent across dyads and categories:

$$u_{od,j} \sim N(0, \sigma_u^2),$$

and Stata returns a single dyad-level variance component σ_u^2 for the model, as COM structures impose common heterogeneity across equations.

Interpretation and identification. Coefficients are interpreted relative to the baseline category ($s3_cat = 0$). For log-transformed regressors, β_j measures the semi-elasticity of assigning a project to category j rather than to the non-priority baseline. For level variables, coefficients capture the effect of a one-unit change. A positive coefficient increases the relative log-odds of selecting category j .

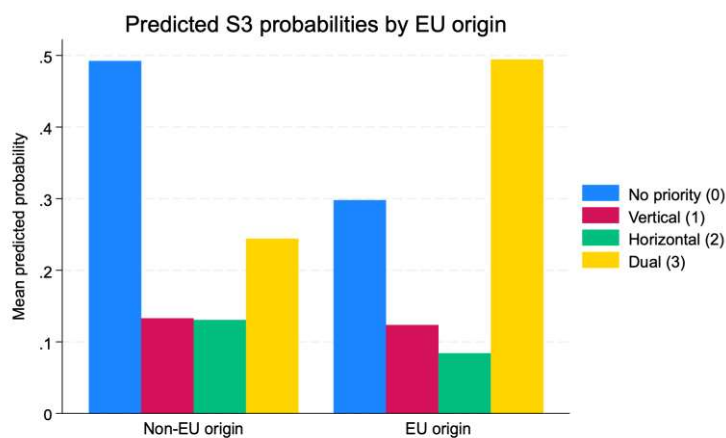
Table 13. Multinomial Logit Coefficients for S3 Priority Categories

Variable	Vertical (1)	Horizontal (2)	Dual (3)
lnGDP_o	-0.330	-0.698	-1.233
lnGDP_d	-6.480	-1.030	3.076
entry_cost_d	0.134	-0.0265	0.261*
ln_manuf	0.121	0.101	0.125
diplo_disagreement	0.175	-0.299	-0.640
scaled_sci_2021	0.00000790*	0.00000456**	0.0000124***
r_d_gdp_d	5.324*	3.080*	13.54***
z_WGI_RQ_d	-1.216*	-0.736	-1.374*
ln_dist	-0.423	-0.153	-0.406
contig	0.232	-0.510	-1.476
comlang_any	1.972	1.486	3.723
wto_d	-0.137	0.274	4.531
eu_o	4.144**	2.437*	6.771***
m_lnGDP_o	0.701	0.614	1.511
m_lnGDP_d	9.400	2.803	2.982
m_entry_cost_d	-0.438	-0.252	-0.839**
m_ln_manuf_baci	0.314	0.266	1.045*
m_diplo_disagreement	0.131	0.596	2.633
m_scaled_sci_2021	—	—	—
m_r_d_gdp_d	-10.57*	-3.809	-21.50**
m_z_WGI_RQ_d	1.026	-0.0507	-1.173
Constant	-64.17**	-34.31	-126.4***
Variance	38.14	38.14	38.14
N	2,285	2,285	2,285

Note: See Table 5 for a description of the variables included in the regressions. The suffix *m_* identifies the Mundlak terms.
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

