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Supply backshoring as a strategy to reduce transaction costs in an era of global value chain reconfiguration☆

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ABSTRACT

In recent years, the global economic landscape has become increasingly turbulent, exposing Global Value Chains (GVCs) to unexpected disruptions and leading companies to reassess their international strategies. To enhance their resilience and reduce dependencies on unstable markets, firms are adopting, among others, relocation strategies, including supply backshoring: the substitution of foreign suppliers with those in the home country. In this paper, we investigate the supply backshoring phenomenon through the lens of Transaction Cost Economics (TCE). Our empirical analysis, based on a dataset of Italian manufacturing companies integrating primary data from a survey conducted from June 2021 to February 2022 and archival data, supports the hypothesis that firms with higher asset specificity—measured by R&D and advertising intensity, as well as Intellectual Property rights intensity—display a greater likelihood of adopting supply backshoring. We also find some contingent effect, i.e., the positive relationship between firm asset specificity and the probability of implementing a supply backshoring strategy is stronger for medium-sized firms and for supplier-dominated and specialized supplier industries, while we do not find significant differences between firms operating in high-tech and low-tech industries. Our findings contribute to the understanding of supply backshoring by empirically validating TCE's relevance in this context and highlighting the role of asset specificity in firms' strategic decisions. This study offers one of the first comprehensive characterizations of the supply backshoring phenomenon, providing valuable insights for both scholars and practitioners.

1. Introduction

In recent years, the global economic landscape has become increasingly volatile, uncertain, complex, and ambiguous, exposing firms and their Global Value Chains (GVCs) to unexpected disruptions and increasing geopolitical tensions among major economies. Events such as the COVID-19 pandemic, raw material shortages, the 2021 Suez Canal blockage, Middle East conflicts, the war in

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Ukraine, and the decoupling between the U.S. and China have amplified the complexity of GVCs, resulting in higher uncertainty in cross-border activities (Luo and Van Assche, 2023; Vertinsky et al., 2023; Witt et al., 2023). Consequently, companies are re-evaluating their GVC strategies to enhance resilience and reduce vulnerabilities, by reconsidering their international footprint and (re)localizing their production and supply activities to reduce dependencies on unstable markets and mitigate the impacts of geopolitical and economic nationalism (Barbieri et al., 2020; Deng et al., 2025; Enderwick and Buckley, 2020; Yücesan, 2025).

As a result of such phenomena, reshoring is increasingly considered as a viable option by firms (Yücesan, 2025), including relocation of business activities to the home country (back-shoring) and the home region (near-shoring) (Fratocchi et al., 2014; Pedroletti and Ciabuschi, 2023). The focus has primarily been on the relocation of production activities; however, there is growing evidence of "supply backshoring" (Boffelli et al., 2022; Młody et al., 2023). The understanding of this phenomenon is still limited (Pedroletti, 2025; Sawik, 2025), although it may help reduce the increasing complexity in managing cross-border supplier relationships under uncertainty.

In this paper, we investigate the supply backshoring phenomenon by adopting the Transaction Cost Economics (TCE) theory, a framework that has already been applied in the extant reshoring literature (Foerstl et al., 2016; McIvor and Bals, 2021). TCE suggests that transactions involving highly specialized assets, which are closely linked to the asset specificity of the firms involved (Sartor and Beamish, 2014), incur higher costs due to the need for collecting comprehensive information, negotiating contract details, and implementing stringent monitoring activities (Hennart, 1987; Williamson, 1981). In this study, we specifically focus on the asset specificity at the firm level—rather than at the transaction level—as a source of transaction costs and as a factor triggering supply backshoring, considering R&D & marketing intensity and intellectual property rights as key dimensions shaping firms' exposure to contractual hazards and international risks, especially in turbulent times. While vertical integration in the host country would allow firms to mitigate some risks, it may also lead to operational inefficiencies, complexity, and heightened costs (D'Aveni and Ravenscraft, 1994). As an alternative to internalization, firms can opt for supply backshoring to decrease international exposure and reduce transaction costs.

Accordingly, we hypothesize that firms sourcing from foreign suppliers are more likely to implement supply backshoring as a risk-mitigation strategy when they rely on higher asset specificity in their home country. Additionally, recognizing that firms operating in high-tech industries are more exposed to techno-geopolitical uncertainty—which amplifies transaction costs and the need for risk-mitigation strategies— we hypothesize that the positive relationship between firm asset specificity and the likelihood of adopting supply backshoring strategies will be stronger for firms in high-tech than in low-tech sectors. We tested our hypothesis on an original dataset that integrates primary data —collected in Italy through a survey conducted from June 2021 to February 2022—with archival ones. Our results provide support for our first hypothesis, as they indicate that firms with higher asset specificity are more likely to adopt a supply backshoring initiative. Conversely, our second hypothesis is not confirmed, as we do not find significant differences between firms operating in high-tech and low-tech industries. However, we find additional contingent effects related to firm size and Pavitt taxonomy, as the relationship between firm asset specificity and supplier backshoring turns out to be stronger for medium-sized firms and for supplier-dominated and specialized supplier industries.

The contribution of our study is threefold. First, this study enhances the understanding of the theoretical foundations underlying supply backshoring by demonstrating that higher firm asset specificity increases the likelihood of adopting this strategy, thereby positioning TCE as a relevant framework for analyzing this phenomenon. More specifically, we offer a nuanced explanation of supply backshoring as an alternative to internalization, which becomes less viable during periods of heightened uncertainty. Second, it examines the boundaries of this phenomenon by identifying contingencies that affect the relationship between firm asset specificity and supply backshoring. Third, it provides one of the first in-depth analyses and supporting empirical evidence of this phenomenon.

2. Theoretical framework and hypothesis development

2.1. Transaction Costs Economics and Supply Backshoring

Transaction Cost Economics (TCE) posits that firms can be more efficient than markets in managing interdependencies among economic agents under conditions of bounded rationality, high opportunism, and uncertainty (Buckley and Casson, 1976; Hennart, 1987; Williamson, 1981). Applied to Multinational Enterprises (MNEs), TCE highlights the rise of interdependencies with foreign partners, such as the supply of raw materials and intermediate products, when production and assembly locations differ (Hennart, 1987). These interdependencies are often managed via spot markets or long-term contracts, which require efficient markets. When transactions involve high asset specificity, the risk of opportunism rises, making detailed ex-ante contracts necessary to define terms, conditions, and penalties for breaches (Hennart, 2001).

However, contracts are effective in risky environments but offer limited protection under high "Knightian" uncertainty, where firms face unpredictable scenarios (Knight, 1921). While in risky contexts firms can anticipate outcomes and their probabilities, under uncertainty they cannot define possible outcomes or their likelihood (Feduzi et al., 2022; Knight, 1921). Such conditions typically follow major shocks or arise in rapidly changing environments, where information is incomplete, ambiguous, and constantly evolving, making complete contracts impossible. Consequently, even when firms rely on the market to manage interdependencies with foreign suppliers, they may need to revise their strategy when macro-trends—such as digital and green transitions or geopolitical tensions—disrupt GVC trajectories (UNCTAD, 2020) or when frequent shocks occur, like the COVID-19 pandemic and the Russia–Ukraine war. In particular, the rise of regional geopolitical blocs or friendshoring strategies increases the risk of global economic and production fragmentation (Deng et al., 2025).

However, even when transaction costs increase due to uncertainty, firms may still prefer contracts over internalization for several

reasons. First, internalization can entail very high costs, including those of acquiring the supplier, maintaining production, and managing a more complex organizational structure (D'Aveni and Ravenscraft, 1994; Desyllas, 2008). Second, vertical integration can create operational inefficiencies by requiring the management of diverse or unrelated activities (Rawley, 2010). Third, contracts allow firms to remain flexible and quickly adapt to fast-evolving and unpredictable markets by leveraging the specializations of different external suppliers (Balakrishnan and Wernerfelt, 1986).

