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Article

The Manufacturing Reshoring Phenomenon: A Policy-Oriented Analysis of Factors Driving the Location Decision

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Abstract: For several decades, multinational enterprises (MNEs) have offshored their manufacturing activities to low-cost countries to achieve significant productivity gains. However, changes in the relative competitiveness of countries, social effects of deindustrialization in advanced economies and the vulnerability of global value chains (GVCs) revealed by the COVID-19 pandemic have encouraged some firms, supported by governments, to “reshore” part, or all of their offshore industrial operations back to their home country. Reshoring decisions are motivated by a variety of endogenous and exogenous factors that are empirically analyzed in this paper to understand how reshoring policies implemented by governments can more effectively address the factors driving the firms’ location decisions. A review of the reshoring policies implemented in Europe, the UK and the US is conducted to provide general policy recommendations regarding policy instruments, SMEs, innovation and regionalization of value chains. This paper fills a gap in the literature by connecting the micro-level supply chain management analysis of firms’ reshoring drivers with the macro-level economic policy perspective on reshoring. The review of existing reshoring policies calls for an in-depth analysis by the manufacturing sector and at the local level.

Keywords: reshoring; economic policy; global value chains; location factors; foreign direct investments



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1. Introduction

The COVID-19 pandemic has revealed the vulnerability of complex global supply chains and the dependence of Western countries on the production of critical products in emerging economies, bringing the issue of “reshoring” to the forefront of political debates. Reshoring corresponds to the return to the firm’s country of origin of a manufacturing production unit previously offshored to a distant location offering competitive production costs.

This phenomenon has been growing in Europe and the United States for several years and has been accelerated by the disruption of supply chains during the COVID-19 crisis. In the first months of the pandemic, the supply chain disruptions led 83% of firms surveyed by EY (2022) to consider reshoring or to implement reshoring decisions that were being considered but not yet taken. The high costs associated with the spatial reconfiguration of the supply chains rapidly dissipated the enthusiasm of some firms, but many others effectively implemented reshoring strategies. More recently, the war in Ukraine also disrupted value chains and led manufacturing firms to reevaluate their location decisions by better considering the risk parameter.

The reshoring phenomena is not only motivated by managerial factors experienced by the private sector at the firm level, but also by political factors at the macro level. The concentration of income declines and unemployment in Western manufacturing regions exposed to trade with offshore manufacturing countries has created social and regional disparities fueling political polarization, leading governments to consider boosting the reindustrialization of these regions. The COVID-19 pandemic has also raised the awareness

of Western governments about the vulnerability of offshore value chains for manufacturing products that are strategic to a country's autonomy. Moreover, companies and value chains are both exposed to natural disasters (pandemics, flood risk, heat stress), which are expected to be increasingly frequent due to climate change and human-made shocks. In the current context of geopolitical tensions, trade restrictions or cyber attacks are likely to rise in the future. Threats to the regular flow of the supply chain emphasize the urgent need for policymakers to strengthen the resiliency of GVCs in order to mitigate potential abrupt supply interruptions (Grumiller et al. 2021).

The reshoring phenomena has therefore been supported by specific public policies implemented by governments of advanced economies. However, these reshoring policies have received little attention in the academic literature and only from an economic policy perspective. This contrasts with the numerous analyses of the multitude of endogenous and exogenous factors motivating reshoring decisions at the firm level that have been conducted in the international business (IB) and operational supply chain management (OSCM) literature. Moreover, there are few analyses of public policy cases in the academic literature, and they generally do not cover a review of public policy tools available to policymakers for supporting reshoring. Most importantly, there has been little interest in connecting the micro-level supply chain management analysis of reshoring drivers with the macro-level economic policy perspective.

This paper aims to fill this gap by analyzing reshoring public policies and the factors driving the firms' location decisions. It aims to review the many reshoring motivations for firms at the micro level in order to understand how governments can adapt their reshoring policies to these issues at the macro level.

The methodological approach is based on an extensive analysis of the literature on reshoring from the international business, supply chain management and economic policy disciplines. The empirical analysis is based on recent data collected by dedicated actors, multiple examples of real firms illustrating the findings and a case study approach on real public policies analyzed on the basis of primary sources.

This paper is structured as follows. After the Introduction, the Section 2 analyses the relevance of reshoring for both firms and governments and shows that this growing phenomenon should be considered with attention by public and private actors. The negative externalities of offshoring that motivate reshoring decisions, the quantitative importance of reshoring cases and the economic, strategic and technological issues surrounding the reshoring phenomenon for governments are analyzed.

In the Section 3, an empirical analysis of the internal and external factors motivating firms to reshore maps the levers available to policymakers to promote reshoring. Based on the empirical literature and real cases, the different internal and external factors driving the reshoring decision are listed.

In the Section 4, a review of existing reshoring policies aims to identify several recommendations for future reshoring policies. This paper analyzes real reshoring policies implemented in the EU and some countries such as France and Germany, along with the UK and the US.

Lastly, the Section 5 suggests several general policy recommendations that arise from the analysis of reshoring drivers and the evaluation of the existing reshoring policies.

2. The Growing Importance of Reshoring for Both Scholars and Managers

2.1. Definition of "Reshoring"

Encouraged by governments, firms based in advanced economies moved activities or functions offshored in another country back to the home country, in a process called "reshoring". The exact definition of this concept remains debated in the supply chain management literature, but "reshoring" can explicitly or implicitly be defined as the reversal of offshoring, that is to say, the "relocation of previously offshored activities" (Wiesmann et al. 2017, p. 22).