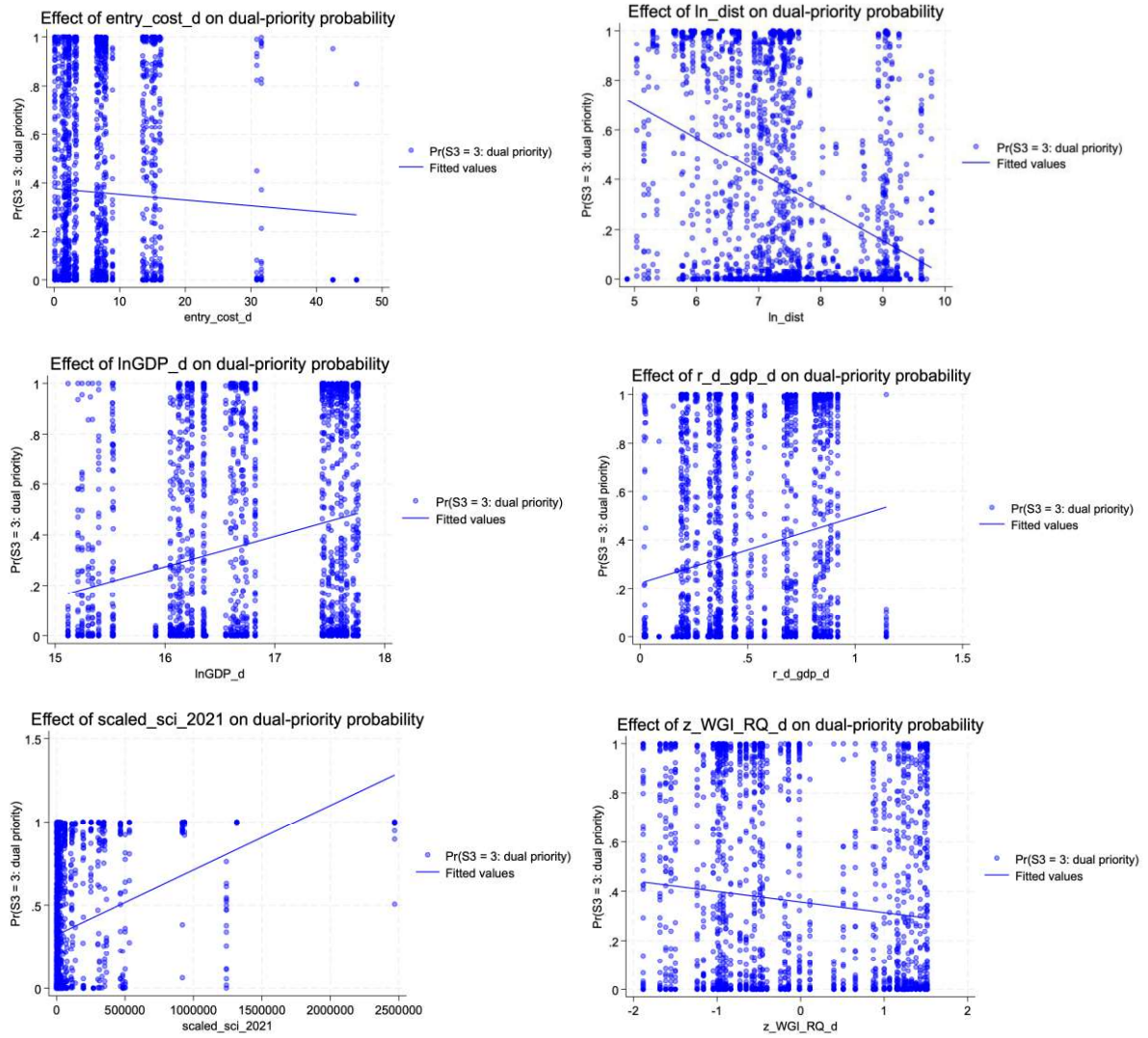
Source: Authors' own elaboration

Figure 17. Predicted Probability Distribution of S3 Priority Alignment: EU vs Non-EU Investors.