Yet, even when firms continue to favor market- and contract-based governance under uncertainty, they need to mitigate international risks and the resulting increase in transaction costs. As an alternative to internalization, firms can reduce international exposure through supply backshoring. Backshoring can mitigate risks from disruptions or political and economic instability, enhancing supply chain security and lowering transaction costs associated with preventing supply chain discontinuities (Foerstl et al., 2016; Fratocchi et al., 2016). It also improves control and coordination, reducing costs in cross-border supplier management and operational risks, which are typically amplified by geographic, cultural, and institutional distances (Martínez-Mora and Merino, 2021). Finally, proximity to the main market enhances responsiveness to fluctuating demand, reducing lead times and costs in inventory and international transportation (Tate et al., 2014).

2.1.1. Firm asset specificity and supply backshoring

Traditionally, TCE emphasizes transaction-level asset specificity as a source of information, bargaining, monitoring, and enforcement costs. However, transaction specificity is closely linked to firm-level asset specificity. Indeed, International Business (IB) literature highlights the importance of building a firm-specific competitive advantage based on non-location-bound assets—such as technological, manufacturing, and marketing know-how—to support international investments and exploit them through subsidiaries when contracting with foreign suppliers is inefficient due to high transaction costs (Rugman and Verbeke, 2001). Similarly, firms' technological and marketing capabilities, often proxied by R&D and advertising intensity, are particularly difficult to transfer or contract out, reinforcing their asset specificity (Silverman, 1999).

Although firm- and transaction-level asset specificity are not perfectly aligned (Cuypers et al., 2021), firms with distinctive assets—such as R&D & marketing capabilities and IPR—require specialized transactions and a narrow set of suitable suppliers when firms rely on the market or contracts to access inputs. Indeed, firms with high asset specificity often rely on customized resources, technologies, or processes, necessitating specialized supplier networks to maintain competitive advantage and meet performance standards (Dyer, 1996). This increases costs for searching for suitable suppliers, negotiating and developing contracts (Poppo and Zenger, 2002), monitoring compliance with quality and performance requirements (Brouthers, 2002), and enforcing agreements, particularly in complex or weak legal environments (Zhou and Poppo, 2010).

These challenges are amplified in global sourcing due to differences in business practices, legal environments, and cultural norms (Kotabe et al., 2008). Firms with high asset specificity must navigate political instability, regulatory changes, and trade barriers, which can reduce collaboration efficiency and increase transaction costs. MNEs with high R&D, marketing, and IPR intensity are particularly exposed to international risks, as their visibility and symbolic representation of home-country technological or cultural influence make them targets in geopolitical tensions. R&D-intensive firms relying on proprietary technologies and global brand equity are vulnerable to export bans and license revocations that can disrupt international operations, as in the case of Huawei (IMF, 2023; The Economist, 2020). Similarly, marketing-intensive firms with strong consumer-facing brands also face heightened risks in politically sensitive environments due to consumer animosity, defined as antipathy toward firms linked to nations involved in disputes (Grappi et al., 2020). This can trigger boycotts, reputational damage, or forced divestitures, affecting brand positioning and customer trust, and is amplified by media backlash and stakeholder pressure across multiple markets (Grappi et al., 2020), as illustrated by the Dolce & Gabbana crisis in China in 2018, where foreign consumers—especially "netizens"—reacted strongly to the firm's marketing mistakes involving a well-known brand (Ban and Lovari, 2021). Finally, firms with high IPR intensity are increasingly vulnerable to IP-related sanctions and infringement (especially in weak legal environments), a risk magnified under geopolitical hostility (Cheng et al., 2025).

Hence, under environmental uncertainty, we expect firms with strong asset specificity engaged in global sourcing to face greater opportunistic behaviors by foreign suppliers, such as repeated contractual adjustments or outcomes attributed to exogenous volatility, which increase their exposure and sensitivity to global risks, institutional pressures, and regulatory unpredictability. Unstable environments require frequent renegotiation and continuous monitoring that raise transaction costs, potentially leading to contract failure (Huo et al., 2018; Zhang et al., 2024). Firms with strong asset specificity must therefore either internalize the market through vertical integration or adopt risk-mitigation strategies like supply backshoring, which reconfigure global value chains toward more predictable governance environments and lower geopolitical risk.[1] Supply backshoring helps preserve asset specificity—including IP, innovation,

[1] Besides supply backshoring, companies can also opt for domestic vertical integration, which enables them to neutralize international uncertainty as well. However, as outlined in the previous paragraph, this solution may entail high costs—including acquisition, operational complexity, and agency issues—and can reduce efficiency by forcing firms to manage diverse activities. In addition, although firms with high asset specificity may incur substantial transaction costs even when adopting a supplier in their home country, these are likely lower than those faced abroad with foreign suppliers, due to the closer institutional, cultural, and relational proximity.

and marketing capabilities[2]—while reducing reliance on distant partners (Foerstl et al., 2016; Fratocchi et al., 2016) and lowering transaction costs through relational contracting with nearby suppliers[3] (McIvor and Bals, 2021). Hence, our reasoning leads us to formulate the following hypothesis:

Hypothesis 1. *The higher the asset-specificity (in terms of R&D, marketing and IPR intensity) of a firm sourcing from foreign suppliers, the higher the probability of undertaking a supply backshoring strategy.*

2.1.2. The moderating effect of industrial technology intensity

High-tech sectors have been increasingly exposed to the pressures of techno-nationalism, a global trend in which states link cross-border technological exchanges to national security and geopolitical objectives (Luo and Van Assche, 2023). The United States and China, in particular, began a process of political, economic, and technological decoupling more than a decade ago, gradually weakening their mutual interdependence and reshaping global value chains (Witt et al., 2023). This process has also raised awareness in Europe of the region's strategic dependence on foreign technological capabilities, prompting policymakers to adopt initiatives aimed at strengthening domestic capacities and securing critical supply chains. Recent measures such as the U.S. Chips & Science Act and the European Chips Act, which aim at fostering domestic technological capabilities, reducing dependence on foreign actors, and weaponizing global value chains for strategic purposes, can be seen as the highlights and tangible outcomes of this long-standing process. Some of the consequences of the rising techno-nationalism are investment screening, export controls, subsidies, and regulatory oversight, creating complex and sometimes contradictory requirements for MNEs operating in high-tech industries that can disrupt supply chains, constrain access to critical inputs, and limit market opportunities (Luo and Van Assche, 2023). Unlike low-tech sectors, the strategic importance of high-tech products and capabilities makes firms operating in high-tech industries prime targets of state-driven techno-nationalist measures, amplifying both operational and reputational risks (Kenney and Lewin, 2022; Luo, 2022).

To cope with techno-geopolitical uncertainty, which amplifies the transaction costs of operating in international markets and relying on foreign suppliers, firms operating in high-tech industries can adopt different responses, such as developing geo-strategies to monitor and mitigate risks, reconfiguring global value chains to concentrate operations in secure or geopolitically aligned locations, and implementing resilience measures to absorb shocks and protect critical capabilities (Luo, 2022; Luo and Van Assche, 2023; Witt, 2019). Supply backshoring emerges as one concrete, operational manifestation of these responses. It can be the result of a geo-strategy, reflecting a deliberate assessment of geopolitical risks and a choice to concentrate critical activities in safer locations. It forms part of a reconfiguration process, as MNEs realign their global value chains to reduce exposure to unstable or hostile markets. Finally, it enhances resilience by bringing strategic resources—such as knowledge-intensive production, intellectual property, and specialized talent—closer to the home base, ensuring continuity and control under heightened techno-geopolitical uncertainty.