The discussions around this topic generally imply that reshoring is mainly relevant for manufacturing activities such as the automotive value chain, the fashion industry or the pharmaceutical sector. However, the reshoring phenomenon has extended to services. Even though this remains at an early stage, service activities such as call centers have indeed been offshored to countries such as India or the Philippines. Following problems encountered with language skills, cases of reshoring of such activities to developed economies have been observed. This remains however quite limited, given the low number of offshoring cases in the service sector (Blinder 2007), which can be explained by the difficulty of offshoring value creation activities requiring specialized knowledge or proximity to customers (De Backer et al. 2016).

A distinction can be made between “home reshoring” (i.e., reshoring following the failure of the earlier offshoring strategy), “tactical reshoring” (i.e., reshoring motivated by the availability of resources in a short-term perspective) and “development reshoring” (i.e., reshoring enabling the firm to upgrade its current product range). “Home reshoring” corresponds to “a mistake correction approach”, whereas “tactical” and “development reshoring” follow a “strategic approach”, which is, however, considered opportunistic in the case of the “tactical” reshoring (Joubioux and Vanpoucke 2016).

2.2. The Growing Quantitative Importance of the Reshoring Phenomenon

In the United States, the number of reshoring cases has increased in recent years (Fratocchi et al. 2015; Tate and Bals 2017). In the third quarter of 2022, job announcements following a reshoring operation increased by 15% compared to the previous record achieved in the first quarter of 2022, bringing the total number of jobs announced in 2022 to over 350,000 (Reshoring Initiative 2022). The total number of job creations announced since 2010 is estimated to be more than 1.6 million. Around 60 times more job creations have been identified in 2022 than in 2010. Reshoring is particularly active in the electrical equipment industry (driven by the strong support for domestic production of electric vehicle batteries) with more than 75,000 jobs created, and the computer and electronic products sector (38,000 jobs announced), followed by the chemicals industry (Reshoring Initiative 2022). Reshoring is expected to continue its growing trend in the United States, supported by the strong projected increase in semiconductor production following the Chips Act and the government subsidies to industry implemented through the Inflation Reduction Act (IRA).

In Europe, no dataset is available to monitor the recent evolution of reshoring announcements at the EU level. However, national surveys reveal the recent gradual increase in the number of reshoring decisions. In total, 26% of 373 Swedish firms surveyed by Johansson and Olhager (2018) were found to be active in reshoring. Moreover, the number of reshoring cases by French manufacturing companies has significantly increased (Fel and Griette 2017).

In addition to already-announced reshoring plans, the increasing publicity of reshoring positively influences the likelihood that CEOs will consider reshoring. There is indeed a growing positive sentiment regarding reshoring. According to Kearney (2022), 92% of manufacturing executives and 78% of CEOs surveyed in 2021 were evaluating reshoring options or had already decided to reshore some of their activities, which represents a significant increase compared to the 2020 figures. Positive feelings towards reshoring are motivated by a combination of new factors such as supply chain disruptions, tariffs and consumers’ preference for local products. Moreover, firms’ reshoring decisions are influenced by the reshoring activity of their competitors and suppliers in order to ensure that a solid supplier ecosystem (such as, for example, in the semiconductor industry) that can compete with China’s economic conditions is built in the United States and the European Union (Kearney 2022).

2.3. Characteristics of Firms Implementing Reshoring Strategies

While reshoring strategies can be of interest to a wide diversity of economic sectors with both labor- and capital-intensive activities (Fratocchi et al. 2015), firms operating in manufacturing industries are more likely to repatriate their industrial sites back to their

home country. These industries include machinery, computer and electronics, electrical equipment or communication equipment (Dachs et al. 2019). For instance, the German machinery and equipment industries are indeed more active in reshoring (Kinkel 2014) because of the high level of customization demanded by consumers, the high complexity of products and the flexibility required (Vanchan et al. 2018). Empirical data from the European Reshoring Monitor (2019) shows that the manufacturing sector represents 86% of the reshoring activity in the EU, including 11% for the apparel industry and 9% for food production. High-tech products such as machinery and equipment or computers and electronics represent 8% each of total reshoring cases (European Reshoring Monitor 2019). This can be explained by the fact that reshoring decisions are generally more frequent when the initial offshoring decision has been implemented through outsourcing or contract manufacturing (Fratocchi et al. 2015). Firms that have made significant investments to offshore their production in-house face greater irreversibility of the initial strategy.

The importance of company size is widely debated in the literature, with contradictory findings that seem to conclude that the size parameter has a different influence depending on the firm's sector. With a sample composed of both North American and Western European firms, Fratocchi et al. (2016) argue that large firms are slightly more likely to reshore, but that there are differences in the propensity to reshore depending on the firm's home country and sector. Moreover, the size of the company has an effect on the conditions of the implementation of the reshoring decision. SMEs generally reshore earlier than large firms (Ancarani et al. 2015) and are, on average, more satisfied with their reshoring decision (Fel and Griette 2017).

3. The Internal and External Factors Motivating Firms' Reshoring Decisions

Manufacturing location decisions result from complex decision-making processes (Boffelli et al. 2018) that must be empirically analyzed in order to efficiently design reshoring policies. This complexity can be explained by different issues, such as the combination of quantitative and qualitative criteria in decision-making tools (Gylling et al. 2015).