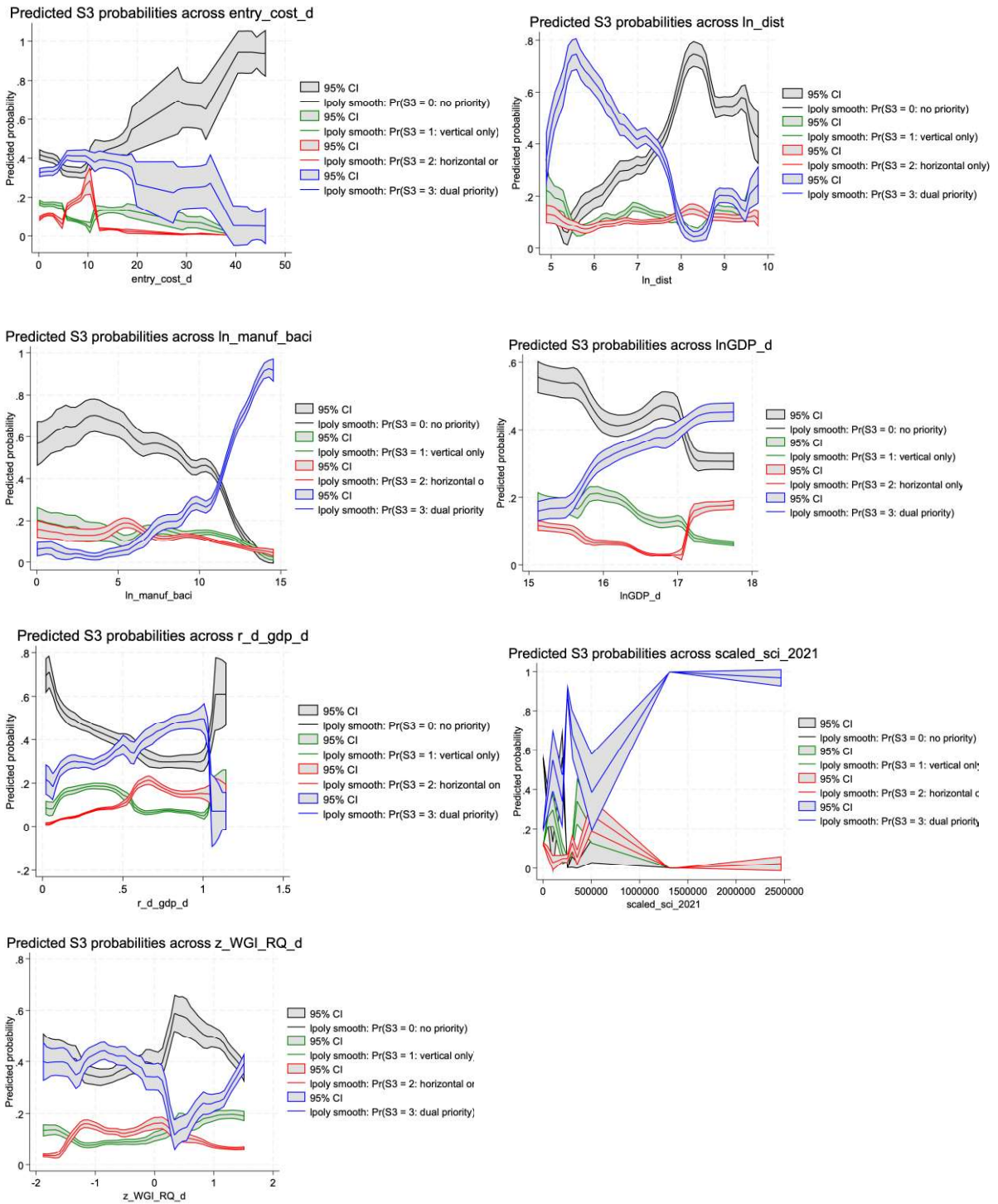
Source: Authors' own elaboration

Figure 18. Scatterplots of Key Determinants of S3-Aligned FDI Across All Dyads



Source: Authors' own elaboration

Figure 19. Predicted Probabilities of S3 Priority Alignment Across Core Determinants



Source: Authors' own elaboration

Annex 8. Robustness

Table 14. Extensive Margin Robustness: Conditional Logit Fixed-Effects Estimates

VARIABLES	Extensive margin - Logit FE robustness
L_lnGDP_o	-0.774 (0.654)
L_lnGDP_d	-3.139 (2.356)
L_entry_cost_d	-0.0506 (0.0448)
L_ln_manuf	0.145* (0.0868)
L_diplo_disagreement	-0.652 (0.554)
L_r_d_gdp_d	1.511* (0.859)
L_z_WGI_RQ_d	0.347 (0.302)
Observations	1,810
Number of pair_id	170

Note: See Table 5 for a description of the variables included in the regression equation. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' own elaboration

Table 15. Extensive Margin Robustness: Probit RE and CRE Specifications with Remoteness

VARIABLES	(1) Intensive margin - RE probit	(2) Intensive margin - CRE probit
L_lnGDP_o	0.918*** (0.128)	-0.176 (0.563)
L_lnGDP_d	1.702** (0.731)	-1.834 (2.155)
L_entry_cost_d	-0.0277 (0.0175)	-0.0392 (0.0413)
L_ln_manuf	0.139*** (0.0430)	0.102* (0.0542)
L_diplo_disagreement	-0.393 (0.369)	-0.135 (0.540)
L_scaled_sci_2021	8.17e-06** (3.71e-06)	8.48e-06** (3.70e-06)
L_r_d_gdp_d	1.785*** (0.629)	2.429*** (0.802)
L_z_WGI_RQ_d	0.141 (0.189)	0.284 (0.231)
remote_o	0.000182* (9.34e-05)	0.000124 (0.000105)
remote_d	0.0445 (0.0871)	0.280 (0.652)
ln_dist	-2.143*** (0.474)	-1.891*** (0.541)
contig	1.475 (2.640)	1.351 (3.048)
comlang_any	-3.794 (2.914)	-3.740 (3.278)
wto_d	0.877 (0.690)	2.197** (1.072)
eu_o	3.057*** (0.657)	2.844*** (0.649)
m_L_lnGDP_o		1.135* (0.589)
m_L_lnGDP_d		1.660 (3.959)
m_L_entry_cost_d		0.0895 (0.256)
m_L_ln_manuf_baci		0.0995 (0.0947)
m_L_diplo_disagreement		-0.531 (0.636)
m_L_r_d_gdp_d		0.895 (2.202)
m_L_z_WGI_RQ_d		-1.608 (2.193)
Constant	-322.7 (555.2)	-1,828 (4,162)
Observations	6,602	6,602
Number of pair_id	764	764

Note: See Table 5 for a description of the variables included in the regression specifications. The suffix *m_* identifies the Mundlak terms. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' own elaboration

Table 16. Intensive Margin Robustness: Fixed-Effects and Correlated Random-Effects Models with Remoteness.