Accordingly, we claim that, for a given level of asset specificity, MNEs operating in high-tech industries face greater transaction costs than their counterparts in low-tech sectors due to their higher exposure to techno-geopolitical uncertainty, which creates a stronger need to implement risk-mitigation strategies, such as supply backshoring. Thus, we formulate the following hypothesis:

Hypothesis 2. *The positive relationship between firm asset specificity (in terms of R&D, marketing and IPR intensity) and the probability of undertaking a supply backshoring strategy is stronger for firms operating in high-tech than for firms operating in low-tech industries.*

Fig. 1 provides a visual summary of our theoretical framework, illustrating the relationship between firm asset specificity and the likelihood of supply backshoring, with the high-tech industry acting as a moderating factor.

3. Methodology

3.1. Dataset and descriptive statistics

To test our hypotheses, we utilized primary data collected from June 2021 to February 2022 through a survey conducted in collaboration with the Italian Confindustria Network. The survey aimed to capture the dynamics and reasons behind the backshoring decisions of Italian companies during the period 2017–2021. This timeframe reflects, indeed, an escalating wave of uncertainty, starting with the Brexit referendum, further exacerbated by the U.S.–China trade war, and culminating in the immediate aftermath of the pandemic (see UNCTAD, 2020). These events contributed to the slowdown of globalization and triggered a reconfiguration of the global value chains due to disruptions and heightened geopolitical tensions. The survey involved 63 territorial associations and 96 category associations within the Confindustria Network and was administered to the companies via an online questionnaire. We received responses from 762 firms, 555 of which source components and products from foreign suppliers. Among these, 120 companies (21.62 %) engaged in supply backshoring between 2017 and 2021 (see Fig. 2).

Due to the unavailability of financial data for some firms, our final dataset comprises 264 firms that responded to the survey, with

[2] Given that substantial investments in innovation, technology, knowledge, marketing relationships etc., amplify the effectiveness of risk management practices and outcomes (Juul Andersen, 2009), firms with strong asset specificity are also expected to be more capable of managing international risks through strategies like supply backshoring,

[3] This is consistent with the gravitational estimate approach applied to non-standardized intermediate goods, which exhibit greater trade elasticity concerning geographic distance (See the Research study published by Centro Studi Confindustria (2023) "Catene di fornitura tra nuova globalizzazione e autonomia strategica aperta").

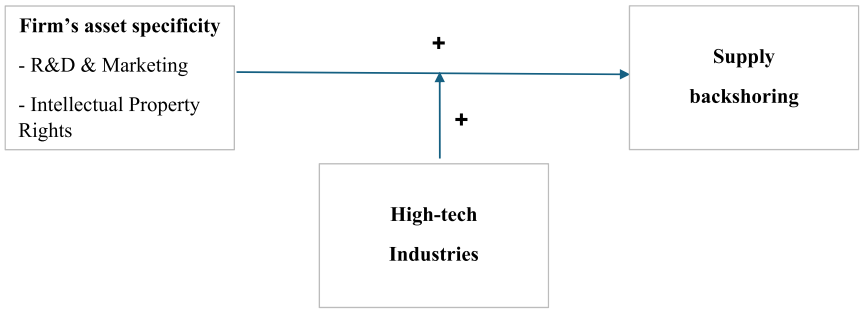

Fig. 1. Summary of the theoretical framework
Source: Authors' elaboration.

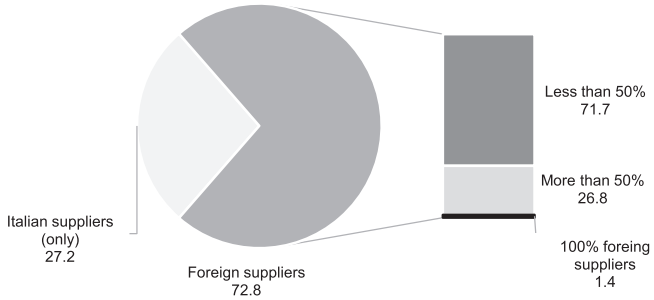

Fig. 2. Distribution of suppliers: Italian versus Foreign
Source: Authors' elaboration.

58 (21.97 %) having engaged in supply backshoring. To assess the representativeness of our final sample, we conducted various z-tests comparing the distribution of companies between our sample and the total surveyed population based on their size, the macro-regions in which they operate, and the technological level of the industry in which they are active. None of these tests showed statistically significant differences. Additionally, there was no statistically significant difference in the proportion of companies that engaged in supply backshoring between our sample (21.97 %) and the total surveyed population (21.62 %) ($z = 0.1127$, $p = 0.9103$). Therefore, we can conclude that the 264 firms included in this study represent the 555 surveyed companies.

Looking at the distribution of the 264 companies in terms of dimension, more than 80 % are small and medium-sized enterprises (SMEs). The proportion of small firms increases among those that decided to relocate their suppliers to Italy (Fig. 3).

The sectoral distribution of the companies in the sample is concentrated; almost half of the respondents belong to the machinery, metal products, and textile, apparel & leather sectors. The sectoral distribution of the firms that implemented supply backshoring is even more concentrated: more than 40 % belong to the machinery, and textile, apparel, & leather sectors (Fig. 4).

Finally, regarding industry technological levels, companies seem to be concentrated in the middle-tech categories (medium-low and medium-high), with more than 6 out of 10 companies belonging to these technical levels. The distribution changes substantially when considering the firms that implemented backshoring of supplies. Indeed, there is a polarization: the presence of low-tech firms increases significantly, as does that of medium-high-tech firms, though to a lesser extent than the former, as shown in Fig. 5.

Fig. 6 shows the drivers underlying supply backshoring. Interestingly, the two main reasons why companies have chosen to bring their supplies back to Italy are: delivery times longer than expected (3.5 as the average score on a scale from 1, meaning not relevant, to 5, meaning extremely relevant) and the availability of suitable suppliers in the home country. Over the last five years, the increase in foreign-sourced supply costs has also been a relevant issue for companies. In general, logistics costs are higher than expected, which is related to the mismatch between what was planned and what was then experienced. Therefore, besides reacting to problems occurring along the supply chain, most companies were also motivated by a valid alternative in their home country, which is usually easier to conceive and implement than searching for other potential suppliers worldwide.

3.2. Variables

To test our hypotheses, we performed an econometric analysis on the primary data collected from the survey, integrated with the financial data retrieved from the AIDA (Bureau van Dijk) database and patents data retrieved from the PATENTSCOPE database.

Our dependent variable is *Supply Backshoring*, a dummy assuming the value of 1 if the surveyed company reported implementing supply backshoring in the period 2017–2021, and 0 otherwise. To measure companies' asset specificity, we considered two primary explanatory variables. Following Kirca et al. (2011), we employed *R&D and advertising intensity*, calculated as the average ratio of

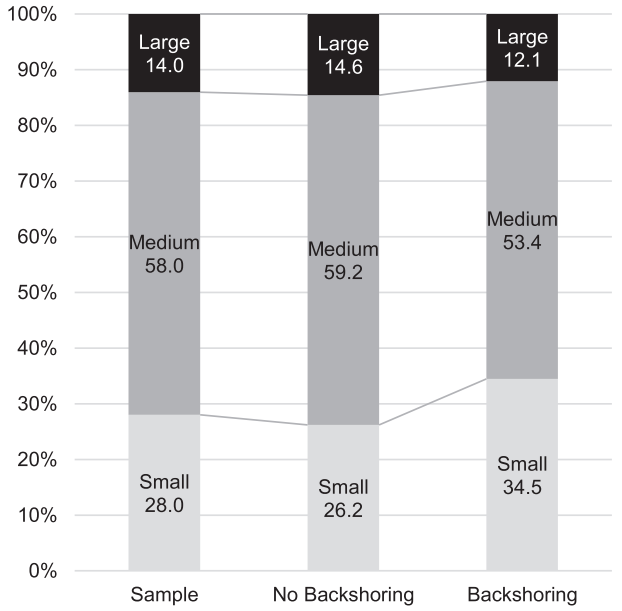

Fig. 3. Sample breakdown by size and relocation strategies
Source: Authors' elaboration.