Reshoring decisions are often interconnected with earlier offshoring strategies (Joubioux and Vanpoucke 2016), which has led some to argue that reshoring motivations can be analyzed simply as a reversal of the initial offshoring drivers. However, whereas offshoring motivations are generally based on cost-related factors, the panel of potential reshoring drivers is a lot more diverse. For instance, Sequeira (2020) identifies more than 100 criteria, with only some of them being related to cost efficiency. Reshoring decisions are indeed based on a holistic set of factors that make the decision-making process complex. This contrasts with the oversimplified perception of the reshoring phenomenon in the political debate, where it is often perceived as a response only to government financial incentives.

Reshoring drivers are presented and illustrated in the following subsections through a categorization based on the distinction between internal (firm-specific) and external (environment-related) factors (Table 1).

Table 1. List of reshoring drivers.

Internal drivers	Correction of a managerial mistake in the initial offshoring decision	Overestimation of cost savings from offshoring	-	Insufficient consideration of hidden costs
			-	Lack of internal capabilities to correctly evaluate costs
		Initial wrong estimation of benefits and risks of offshoring	-	Oversimplified decision-making frameworks and modeling techniques
		-	Bounded rationality	
	Shift in the competitive strategy	Overhasty offshoring decision	-	Insufficient knowledge of the host country
			-	Bandwagon effect
		-	Insufficient planning	
	Shift in the competitive strategy	Upgrade from a cost strategy to a differentiation focus strategy	-	Shift to the higher segments of the market
			-	Corporate Social Responsibility (CSR) policy
			-	Adoption of “lean management” operational strategy

Table 1. Cont.

External drivers	Host country-specific drivers	Cost-related drivers	<ul style="list-style-type: none"> - Increasing operating costs in the offshore location - Labor costs - Costs of direct and indirect material - Overheads costs - Energy costs - Building costs
		Value creation drivers	<ul style="list-style-type: none"> - Increase in logistics and transportation costs - Low-standard quality products manufactured offshore - Additional costs from low quality (e.g., recalls of deficient products, new production runs) - Insufficient quality of human capital (lack of technical expertise, general communication skills, ...) - High employee turnover - Problems related to the local supplier network (difficult identification of suppliers, unfavorable position in contract negotiations, low quality)
		Other “push” drivers	<ul style="list-style-type: none"> - Insufficient protection of intellectual property rights (IPR): poor legal system, lack of regulation enforcement, recurrent non-compliance with contractual agreements, etc. - High complexity in coordinating distant manufacturing sites: mental distances, physical distances, coordination costs, limited innovation potential, time-consuming overseas travel, difficulty in managing unexpected changes in the business environment - Lack of flexibility in the transportation of products: purchase order rigidity, excessive stocks to match potential unexpectedly high demand, order requirements (container’s size, stability in quantities, etc.), inability to provide customization services - Uncertainty: volatility in the offshore supply market, instability in exchange rates, political risks, natural disasters, supply chain disruption risk
	Home-country-specific drivers	Cost-related drivers	<ul style="list-style-type: none"> - Productivity improvements in the firm’s country of origin - Improved labor market flexibility - Unemployed manufacturing capacity at home - Automation of manufacturing processes
		Value creation drivers	<ul style="list-style-type: none"> - Access to a skilled workforce in the home country - High level of flexibility: reduced lead times, consumer responsiveness, low delivery times - Ecosystem synergies: co-location of R&D and manufacturing activities, presence of a dense network of suppliers, collaboration with other firms and universities
		Other “pull” drivers	<ul style="list-style-type: none"> - “Made-in” effect (consumers’ higher willingness to pay when aware of a reshoring initiative), perception of higher quality, strategic alignment with the firm’s heritage and brand values - Sustainable production

Source: authors and references cited in the body text.

3.1. Internal Drivers: Correction of a Managerial Mistake in the Initial Offshoring Decision

Reshoring motivations that are internal to the firm can be classified with a distinction between the correction of an initial mistake when opting for an offshoring strategy and a shift in the firm’s competitive strategy that is independent of the original offshoring decision. Factors related to managerial mistake recognition are analyzed in this subsection.

The initial incorrect offshoring decision can be explained by an overestimation of cost savings that results from insufficient consideration of hidden costs. Companies can make location decisions without correctly assessing the comprehensive costs and performance implications of the reshoring decision (Kinkel 2014). Such a mistake can be understood as the firm’s lack of internal capabilities to correctly evaluate the costs generated by the implementation of an offshoring decision (Foerstl et al. 2016). These “hidden costs” correspond

to managerial, logistical and operational issues that were not predicted by the firm (Porter and Rivkin 2012).

The reshoring decision can also be motivated by an initial wrong estimation of the benefits and risks associated with the offshoring activity, which often results from oversimplified decision-making frameworks. Based on the analysis of four case studies, Gray et al. (2017) found that the initial offshoring decision taken by SMEs was often made with overly simplified systems that only considered the per-unit landed costs. The decision-making systems did not consider other landed costs and ignored important dimensions such as responsiveness to customer demand.