VARIABLES	(1) Intensive margin FE	(2) Intensive margin CRE
L_lnGDP_o	-0.151 (¹) (0.168)	-0.200 (0.164)
L_lnGDP_d	-0.745 (0.582)	-0.721 (0.580)
L_entry_cost_d	-0.0142 (0.0111)	-0.0134 (0.0112)
L_ln_manuf_baci	-0.0213 (0.0263)	-0.0186 (0.0253)
L_diplo_disagreement	-0.180 (0.130)	-0.151 (0.131)
L_scaled_sci_2021		1.23e-06*** (3.54e-07)
L_r_d_gdp_d	1.707*** (0.206)	1.672*** (0.206)
L_z_WGI_RQ_d	0.135** (0.0537)	0.125** (0.0537)
remote_o	-0.00472 (0.00298)	2.68e-05 (5.18e-05)
remote_d	0.244 (0.166)	0.240 (0.166)
wto_d	1.516*** (0.287)	1.492*** (0.289)
eu_o	-0.106 (0.0935)	0.226** (0.105)
mIntL_L_lnGDP_o		0.397** (0.180)
mIntL_L_lnGDP_d		0.133 (1.042)
mIntL_L_entry_cost_d		0.0469 (0.0654)
mIntL_L_ln_manuf_baci		0.142** (0.0574)
mIntL_L_diplo_disagreement		0.215 (0.203)
mIntL_L_r_d_gdp_d		-2.172*** (0.808)
mIntL_L_z_WGI_RQ_d		-1.365** (0.584)
Constant	-1,551 (1,076)	-1,547 (1,058)
Observations	2,422	2,422
R-squared	0.497	
Number of pair_id	311	311

Note: See Table 5 for a description of the variables included in the regression specifications. The suffix *m_* identifies the Mundlak terms. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' own elaboration

Table 17. Intensive Margin Robustness: Poisson and PPML Fixed-Effects Estimates

VARIABLES	Intensive margin
L_lnGDP_o	0.196 (0.208)
L_lnGDP_d	1.310** (0.666)
L_entry_cost_d	-0.0111 (0.0103)
L_ln_manuf	-0.0173 (0.0391)
L_diplo_disagreement	-0.0192 (0.149)
L_r_d_gdp_d	1.382*** (0.238)
L_z_WGI_RQ_d	0.217*** (0.0438)
wto_d	0.924*** (0.301)
eu_o	-0.0676 (0.0534)
Constant	-21.22* (12.12)
Observations	2,393

Note: Note: See Table 5 for a description of the variables included in the regression specifications. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' own elaboration

Table 18. Dynamic Effects of EU Candidacy on FDI to the Western Balkans: PPML-HDFE vs. Log-Linear FE Estimates

VARIABLES	(1) PPML-HDFE	(2) OLS log-lin
1.rel_cand_bin#1.eu_o	0.136 (0.141)	-0.267*** (0.089)
2.rel_cand_bin#1.eu_o	-0.019 (0.160)	-0.178** (0.076)
3.rel_cand_bin#1.eu_o	-0.114 (0.095)	0.101** (0.052)
4.rel_cand_bin#1.eu_o	-0.209** (0.097)	0.053 (0.041)
6.rel_cand_bin#1.eu_o	0.237** (0.116)	-0.089* (0.049)
7.rel_cand_bin#1.eu_o	0.559*** (0.148)	-0.154** (0.062)
8.rel_cand_bin#1.eu_o	0.634*** (0.176)	-0.064 (0.071)
9.rel_cand_bin#1.eu_o	0.400*** (0.132)	0.103 (0.084)
10.rel_cand_bin#1.eu_o	0.698*** (0.197)	-0.013 (0.090)
11.rel_cand_bin#1.eu_o	0.717*** (0.213)	0.008 (0.104)
12.rel_cand_bin#1.eu_o	0.609** (0.265)	0.079 (0.121)
13.rel_cand_bin#1.eu_o	0.601** (0.276)	0.111 (0.130)
14.rel_cand_bin#1.eu_o	0.570** (0.253)	0.301** (0.136)
15.rel_cand_bin#1.eu_o	0.714*** (0.270)	0.258* (0.143)
16.rel_cand_bin#1.eu_o	0.494* (0.256)	0.462*** (0.176)
Constant	12.825*** (0.003)	0.742*** (0.011)
Observations	6,242	17,654
R-squared		0.964
Clusters	441	1172

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' own elaboration

Getting in touch with the EU

In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696,
- via the following form: european-union.europa.eu/contact-eu/write-us_en.

Finding information about the EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

EU open data

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.



Publications Office
of the European Union