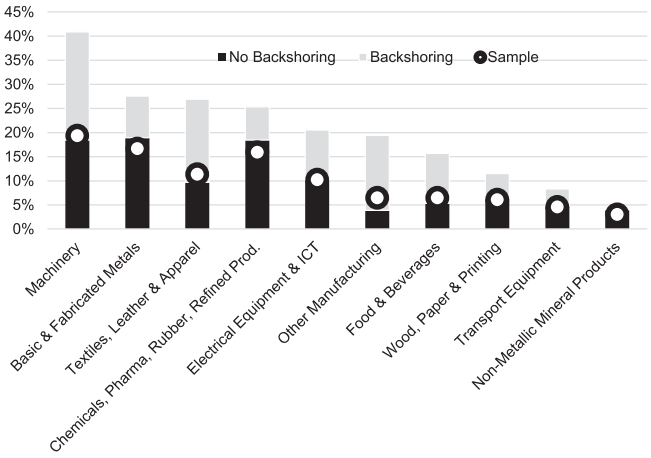

Fig. 4. Sample breakdown by industry and relocation strategy
Source: Authors' elaboration.

companies' R&D and advertising expenditures to total assets between 2014 and 2016. This measure also aligns with the extant literature on buyer-supplier relationships, which emphasizes that buyer attractiveness can stem from its "innovation capability" and/or its "brand and reputation" (Tanskanen and Aminoff, 2015). Furthermore, recognizing that patents and copyrights are both crucial for safeguarding specific assets and a key source of firm-specific advantages (Cui et al., 2022), we incorporated *IPR intensity* as the second explanatory variable. Specifically, we calculated it as the average value of intellectual property rights relative to total assets during the same period.

We included several control variables drawn from the IB and reshoring literature that may affect a firm's decision to backshore its supply at the firm, region, and industry levels. At the firm level, first, we included *Productivity*, measured as the average asset turnover ratio (revenues to total assets) over 2014–2016, a common indicator of operational efficiency and supply chain effectiveness (Brealey et al., 2006; Johnson and Templar, 2011). Since poor offshoring performance is a key driver of backshoring (Johansson et al., 2019), we also controlled for *Profitability*, measured as the average ROA (net income to total assets) for 2014–2016 (Lin et al., 2011; Lu and Beamish, 2004).To capture the extent to which a firm relies on advanced Industry 4.0 knowledge and technologies, we introduced the variable *Digital patents*, measured as the cumulative number of patents in Industry 4.0–related technologies granted to each firm during 2014–2016 (Barbieri et al., 2022). Following Pennacchio (2023), we included *Firm age*, measured as the difference between 2017 and

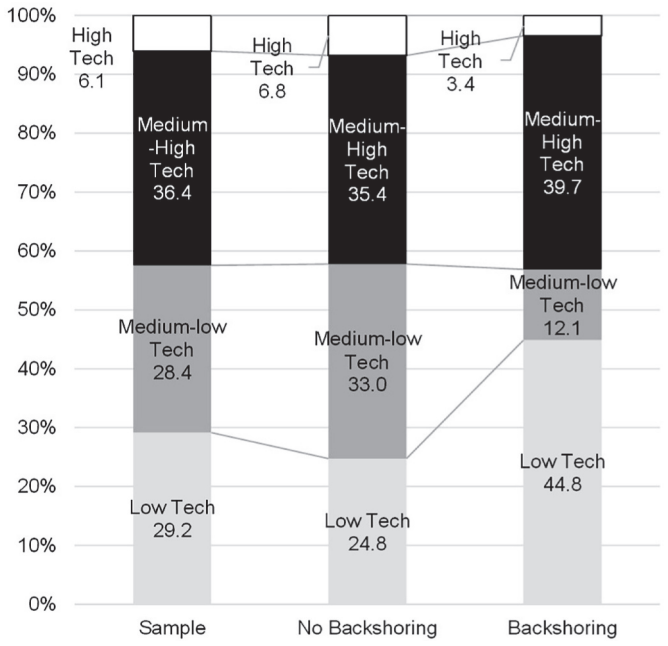

Fig. 5. Sample breakdown by technological level and relocation strategy
Source: Authors' elaboration.

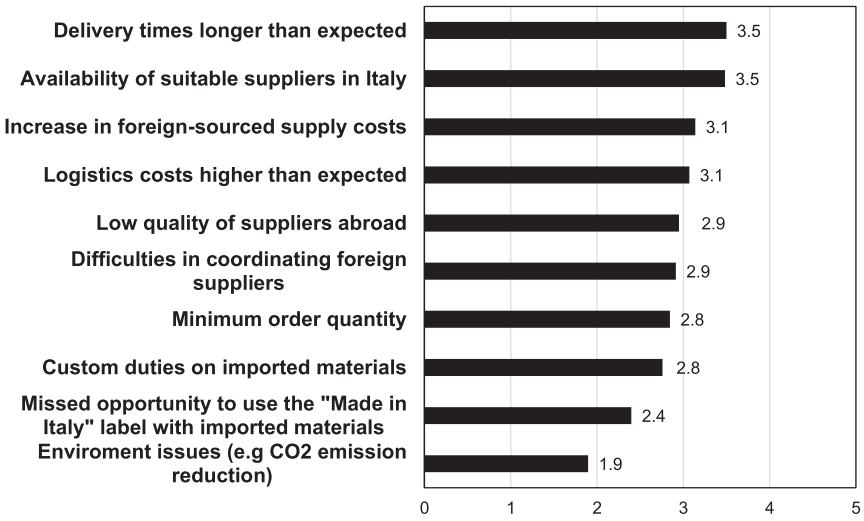

Fig. 6. Drivers for supply backshoring
Source: Authors' elaboration.

the year of incorporation. Consistent with Wan et al. (2019), who highlighted the role of firm size in reshoring decisions, we considered the average number of employees during 2014–2016; consistently with the European Union classification, we distinguished among *Small size firms* (having fewer than 50 employees), *Medium size firms* (with 50–249 employees) and *Large size firms* (with 250 or more employees), using the first one as the benchmark. Following Chen et al. (2022), we controlled for *International Openness* through the number of foreign subsidiaries owned by each firm. Finally, to account for regional and industrial heterogeneity (D'Agostino and Scarlato, 2015; Wan et al., 2019), we included macro-region and industry dummies. As regards the former, based on the national statistical institute's classification, we employed *North-East Italy*, *North-West Italy*, *Central Italy*, and *South Italy*. As regards the latter, we controlled for the 2-digit NACE Sector C in which the firms operate, using the variables *Industry controls (NACE 2-digit)*.