Lastly, reshoring can be the result of an overhasty offshoring decision that has been made with insufficient knowledge of the host country. Barbieri et al. (2018) identify that offshoring strategies are often implemented because of a “bandwagon effect”, observing that many companies replicated the offshoring behavior of their competitors without thoroughly evaluating all the implications of this decision. This opportunistic behavior is associated with insufficient planning and knowledge of the host country (Kinkel and Maloca 2009).

The exact importance of the mistake correction hypothesis among other reshoring motivations is debated in the literature. Based on a sample of around 7500 reshoring German firms over 15 years, Kinkel (2014) finds that two-thirds of reshoring decisions are taken only less than five years after the initial offshoring, leading to the conclusion that reshoring primarily is the result of a short-term correction to initial misjudgments regarding the offshoring activity. However, Fel and Griette (2017) find, on the basis of their sample of 270 French firms, that the mistake’s correction driver accounts for only 14% of the reshoring cases surveyed. They also show that the company size is a significant parameter, as only 8% of large firms motivate their reshoring decision by the initial error driver, compared to 16% of SMEs.

3.2. Internal Drivers: Shift in the Competitive Strategy

Reshoring decisions can also result from a shift in the firm’s competitive strategy. A company may choose to reshore a manufacturing process in order to adapt its organizational structure to a strategic decision related to the firm’s new market segment or marketing strategy. This category includes reshoring decisions associated with the upgrade of the reshored products (Bettiol et al. 2017), the implementation of a CSR policy (Fel and Griette 2017) or the adoption of a “lean management” operational strategy, which all require them to approach the supplier network. The strategic adjustment corresponds to the upgrade from a cost-focused strategy to a differentiation-focused strategy (Porter 1980). This is consistent with Bals et al.’s (2016) argument that reshoring is mainly based on a strategic approach to location decision making.

The strategic shift seems more frequent than the managerial correction hypothesis. It is a reshoring driver for 33% of the firms analyzed by Fel and Griette (2017). For instance, Varta Microbattery GmbH shifted its product mix from mass industrial batteries to a focus on micro-batteries, which represented an upgrade in the value-added product and motivated the company to reshore its micro-battery manufacturing sites in Germany (Foerstl et al. 2016).

However, reshoring decisions are most often the response to exogenous factors that are independent of the relative advantages of the initial offshoring decision or the firm’s competitive strategy. These factors correspond to modified contextual conditions in the host or the home countries and motivate a fully rational reshoring decision (Section 2.3).

3.3. External Host Country-Specific Drivers

Reshoring drivers associated with the local conditions in the offshore location are also called “push factors” (Pegoraro et al. 2022). They negatively affect the attractiveness of the host country regarding the firm’s operations.

(i) Cost-related “push” drivers

According to [Fratocchi et al. \(2015\)](#), cost drivers are the most frequent motivation in reshoring decisions. They refer to all changes in costs, including the “total manufacturing cost” (TMC) that corresponds to the aggregate cost incurred in the production of the product. TMC includes labor costs (direct and indirect labor), the costs of direct materials and indirect materials (required for operations) and overhead (e.g., maintenance, depreciation, rent, cleaning, insurance, taxes, administrative costs, logistics, etc.).

The cost-related category includes the increasing operating costs in the offshore location, which results in diminishing comparative advantages. Since manufacturing activities were offshored to emerging economies, production costs have dramatically increased in many host countries. The change in the cost structure in developing economies is a major driver of offshoring, as illustrated by [Fel and Griette’s \(2017\)](#) survey showing that 53% of firms reshored because of a change in operating costs in the offshore location, especially in China. An increase in labor costs is often cited as the most significant factor ([De Backer et al. 2016](#)), both in Eastern European countries such as Romania and in Far East locations such as China. In 2000, the average hourly wage in developing countries was around 2% of the United States and reached 9% in 2015 ([De Backer et al. 2016](#)). There are numerous examples of firms having reshoring following an increase in Chinese labor costs. For instance, Vent-Axia, which produces ventilation systems, reshored its manufacturing activities of domestic fans from China to the UK in 2023 because, even though China still offered more favorable economic conditions despite the increase in labor costs, the rising costs and other problems with the supply chain logistics have lowered the advantages of offshoring.

In addition to labor costs, there are also other costs frequently involved in reshoring decisions based on cost efficiency, such as energy costs or building costs, which are reported to have dramatically increased in recent years in developing countries. Furthermore, as explained by the factor market rivalry theory ([Tate et al. 2014](#)), the increased presence of competitors in the offshore area tightens the competition for assets, which pushes existing production sites away from the offshore location. The competition between firms for the same limited assets (e.g., human labor, raw materials, transportation capacity, etc.) also reduces growth opportunities in the offshore location, therefore encouraging firms to centralize their operations in their home country in order to reduce transaction costs.

Moreover, the distance between the offshore manufacturing location and the firm’s home country and demand markets generates significant transportation costs that have been reported to dramatically increase in the last few years ([UNCTAD 2021](#)). The rise in shipping costs results in an increase in consumer prices that influences the firms’ location decisions, as distant locations do not offer the same cost-efficiency advantages as before. Concerns regarding increases in logistics and transportation costs in East and South Asia have been reported by numerous firms surveyed by [Ellram \(2013\)](#). For instance, Ford created 3200 jobs in the US in 2016 with the reshoring of the industrial sites manufacturing the F-650 and F-750 vehicles. Opening factories in Cleveland (Ohio) was motivated partly by the reduced shipping costs for intermediate pieces ([Sauter 2016](#)).