Table 1 reports the descriptive statistics of the dependent, explanatory, and control variables, and Table 2 presents the correlation matrix. Variance Inflation Factors were all well below the 0.10 threshold, indicating no multicollinearity issues. For a better comprehension of the empirics, the variables *IPR intensity, R&D and advertising intensity*, *Productivity* and *Profitability* have been

Table 1
Descriptive statistics of the dependent, explicative, and control variables.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Supply backshoring	264	0.220	0.415	0.000	1.000
R&D and advertising intensity	264	0.005	0.022	0.000	0.225
IPR intensity	264	0.003	0.014	0.000	0.174
Productivity	264	1.031	0.457	0.052	3.762
Profitability	264	6.316	6.694	−10.093	39.513
Digital patents	264	0.049	0.340	0.000	4.000
Firm age	264	33.450	16.148	5.000	91.000
Small size firms	264	0.2803	0.450	0.000	1.000
Medium size firms	264	0.580	0.495	0.000	1.000
Large size firms	264	0.140	0.348	0.000	1.000
Foreign subsidiaries	264	1.121	7.088	0.000	80.000
North-East Italy	264	0.367	0.483	0.000	1.000
North-West Italy	264	0.345	0.476	0.000	1.000
Central Italy	264	0.380	0.380	0.000	1.000
South Italy and Islands	264	0.113	0.318	0.000	1.000

Please note: for the sake of space, the industry dummy variables (NACE 2-digit codes) are not reported in the table, as the distribution of observations across industries has already been presented in Fig. 4.

standardized. Also, to test our second hypothesis, we divided the companies into two subsamples based on the tech level of the industry in which they operate. Thus, we grouped separately companies operating in low/medium-low tech industries (NACE codes 10, 11, 13, 14, 15, 17, 22, 25, 28, 31, 32, 33) and those operating in high/medium-high tech ones (NACE codes 20, 21, 26, 27, 29, 30).

4. Results

4.1. Main results

Given the binary nature of our dependent variable (*Supply Backshoring*), we adopted a robust probit model for the econometric estimation. To enhance the explanatory power of the model and account for differences among Italian provinces, we clustered the robust standard errors by province.

Results of the analysis are reported in Table 3. Columns (1) and (2) in Table 3 display the coefficients and marginal effects of the base model, respectively. The variables *R&D and advertising intensity* and *IPR intensity* show a significant and positive correlation with the dependent variable, confirming our first hypothesis.

Among the control variables, *Productivity* is positive and significant, while *Profitability* is negative and significant (both at $p < 0.01$). Additionally, the probability of implementing supply backshoring significantly decreases with an increase in the number of Industry 4.0 patents published by companies ($p < 0.05$).[4] Firm size and the number of foreign subsidiaries or their geographic position do not significantly impact the probability of implementing a supply backshoring.

Columns (3) to (6) of Table 3 present the coefficients and marginal effects of the analysis conducted by dividing companies based on the technological level of the industry in which they operate. Columns (3) and (4) include companies operating in low and medium-low technology sectors, while Columns (5) and (6) include companies in medium-high and high technology sectors.

For medium-high/high-tech companies, the probability of implementing supply backshoring is significantly and positively influenced by both *R&D and advertising intensity* and *IPR intensity*. In contrast, for low/medium-low tech companies, neither *R&D and advertising intensity* nor *IPR intensity* shows a significant relationship with the likelihood of supply backshoring. However, these differences cannot be interpreted as statistically significant group differences on their own. Following Mize et al. (2019), we estimated a fully interacted probit model with interaction terms between a technological intensity dummy and all explanatory variables. The technological intensity dummy equals 1 if the firm operates in a medium-high or high-technology industry, and 0 otherwise. This allows for valid cross-group comparisons in nonlinear models. The joint Wald test strongly rejects the null hypothesis of equal effects across groups ($\chi^2(13) = 87.32$, $p < 0.001$), confirming model-level heterogeneity. However, results, which are reported in Table 4, show that the interaction terms for *R&D and advertising intensity* and *IPR intensity* and the technological intensity dummy are not statistically significant. Also, the individual Wald tests confirm no significant differences in their effects between medium-high/high tech firms and low/medium-low tech ones for *R&D and advertising intensity* ($\chi^2(1) = 1.75$, $p = 0.186$) and for *IPR intensity* ($\chi^2(1) = 0.28$, $p = 0.599$). These results indicate that, despite apparent differences in the subsample analysis, the effects of *R&D and advertising intensity* and *IPR intensity* do not differ significantly between tech-level groups.[5] Therefore, our second hypothesis is not confirmed.

[4] This result is consistent with past studies (e.g., Barbieri et al., 2022), showing that these technologies, which integrate powerful ICT contents, allow for easier and more efficient coordination of remote activities, at the same time extending the span of control (Chen and Kamal, 2016).

[5] We are grateful to an anonymous reviewer for suggesting running the full interacted probit model to test the robustness of our subsample results. We also performed two additional Probit Models, each with a single interaction term between HT and our two explanatory variables, i.e., R&D and advertising intensity and IPR intensity, and they were both not significant.

Table 2
Correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Supply Backshoring	1.000														
(2) R&D and advertising intensity	0.0932	1.000													
(3) IPR intensity	0.0640	−0.0138	1.000												
(4) Productivity	0.1502	−0.0863	−0.0657	1.000											
(5) Profitability	−0.0459	−0.0796	−0.0696	0.3407	1.000										
(6) Digital patents	0.0039	−0.0282	0.4052	0.0298	0.0120	1.000									
(7) Firm age	−0.0540	−0.1160	−0.1239	−0.1914	−0.0820	−0.0013	1.000								
(8) Small size firms	0.0762	0.0754	−0.0834	0.1485	0.0777	−0.0658	−0.0818	1.000							
(9) Medium size firms	−0.0484	−0.0360	0.0924	−0.0265	−0.0035	−0.0573	0.0624	−0.7327	10.000						
(10) Large size firms	−0.0297	−0.0463	−0.0234	−0.1545	−0.0955	0.1666	0.0171	−0.2520	−0.4740	1.000					
(11) Foreign subsidiaries	−0.0233	−0.0277	−0.0213	−0.0101	0.0834	0.1364	0.0823	−0.0846	−0.1004	0.2522	1.000				
(12) North-East Italy	−0.1008	−0.0056	−0.0719	0.0854	−0.0992	−0.0643	0.0109	−0.0558	0.1239	−0.1040	−0.0653	1.000			
(13) North-West Italy	0.0771	−0.0092	0.1411	−0.0733	0.0471	0.1062	0.0742	−0.0268	−0.0119	0.0516	0.1216	−0.5527	1.000		
(14) Central Italy	−0.0267	−0.0432	−0.0521	0.0273	0.0756	−0.0078	−0.0116	0.0468	−0.1145	0.1022	−0.0347	−0.3501	−0.3332	1.000	
(15) South Italy and Islands	0.0694	0.0738	−0.0398	−0.0526	−0.0101	−0.0520	−0.1137	0.0688	−0.0335	−0.0414	−0.0416	−0.2729	−0.2597	−0.1645	1.000

Source: Authors' elaboration.

Note: Industry dummies are not reported due to the large number of variables; however, the correlation matrix including industry dummies is available upon request. The Variance Inflation Factors (VIF) remain below the conventional threshold of 10, even when industry dummies are included.

Table 3
Coefficients and Marginal effects of the Robust Probit Regressions (dependent variable: Supply Backshoring).