(ii) Value creation “push” drivers

Host country-specific reshoring drivers related to the firm’s value creation refer to inconsistent or inadequate product quality. The below-standard quality of products manufactured offshore generates customer dissatisfaction and additional costs such as recalls of deficient products and new production runs ([De Backer et al. 2016](#)). The poor quality of offshore production is a driver for 51% of reshoring companies surveyed by [Dachs et al. \(2019\)](#), with this figure reaching 79% for reshoring cases from Asia. For example, General Electric encountered quality problems with its offshore manufacturing production in China and decided to invest USD 800 million in a former plant in Louisville (USA) ([Bals et al. 2016](#)). Quality problems mainly concern small and medium firms: product quality is the first reshoring motivation for SMEs but is not among the top five drivers for large companies according to [Kearney \(2022\)](#).

Product quality problems can be the result of insufficient quality of human capital, that is, for example, a lack of technical expertise, general communication skills or education

levels in the available workforce (Gerbl et al. 2015). The difficulty in preserving the high quality of products in the host country can be exacerbated by the frequently high employee turnover that inevitably limits the level of skills of employees in countries characterized by low levels of skilled and educated labor in the total workforce. Moreover, decreasing human capital quality is sometimes combined with increasing labor costs, leading to both poor product quality and high operating costs in offshore locations (Baraldi et al. 2018). A lack of skilled workers in the offshore location is, for example, cited as a major reshoring motivation by Fitwell and AKU, two Italian footwear manufacturers surveyed by Di Mauro et al. (2018) that had offshored their manufacturing activity in Romania.

Firms operating offshore production sites can also be exposed to problems related to the low quality of the local supplier network. When there is only a limited number of suppliers in the offshore area, the firm is in an unfavorable position when negotiating supply contracts that can lead to additional costs (McIvor and Bals 2021). For instance, NCR, a US ATM manufacturer, reshored a 900-employee industrial site because of the insufficient reactivity of Chinese contract suppliers, especially for suppliers of lower-level intermediate goods (Reshoring Initiative 2022).

(iii) Other “push” drivers

Other reshoring drivers that are specific to the offshore host country include insufficient intellectual property rights (IPR) protection, high complexity in coordinating distant manufacturing sites, lack of flexibility in the transportation of products, and uncertainty generated by economic, political or natural factors.

Firstly, many firms reshore some of their offshore processes because of fear of intellectual property theft. In addition to insufficient regulation protecting patents and intellectual property, developing countries characterized by poor legal systems cannot effectively enforce regulation (Locke et al. 2013). The risk with an ineffectively protected share of business insights with local suppliers is that these suppliers may become competitors to the firm (De Backer et al. 2016). Moreover, non-compliance with contractual agreements is also a critical threat in offshore locations that can motivate reshoring. In total, 43% of firms surveyed by EY (2022) said that the protection of intellectual property rights is a top technology-related factor in location decision making. For example, Cartronic, a German toy company, reshored its manufacturing activity located in China because the transfer of new product technology in China generated counterfeiting risks (European Reshoring Monitor 2019).

Furthermore, offshoring to distant locations requires information and goods to travel long distances, which makes control over manufacturing processes more difficult. This is linked to both mental distances, which create difficulties in the synchronization of business functions (e.g., lack of coordination between distant R&D and manufacturing sites) (Amaral et al. 2012), and physical distances, which correspond to problems linked to logistics and shipping. These distances generate high coordination costs that can offset the advantages of the offshore location. The complexity associated with an extended supply chain can be a catalyst for other problems, such as limited innovation potential or time-consuming overseas travel to visit offshore manufacturing sites (Fel and Griette 2017). For instance, high control over manufacturing operations was a major driver for McLaren Technology Group’s plan of reshoring the UK’s firm production of carbon-fiber “tubs” (European Reshoring Monitor 2019).

Another driver similar to the lack of control over business operations is the lack of flexibility in the transportation of products. Geographical distance creates supply chain issues linked to order requirements (e.g., quantity adapted to container size, stability of quantities, etc.) or purchase order rigidity. Moreover, delivery cycles are excessively long and require offshore companies to optimize their purchasing and logistics (Di Mauro et al. 2018). Difficulties in matching production and consumption volumes are avoided by firms by placing orders higher than the forecasted demand, but this can lead to obsolete inventory and thus negatively impact the profitability of the operation. For instance, time-to-market reduction has been a motivation for Prada’s reshoring to Italy and Adidas’ reshoring to Germany (European Reshoring Monitor 2019). The geographical distance between the

manufacturing facility and customers also generates an inability to provide customization or any other services related to the product, thus preventing the firm from additional revenues coming from value-adding services.

Lastly, “push” reshoring drivers can be related to the uncertainty generated by the economic, political or natural characteristics of the host country. Firstly, the firm can face volatility in the offshore supply market, which prevents the establishment of rigid contracts since the terms of the contract would have to be frequently amended as a result of changing circumstances. For instance, Walmart insourced and reshored part of its foreign supply chain partners in order to protect itself against the drawbacks of the volatility observed in the service supply markets (Bals et al. 2016). Moreover, political risks such as unexpected changes in the local business regulation can severely interfere with business activities. This can include both political instability in developing countries and changing bilateral or multilateral relations between advanced economies.

3.4. External Home-Country-Specific Drivers

Reshoring drivers under the control of the firm’s country of origin are called “pull” factors since they can have a positive influence on the likeliness of the firm to move its manufacturing facility back to its home country (Pegoraro et al. 2022).

(i) Cost-related “pull” drivers.

Home-country-specific reshoring drivers associated with costs are generally the result of productivity improvements in the firm’s country of origin, either related to automation or not. Firstly, the reshoring decision can be motivated by a decrease in the general level of costs in the home country unrelated to the integration of new technology. Such improvement in economic conditions can be the result of an improved labor market flexibility or of the existence of unemployed capacity at home, which was a driver for 42% of firms surveyed by Dachs et al. (2019). The total costs of ownership (TCO), which include the hidden costs that are often high for offshore operations, fell or remained stable for 80% of the firms analyzed by Fel and Griette (2017), including for mid-range products. Examples of firms having reshored because of increased cost efficiency in their home country are numerous. It is the case of companies like Saint-Gobain PAM, which reshored some product lines in France to improve cost-efficiency, as well as Lechpol (electronic devices supplier based in Poland) or Arkopharma (French food supplement producer) (European Reshoring Monitor 2019).

The automation of manufacturing processes is a major driver of productivity increases and cost efficiency in developed countries (Bailey and De Propriis 2014), thus bolstering reshoring. For example, Industry 4.0 technologies enable firms to improve at the same time the productivity, flexibility and quality of products manufactured in high-cost countries (Ancarani et al. 2019), which addresses several of the main problems identified with offshoring production. The increased degree of automation indeed lowers the need for human labor and therefore makes countries with high labor costs economically viable for manufacturing activities. It has been cited as the main reshoring motivation by 20% of companies surveyed by the European Reshoring Monitor (2019). For instance, Manfrotto, an Italian manufacturer of camera and lighting support equipment, reorganized its operations based on the lean manufacturing philosophy.

(ii) Value creation “pull” drivers.

Regarding value creation-related drivers, reshoring decisions can be motivated by access to a skilled workforce in the home country, since offshore manufacturing activities can face problems in retaining skilled workers. Employees with technology skills are indeed critical for firms in order to operate their digitalized operations, leading them to classify the availability of a skilled workforce as the first technology-related factor according to EY (2022). For example, Energid Technologies, a developer of software and robotics technology, reshored activities from India to Cambridge (Massachusetts) in order to benefit from the higher skills and working productivity of computer engineers in the US (Jones 2014).

Furthermore, reshoring strategies can be driven by the ecosystem synergies obtained in the home country thanks to the co-location of R&D and manufacturing activities or the presence of a dense network of skilled suppliers. Proximity between the different processes of the firm facilitates the management of the complex interdependencies between business units. For instance, American ATM manufacturer NCR reshored some production processes in order to reduce the coordination effort required between design, logistics and production (Ketokivi and Ali-Yrkkö 2009). Innovation and research and development (R&D) activities, indeed, may be slowed down when suffering from a physical and mental distance to manufacturing (Pisano and Shih 2009). This is due to the importance of innovation of feedback coming from the manufacturing processes. Companies such as Cuddly AB, a Norwegian manufacturer of compact cameras, therefore implemented a reshoring strategy in order to achieve greater proximity between innovation and production activities (European Reshoring Monitor 2019). Lastly, reshoring enables the company to belong to an industrial district that provides beneficial network effects such as the presence of skilled labor (e.g., universities) or a dense network of suppliers (Forte and Miotti 2015). The availability of skilled workers enabled by synergies between industries and local universities (e.g., apprenticeship projects, joint research, etc.) is also a major driver (Gadde and Jonsson 2019). For instance, Fitwell and AKU, two Italian footwear manufacturers, were able to reshore their production sites partly because of the possibility of leveraging the resources and skills offered by the Montebelluna sportsystem district (Di Mauro et al. 2018).

(iii) Other “pull” drivers.

Other home-country-specific drivers mainly include motivations related to the customer preferences for locally manufactured products (“made-in” effect).

The “made-in” effect, which corresponds to the higher customer willingness to buy local products because of economic patriotism, is an increasingly important driver of reshoring. In total, 16% of the firms surveyed by the European Reshoring Monitor (2019) cited this factor as a motivation for reshoring. Consumer buying behavior is characterized by a higher willingness to pay when consumers are aware of the firm’s reshoring initiative, as shown by the statistical variable models on different surveys by Grappi et al. (2015). The “made-in” effect allows the firm to shift its marketing strategy toward higher segments, because of the customers’ perception that local products are of higher quality and that local manufacturing processes better take into account ethical considerations. This enables the firm to charge a premium price that offsets the increase in labor costs generated by reshoring. For instance, the UK fashion company Burberry moved its manufacturing production back to the UK, in order to be associated with the idea of “Britishness” in order to tell a story about the firm’s heritage (Robinson and Hsieh 2016).

4. Analysis of Current Reshoring Policies Implemented in Advanced Economies

In this section, the reshoring policies of several Western economies will be analyzed with the aim of suggesting policy recommendations based on reshoring drivers that could help to improve the efficiency of reshoring policy. The relevance of this objective is supported by Elia’s (2022) claim that reshoring scholars have rarely paid attention to the effects of reshoring policies in the firm’s location decision-making process.