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Base Model	Base Model -Marginal Effects	Low/medium-low tech companies	Low/medium-low tech companies -Marginal Effects	High/medium-high tech companies	High/medium-high tech companies - Marginal Effects
R&D and advertising intensity	0.336***	0.0587***	1.408	0.0873	0.350***	0.092***
	(0.112)	(0.0201)	(0.860)	(0.0597)	(0.118)	(0.031)
IPR intensity	0.211**	0.0368**	0.705	0.0437	0.278**	0.073**
	(0.0953)	(0.0168)	(1.151)	(0.0703)	(0.131)	(0.033)
Productivity	0.275***	0.0479***	0.377***	0.0234**	0.266	0.070
	(0.0975)	(0.0169)	(0.145)	(0.0118)	(0.201)	(0.054)
Profitability	−0.292***	−0.0510***	−0.498***	−0.0309**	−0.136	−0.036
	(0.0993)	(0.0164)	(0.170)	(0.0144)	(0.124)	(0.031)
Digital patents	−0.693**	−0.1209*			−0.409	−0.108
	(0.349)	(0.0656)			(0.457)	(0.121)
Firm age	−7.55e-05	−0.00001	−0.00378	−0.0002	0.00326	0.001
	(0.00494)	(0.0009)	(0.00839)	(0.0005)	(0.00713)	(0.002)
Medium size firms	0.0109	0.0019	0.266	0.0158	−0.354	−0.095
	(0.219)	(0.0381)	(0.316)	(0.0204)	(0.336)	(0.094)
Large size firms	−0.0340	−0.0058	−0.506	−0.0213	0.0977	0.026
	(0.273)	(0.0463)	(0.536)	(0.0189)	(0.396)	(0.109)
Foreign subsidiaries	0.00350	0.0006	0.395*	0.0245***	−0.00245	−0.001
	(0.00867)	(0.0015)	(0.219)	(0.0074)	(0.0106)	(0.003)
Italian macro-region controls	YES	YES	YES	YES	YES	YES
Industry controls (NACE 2-digit)	YES	YES	YES	YES	YES	YES
Constant	−5.519***		−7.179***		−0.786	
	(0.356)		(1.255)		(0.828)	
Observations	264		149		112	
Prob > chi^2	0.0000		0.0000		0.0019	
Pseudo R^2	0.1911		0.3419		0.1189	

Please note: In columns (3) and (4), the variable Digital patents perfectly predicts failure when it assumes values other than zero. Thus, the variable Digital patents and 3 observations were excluded from the estimation. The main estimation in columns (1) and (2) was also replicated with the reduced sample of 261 observations, and the results remained unchanged.
All models include controls for industry (NACE 2-digit) and Italian macro-regions. Coefficients for these dummy variables are omitted from the table for clarity.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$. Robust Standard Errors between brackets.

4.2. Robustness checks and Additional evidence

As a robustness check, first, we re-estimated the main specifications using a Logit instead of a Probit model. The direction, magnitude, and statistical significance of the main explanatory variables remain consistent, suggesting that our results are not sensitive to the specific function used to model the binary outcome. Second, we estimated three additional probit models: one using firm size as a continuous variable (measured by the average number of employees during the period 2014–2016), one using the 20 Italian regions, and one using productivity measured as the average revenue per employee over the period 2014–2016. The main findings remain unchanged, supporting the robustness of our conclusions to alternative control variables' specifications.[6]

To provide additional insights that may help better interpret our main results, we conducted an analysis by splitting the sample by companies' size. The results are presented in columns (1) and (2) of Table 5 for the subsamples of Small and Medium companies. The analysis for Large companies was not conducted due to the limited number of observations in the sample (37 large companies). For Small companies (column (1)), no significant correlation is observed between the variables accounting for the firm asset specificity and the probability of implementing supply backshoring. Conversely, for Medium companies (column (2)), *R&D and advertising intensity* and *IPR intensity* are positively and significantly correlated with the probability of implementing supply backshoring. To formally test the results of the subsamples, we estimated a fully interacted probit model[7] including interaction terms between a size dummy (*Medium size firm*, equal to 1 for medium-sized firms and 0 for small firms) and all explanatory variables, following Mize et al. (2019).

[6] The results of the Logit Model and of the Probit models with the alternative size and regional specifications are available from the authors upon request
[7] Available upon request

Table 4
Results of the Fully Interacted Probit model with interaction terms between the High-Tech industry dummy and all explanatory variables (dependent variable: Supply Backshoring).

Variables	Coefficient
R&D and advertising intensity	1.408*
	(0.859)
IPR intensity	0.705
	(1.149)
Productivity	0.377**
	(0.145)
Profitability	−0.498***
	(0.170)
Digital patents	(Dropped)
Firm age	−0.004
	(0.008)
Medium size	0.266
	(0.315)
Large size	−0.506
	(0.535)
Foreign subsidiaries	0.395*
	(0.219)
High-Tech industry dummy (HT)	5.885***
	(1.431)
Interaction: IPR intensity × HT	−0.630
	(1.197)
Interaction: R&D & advertising intensity × HT	−1.131
	(0.854)
Interaction: Productivity × HT	−0.007
	(0.267)
Interaction: Profitability × HT	0.366*
	(0.200)
Interaction: Age × HT	0.007
	(0.012)
Interaction: Size Medium × HT	−0.642
	(0.485)
Interaction: Size Large × HT	0.651
	(0.733)
Interaction: Foreign Subsidiaries × HT	−0.391*
	(0.220)
Regional & Industry dummies	Yes
Constant	−6.851***
	(1.248)
Observations	255
Prob > χ^2	0.000
Pseudo R^2	0.242

* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$. Robust Standard Errors between brackets. Dropped observations due to perfect prediction or collinearity.

The joint Wald test of all interaction terms with *Medium size firm* rejects the null hypothesis of equality of effects across size groups ($\chi^2(19) = 67.17, p < 0.001$), indicating significant heterogeneity at the model level. Examining the individual interaction terms shows that the coefficient for *R&D and advertising intensity* is significant ($p = 0.008$), while the coefficient for *IPR intensity* is not ($p = 0.581$). These results are confirmed by the individual Wald tests of coefficient differences and suggest that *R&D and advertising intensity* plays a more relevant role in driving supply backshoring among medium-sized firms, whereas its effect is not statistically significant for small firms.

Also, to gain further insight into how a firm's sector of activity influences supply backshoring decisions, we categorized our sample according to the revised Pavitt taxonomy (Pavitt, 1984) (Columns (3) and (4) of Table 5). This classification divides industries into four categories: Science-Based, Specialized Suppliers, Scale and Information Intensive, and Supplier Dominated. Our analysis reveals that in Specialized Supplier and Supplier Dominated industries, higher *R&D and advertising investments* and *IPR intensity* significantly enhance the likelihood of implementing supply backshoring. Conversely, in Science-Based and Scale and Information Intensive sectors, these factors do not exhibit a significant impact on backshoring decisions. To formally test these differences, we estimated a fully interacted probit model[8] including interaction terms between a sectoral dummy (*Supplier NACE*, equal to 1 for Specialized Supplier and Supplier

[8] Available upon request

Table 5
Results of the Robust Probit Regressions Additional evidence - Size (1) and (2) and Pavitt taxonomy (Pavitt, 1984) (3) and (4) - dependent variable: Supply Backshoring.

	(1)	(2)	(3)	(4)
	Small Companies	Medium Companies	Specialized suppliers - Suppliers dominated	Science based - Scale and Information intensive
R&D and advertising intensity	−0.0412	0.553***	0.594***	0.0477
	(0.108)	(0.182)	(0.220)	(0.136)
IPR intensity	0.438	0.779**	0.716***	−0.209
	(1.019)	(0.330)	(0.243)	(0.225)
Productivity	0.538	0.216*	0.386***	−0.429
	(0.334)	(0.128)	(0.120)	(0.302)
Profitability	−1.372***	0.224	−0.386***	−0.252
	(0.429)	(0.174)	(0.140)	(0.238)
Digital patents		−2.124*	−2.176***	
		(1.089)	(0.734)	
Firm Age	−0.0305***	0.00607	0.000517	−0.00451
	(0.0106)	(0.00694)	(0.00623)	(0.0137)
Medium size firms			0.0596	−0.701
			(0.258)	(0.699)
Large size firms			−0.256	−1.622**
			(0.423)	(0.817)
Foreign subsidiaries	1.403**	0.148	0.395***	−0.0768
	(0.650)	(0.0910)	(0.100)	(0.0679)
Italian macro-region controls	YES	YES	YES	YES
Industry controls (NACE 2-digit)	YES	YES	YES	YES
Constant	−6.931***	−11.66***	−5.690***	−6.066***
	(0.689)	(3.466)	(0.460)	(0.820)
Observations	73	153	176	84
Prob > chi^2	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.4564	0.2816	0.2379	0.2995

Please note: - in column (1) the variable Digital patents perfectly predicts failure when it assumes values other than zero. Thus, the variable Digital patents and 1 observation were excluded from the estimation. - the analysis for the subsample of large firms was not conducted due to the limited sample size of 37 observations. - in columns (3) and (4): following Pavitt taxonomy (Pavitt, 1984), industries have been classified across the four categories as follows: (i) Science based: NACE 19 20 21 26; (ii) Specialized suppliers: NACE 27 28 30; (iii) Scale and information intensive: NACE 17 18 22 23 24 29; iv) Suppliers dominated: NACE 10 11 12 13 14 15 16 25 31 32 33. - in column (4) the variable Digital patents perfectly predicts failure when it assumes values other than zero. Thus, the variable Digital patents and 4 observations were excluded from the estimation. - all models include controls for industry (NACE 2-digit) and Italian macro-regions. Coefficients for these dummy variables are omitted from the table for clarity.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$. Robust Standard Errors between brackets.