4.1. Reshoring Policy in the European Union

Reshoring has been frequently included in the European Commission’s or the European Parliament’s communications regarding industrial strategy. For instance, the 2013 European Parliament’s “Renaissance of Industry for a Sustainable Europe Strategy” recognizes reshoring as a goal for the EU. This objective was supported by the 2010 Europe Strategy 2020 Program’s target of increasing the share of manufacturing in the EU GDP to 20%. Moreover, the European Commission explicitly referred to reshoring in a number of communications including “For a European Industrial Renaissance” and “A Stronger European Industry for Growth and Economic Recovery” (De Backer et al. 2016). However, assessing EU reshoring policies appears to be difficult as the EU institutions implemented

very few initiatives focusing specifically on reshoring, which reveals a significant gap between policy discussions and policies effectively implemented (Goldthau et al. 2022).

Nevertheless, EU policies focus on improving Europe's "technological sovereignty" through the support for technological leadership in strategic sectors or autonomy of supply chains in technological domains. Such policies correspond to industrial policies and are designed through the perspective of the European economy's competitiveness and strategic autonomy with regard to geopolitical issues (European Commission 2020). This includes policies such as the European Chips Act, which aims at supporting the semiconductor industry in Europe with an expected budget of EUR 11 billion by 2030.

Moreover, some EU-related institutions have invested in projects supporting the backshoring of strategic manufacturing facilities. For example, the European Investment Bank (EIB) supported the reshoring in Europe of electric battery manufacturing, with a total investment of EUR 1 billion since 2010 over several projects (European Investment Bank 2020). For instance, the European Fund for Strategic Investment (EFSI), which is a joint initiative of the EIB and the European Commission, financed the reshoring of a gigafactory by Swedish battery manufacturer Northvolt, with the support of EIB's InnovFin Energy Demonstration Programme.

4.2. Reshoring Policy in France

The French government has significantly supported reshoring over the last few years. A 2013 survey showed that 60% of reshoring firms had received support from the French government or local authorities (De Backer et al. 2016). The « aide à la réindustrialisation » (ARI) ("reindustrialization aid", initially called "reshoring bonus") launched in 2010 was designed to finance reshoring plans with low-interest loans financing up to 40% of projects representing at least EUR 5 million and 25 job creations for SMEs. In 6 years, the ARI policy created 2600 jobs with 44 reshoring projects, however, with an important cost to public finance (PIPAME 2013).

In 2013, the Ministry of the Economy launched the "Colbert 2.0" tool which was designed to help firms evaluate the feasibility of reshoring their manufacturing operations in France (De Backer et al. 2016). After submitting an online form, companies were supported with a customized support service by a single contact person at the Ministry for bureaucratic fulfillment (Elia 2022). Moreover, a national fund provided financial aid to companies, especially SMEs, reshoring their production activities. The Ministry also created a dataset showing the advantages of different French locations, such as the availability of industrial areas or plans, but also company stories and other useful information for firms (Bellego 2014). Colbert 2.0 successfully encouraged reshoring through information provision and financial support but was deactivated in 2016 because it constituted a significant expense for the Ministry (Elia 2022). At the same time, the creation by the government of the "Origine France Garantie" brand aimed at encouraging the "made in France" effect, therefore indirectly supporting reshoring (Elia 2022).

In the wake of the COVID-19 pandemic, a call for projects named "Reshoring" was launched in order to specifically support backshoring projects. In total, 477 projects among 1570 candidates were financed, with EUR 846 million of public investment for a total of EUR 3.2 billion investments, leading to the creation or support of 50,000 jobs (Gouvernement 2022). The French COVID-19 recovery plan also included a list of industrial facilities available for the launch of new manufacturing activities (Elia 2022). The Ministry of the Economy simplified the procedures needed to apply for a grant or loan, which resulted in great success with over 3600 applications only one month after the announcement of the launch of the fund dedicated to industrial investments (Les Echos 2020).

4.3. Reshoring Policy in Germany

In order to preserve its high-value-added activities and develop new technologies, Germany's industrial policy focuses on supporting the competitiveness of manufactur-

ing sites through several policies aiming at designing a favorable and stable regulatory environment regarding for instance infrastructure, consumer safety and R&D support.

Several initiatives consisting of financial aid for investment can be distinguished, such as the “Improvement of Regional Economic Structures” (GRW), which is jointly supported by the federal governments and the Länder and aims at providing additional investment capacity to firms planning to create jobs. Several other subsidies to the industry (e.g., financial aid, tax relief without compensation) exist. The Länder also provides significant subsidies through the public bank KfW (80% owned by the federal government and 20% by the Länder) or regional investment banks. Moreover, the federal government has implemented tax exemptions aiming at reducing labor costs, communication campaigns supporting the “made in Germany” trend, equity investments and control of FDIs (PIPAME 2013). Digitizing companies can also benefit from significant support from the government through the “Industry 4.0 Programme”, which offers additional financial incentives. More recently, the German federal government contributed up to EUR 5 billion for the construction of a semiconductor factory in Dresden, with the support of the European Chips Act (Blanchard and Escritt 2023). Lastly, at the end of 2023, the German federal government published a strategy paper announcing several measures aiming at supporting the pharmaceutical sector (BMWK 2023).