Dominated industries and 0 for Science-Based and Scale-Intensive industries) and all explanatory variables, following Mize et al. (2019). The joint Wald test of interaction terms rejects the null hypothesis of equal effects across groups ($\chi^2(23) = 147.49$, $p < 0.001$), indicating significant heterogeneity at the model level. Also, the Wald tests of coefficient differences confirm significant differences between sectoral groups for *R&D and advertising intensity* ($\chi^2(1) = 7.08$, $p = 0.008$) and for *IPR intensity* ($\chi^2(1) = 6.73$, $p = 0.009$), providing strong evidence that the impact of these variables on the probability of backshoring differs across industries.

5. Discussion and conclusions

Despite the growing interest of IB literature toward GVC reconfigurations, supply backshoring remains a clearly under-investigated topic, especially when compared to the debate on manufacturing backshoring (Pedroletti and Ciabuschi, 2023). To the best of our knowledge, the only previous empirical IB studies regarding the supply reshoring phenomenon concern Polish companies operating in the fashion and electromechanical industries (Młody and Fratocchi, 2022; Młody et al., 2023) and a sample of publicly listed U.S. manufacturing companies (Leung et al., 2024). This is surprising because the vulnerabilities that affect the GVCs, and that have been dramatically exposed to several turbulences over the recent years, frequently originate from the focal firm's direct or indirect suppliers (Bode and Wagner, 2015; Raj et al., 2022). Different from manufacturing backshoring, supply backshoring can happen even in cases where companies do not own plants abroad but simply source from foreign suppliers. As such, it can be of interest to a broader spectrum of firms.

The results of our paper show that (a) firms with higher asset specificity display a greater likelihood of supply backshoring, and (b) the relationship between these two variables is not statistically different across high-tech and low-tech industries. Hence, on the one hand, we find confirmation for the arguments underlying our first hypothesis. Essentially, supply backshoring represents a transition toward an organizational form of supply activities characterized by lower transaction costs, given the substantial operational

uncertainty – and the relative increase in transaction costs – that can arise in international buyer-supplier exchanges (Leung et al., 2024; Williamson, 2008), especially when firm asset specificity is high. Indeed, firm asset specificity exacerbates the impact of various severe risks that have been affecting the GVCs over recent years – namely, geopolitical tensions leading to varied forms of sanctions vexing firms that operate in foreign markets, consumer animosity, and IP infringements. Particularly, given their higher exposure to these dangerous factors, firms characterized by high degrees of firm asset specificity will incur rising transaction costs in the form of, e.g., increased monitoring efforts, more frequent interruptions and contract renegotiations, which threaten the security and continuity of the supply, and may also end up with legal disputes. The higher specificity of the focal firm's technology and intellectual property also increases the risk of spillovers and property rights infringements in the relationship, calling for more stringent protection measures (e.g., more elaborated contractual clauses) that again increase the transaction costs. Besides, specialization limits the supplier's ability to rapidly and effectively respond to changes in demand even when its behavior is fair (Huang et al., 2014). Overall, these conditions can eventually outbalance the high switching costs that firm asset specificity usually implies (Huang et al., 2014; McIvor and Bals, 2021; Terjesen et al., 2012), and ultimately motivate the supply backshoring decision.

On the other hand, we do not find support for our second hypothesis, since our analysis did not provide statistically significant evidence of the moderating effect of the industry's technological level (i.e., high-tech vs. low-tech) on the relationship between asset specificity and supply backshoring propensity. Recent literature, however, offers some reasonable grounds to interpret this finding. The superior exposure to the pressures of techno-nationalism realistically implies that, for a given level of asset specificity, firms operating in high-tech industries may also find it more difficult to replace the current suppliers, in light of their high technological specialization and exclusiveness (Shih, 2020; Yücesan, 2025). Besides, the focal firm may actually be dependent on a complex ecosystem (rather than on its direct supplier alone), including higher-tier suppliers as well, that also contribute to such technological specialization/exclusiveness. In that case, reversing the supply location decision would barely lower transaction costs and risks, since a domestic supplier will likely depend, to some extent, on those critical upstream suppliers, and inevitably shift the risks and costs of its own sourcing process to the relationship with the focal firm.[9] Consistent with Luo and Van Assche (2023), Witt et al. (2023), and Yücesan (2025), we could also conjecture that in response to the higher transaction costs they face, firms operating in high-tech sectors may indeed choose to reconfigure their global footprint by adopting a "supply regionalization" strategy instead of a "supply backshoring" one. While our data do not include this alternative approach and therefore prevent empirically-substantiated conclusions, extant literature has stressed the possible advantages of regionalization in terms of, e.g., increased opportunities to access critical, specialized technologies (which may not be available in the firm's home country) and lower geopolitical tensions among the trading firms' countries (Luo and Van Assche, 2023) – which seem to be appealing, particularly to high-tech industry players.

Additional evidence also reveals that the significance of firm asset specificity as a driver of supply backshoring is essentially driven by medium-sized firms. This is likely attributable to the fact that such firms, on the one hand, own more resources to be invested in specific assets than small firms (Nunes et al., 2012); on the other hand, they cannot count on the same amount of resources endowment of larger firms to mitigate the transaction costs (Dachs et al., 2019) raised by firm asset specificity when dealing with increased uncertainty in cross-border relationships. Furthermore, the analysis based on Pavitt's taxonomy suggests that supply backshoring is driven by asset specificity in those sectors characterized by numerous, intense, and frequent transactions between customer and supplier companies. This seems to confirm that the pivotal relevance of transactions typical in these sectors exposes firms with stronger asset specificity to higher transaction costs, thus increasing the likelihood of supply backshoring. In contrast, firms in globally-oriented sectors are influenced by factors other than firm asset specificity when determining supply chain localization.

5.1. Theoretical contributions

Our study provides a threefold theoretical contribution. First, by showing that a firm's propensity to undertake supply backshoring increases at higher levels of its asset specificity, the research not only adds to the comprehension of what drives the switch from international to domestic supply markets, but also confirms TCE as an appropriate theoretical angle to unravel relocation decisions and strategies (McIvor and Bals, 2021; Schneider et al., 2013). IB scholars have typically used asset specificity and TCE to examine offshoring decisions, such as, e.g., foreign market entry mode choice (e.g., Maekelburger et al., 2012). According to TCE, in their offshoring process, firms will select the governance mode that most efficiently balances the advantages and costs of control (Pan and Tse, 2000). However, how is the supply *reshoring* decision explained from a TCE perspective? Our study provides an answer to this question by empirically showcasing that such a relocation strategy is more likely to happen at higher levels of the focal firm's asset specificity. Consistent with Foerstl et al. (2016) and Leung et al. (2024), we interpret supply backshoring as the combined location and governance decision that managers undertake, once they estimate the *projected* transaction costs and benefits associated with this choice to be lower than the transaction costs and benefits of current offshore outsourcing operations.

Second, our research contributes to the understanding of the boundaries of the relationship between asset specificity and supply backshoring propensity. While the industrial technology intensity does not seem to act as a moderator, other industry- and firm-level contingencies play a relevant role. As for the industry-level specificities, common to the sectors where supply backshoring was more frequently observed in our study is the strong reliance on outsourcing, which increases the relevance of transactions as a governance

[9] For instance, the persistent dependence of Western companies on Chinese supplies of rare earths – minerals that are crucial to numerous high-tech commodities – despite the enduring geopolitical tensions and uncertainties affecting their trades (Bhamra et al., 2025), testifies how complex the replacement of these suppliers can be. Companies facing this complexity may end up with "tolerate" (Manning, 2014) the external offshoring challenges, explaining why the positive effect of asset specificity on supply backshoring does not get stronger in high-tech industries.

mode of the value chain and, in turn, the likelihood that focal firms operating here incur higher transaction costs due to asset specificity. We expect this to make firm asset specificity particularly salient for supply backshoring in these sectors. In addition, the richer financial and resource endowment of large firms, together with their deeper experience with international activities than SMEs (Anderson et al., 1998; Dachs et al., 2019), could make them more able to mitigate the transaction costs originated by their asset specificity, lowering the effect of the latter on the propensity to undertake supply backshoring.

Third, our study provides one of the first characterizations of the frequency, motivations, and salient features of the supply backshoring phenomenon. As such, it complements extant backshoring characterizations (e.g., Dachs et al., 2019; Fratocchi et al., 2016; Zhai et al., 2016) by adding a specific focus on the relocation of supply activities. Since a key aspect of deglobalization is the reduction of the benefits from "fine slicing" the supply chain (Witt, 2019), examining how and why firms revise their prior sourcing decisions and shorten their supply chains becomes salient. Specifically, our findings suggest that supply backshoring is linked with two relevant economic factors, namely: an increase in the local supply effectiveness – captured by the "availability of suitable suppliers (in the domestic country)" driver – and a possible decrease in the efficiency of some GVCs. The former seems consistent with, and can contribute to, a rise in regionalization (Enderwick and Buckley, 2020). As for the latter, it is confirmed by operational (e.g., longer lead times; low quality of the supplies) and cost factors. The econometric model further shows that firms with higher productivity – a factor that arguably sustained the prior international expansion of their GVCs – display a higher supply backshoring propensity, very likely as a response to the increased pitfalls and inefficiencies they started to face in their international sourcing operations. Besides, the likelihood of supply backshoring is lower for the more profitable firms: this suggests that such companies continue to benefit from their global scale operations (e.g., economies of scale, access to world-class suppliers) and tend to maintain their status quo.

5.2. Managerial implications

As for the managerial implications, our results showcase an array of drivers that lead the supply backshoring decisions. Many of them refer to monetary aspects: this is interesting, especially if one considers that offshoring initiatives are usually driven by cost-minimization objectives (Bailey and De Propris, 2014; Contractor et al., 2010), and it warns managers about the increasing difficulties they may encounter in gaining the expected economic benefits from their foreign supplies – particularly if asset specificity is high for their firms. Of course, replacing a specialized supplier that holds exclusive or even unique capabilities may not be viable, at least in the mid-to-short term. However, our research reveals renewed opportunities to find suitable domestic suppliers that may help to prevent the risk of supply chain disruptions affecting competitiveness, brand reputation, and customer trust. Under these conditions, a more selective approach toward global sourcing could prove beneficial: managers could strengthen their local supply base, at the same time focusing their efforts – in terms of supply security and mitigation of the dependence – on the international suppliers for which local alternatives remain unavailable.

5.3. Limitations and future developments

This study examines the supply backshoring phenomenon in one of the main European economies, i.e., Italy, representing a first attempt to explore this aspect of GVC reconfiguration amid turbulence, uncertainty, and geopolitical changes. To the best of our knowledge, the present study is one of the very first that adopts a quantitative approach to test theoretically driven hypotheses aimed at explaining the occurrence of supply backshoring within IB literature. While TCE is appropriate to study the efficiency-risk tradeoff, we acknowledge that other theoretical perspectives, such as the Resource-Based View (RBV) (Barney, 1991), could be relevant. Supply backshoring could be motivated by the focal firm's increased difficulty or inability to access the distinctive assets and resources it needs for sustaining its competitive advantage in the foreign supply market. At the same time, the Institutional theory could be adopted to better understand the transaction costs level in high-tech industries, since it is heavily related to the effectiveness of the legal protection of IPRs (Wang et al., 2023).

Limitations include the focus on a single country and a sample dominated by SMEs in four sectors, potentially limiting generalizability. Country-level factors such as the availability of a broad and heterogeneous range of suppliers (McIvor and Bals, 2021) may affect the relevance of firm asset specificity in driving supply backshoring initiatives. As the second largest manufacturing country in Europe, Italy offers opportunities to replace suppliers that rising transaction costs have made too complex to deal with, which might not be equally available in other countries. Focal firms from these home countries may be more inclined to tolerate or mitigate (Manning, 2014) the effects of asset specificity, or to adopt alternative relocation strategies such as supply nearshoring. Also, the existence/nonexistence of policies aimed at favoring backshoring (Elia et al., 2021) may be another country-level influencing factor for supply backshoring. Furthermore, R&D and advertising intensity and IPR intensity may not fully capture the multidimensional nature of firm asset specificity. Therefore, future research could consider additional or alternative measures that might provide a more comprehensive view of this construct, such as other firm-specific intangible assets (like proprietary software, logistics-related knowledge and unique data infrastructure). In addition, while our theoretical model posits that firm asset specificity drives supply backshoring decisions, future research could address the potential endogeneity issue, i.e., the possibility that backshoring could in turn influence firm R&D or marketing behavior. In our study, this risk is mitigated by the temporal ordering of the data, as R&D & advertising and IPR measures refer to periods preceding the observed supply backshoring decisions. Nonetheless, future research could adopt longitudinal designs or instrumental variable approaches to more rigorously address potential bidirectional relationships and further strengthen the causal interpretation of the results.

We also acknowledge that a more rigorous application of TCE to examine the impact of asset specificity on supply backshoring would require measuring this specificity at the transaction level. Besides, a characterization of the reshored supply in terms of, e.g.,

economic value, adopted sourcing strategy (single vs. dual vs. multiple sourcing), and criticality of the goods for the focal firm's business, would have helped in better characterizing the supply backshoring strategy. However, since ours is a first attempt to investigate the phenomenon, we contend that these limitations could be appropriately addressed by future research. At the same time, future studies could broaden the focus and investigate in greater depth other factors and industrial or geographical contingencies that may influence the supply backshoring phenomenon. This could include exploring additional drivers, such as sustainability, given its growing relevance in the GVCs' debate (Dimitropoulos et al., 2023), and examining other countries beyond Italy, possibly through comparative analyses, to understand whether regionalization and supply backshoring phenomena are actually taking place, and to what extent, also in other geographic areas such as Asia and North America.

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CRediT authorship contribution statement

Paolo Barbieri: Writing – original draft, Validation, Conceptualization. **Cristina Di Stefano:** Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Stefano Elia:** Writing – original draft, Validation, Supervision, Project administration, Methodology, Conceptualization. **Luciano Fratocchi:** Writing – original draft, Investigation, Conceptualization. **Cristina Pensa:** Writing – original draft, Methodology, Formal analysis, Data curation.

Data availability

The data that has been used is confidential.

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