4.4. Reshoring Policy in the UK

In the United Kingdom, manufacturing policies include the 2012 Advanced Manufacturing Supply Chain Initiative (AMSCI) that aimed to support the competitiveness of the UK manufacturing supply chain in order to retain industrial facilities in the UK, with a focus on the automotive sector (Vanchan et al. 2018). A GBP 345 million fund was launched to support capital and R&D investments, as well as skills training (Grumiller et al. 2021). The program appeared to be very popular among manufacturing companies and successfully supported the reshoring of industrial supply chains but mainly focused on large companies because of the requirement of a minimum funding level of GBP 2 million (Bailey and Tomlinson 2017). Later rounds reduced this minimum funding requirement to GBP 100,000, which allowed it to target reshoring SMEs, especially in the automotive and aerospace sectors in the Liverpool City Region and the West Midlands (Bailey and Tomlinson 2017).

In 2014, the government agency UK Trade & Investment (UKTI) and the Manufacturing Advisory Service (MAS) jointly launched the Reshore UK initiative, which became the main scheme explicitly aimed at supporting manufacturing reshoring in the UK (De Backer et al. 2016). While the UKTI was the initial contact point for companies, the MAS supported firms in the planning of their reshoring strategy and the search for suitable locations and relevant suppliers (Pegoraro et al. 2022). SMEs interested in reshoring could access financial support (Goldthau et al. 2022), and all firms (both reshoring companies and their potential UK-based suppliers) could benefit from expert advice on efficiency-seeking solutions, innovative practices, supply chain services and business strategies (Manufacturing Advisory Service 2014). Reshore UK played an essential role in connecting small UK-based suppliers with large manufacturing OEMs, therefore supporting SMEs that were previously excluded from national business networks (Grumiller et al. 2021). The identification of local suppliers was a key issue in supporting reshoring and developing a national supply chain in specific manufacturing activities.

However, UKTI closed in 2016, one year after the MAS. Activities related to innovation were integrated into the Innovate UK agency, while the support in suppliers’ identification was transferred to the new online platform “Reshoring UK: UK Engineering Marketplace”, which is operated by private industrial associations (Elia 2022). The government’s reshoring policy was suspended because of the economic uncertainty generated by the Brexit negotiations with the EU (Gamble 2018). The Reshoring UK: UK Engineering Marketplace platform, however, remained widely used by UK manufacturing companies in order to connect with accredited local suppliers able to deliver products of higher quality than foreign

suppliers. This underlines the importance of building a coordinated national industrial system in order to support reshoring, combined with support for innovation, technology and education.

After Brexit, the UK endorsed new industrial policies supporting manufacturing firms, including those implementing reshoring plans. The Industrial Strategy “Building a Britain Fit for the Future” (HM Government 2017) defined specific challenges (e.g., artificial intelligence, mobility, clean growth, etc.) around which ad hoc local industrial policies were designed. These policies included subsidies and funding for local enterprise partnerships (LEPs), firms and research institutions. Individual missions set concrete targets towards a grand challenge and allocate funding to concrete projects supporting such objectives (Mazzucato 2018). Lastly, the UK government announced in November 2023 a new “Advanced Manufacturing Plan” that includes GBP 4.5 billion in funding aiming at leveraging private funds for the construction of new manufacturing sites (Wragg 2023).

4.5. Reshoring Policy in the US

The recurrence of reshoring in US political discussions has led to the implementation of major industrial policies by the US federal government that often include tax incentives and public investment (Zhai et al. 2016). For instance, the 2012 “Blueprint for an America Built to Last”, which is often considered the first reshoring policy ever implemented in the US (De Backer et al. 2016), introduces several policy instruments that can support reshoring (Barrentine and Whelan 2014). For instance, reshoring companies can benefit from tax deductions for reshoring costs (especially for high-tech companies), tax credits, reduction in energy costs and other incentives (Elia et al. 2021). Moreover, the “Blueprint for an America Built to Last” includes significant investments in logistics infrastructure in order to improve the competitiveness of the US territory. In 2015, the “Supply Chain Innovation Initiative” specifically targeted manufacturing SMEs in order to support their innovation and access to technologies through a commitment of USD 500 million in public and private investments in cutting-edge technologies (Vanchan et al. 2018).

The US reshoring policy significantly focuses on partnerships and synergies between the manufacturing sectors and research centers, especially during Obama’s presidential mandates. For instance, the 2010 “Skills for the Future Initiative” introduced partnerships between private industrial actors and community colleges regarding job training programs and job placement in order to improve the workforce development strategy (Vanchan et al. 2018). The “Blueprint for an America Built to Last” created 25 “manufacturing universities” that offer engineering curricula designed in accordance with the needs of the manufacturing sector (Elia 2022). In addition, 40 “manufacturing hubs” were created with the objective of promoting collaboration between companies and universities in specific technological industries (Piatanesi and Arauzo-Carod 2019).

Moreover, the Manufacturing Extension Partnership (MEP), a public–private partnership serving SMEs, offered support to manufacturing firms in the calculation of the total cost of ownership when making location decisions (De Backer et al. 2016). Furthermore, the US government promoted reshoring plans by releasing reports on the number of jobs created by reshoring decisions in each US state (Sequeira 2020).

In order to improve the competitiveness of the US manufacturing sector, the Trump Administration implemented an aggressive trade policy against China, which proved to be quite inefficient in supporting reshoring. High tariffs were introduced on imports such as steel and aluminum because of national security concerns (Grumiller et al. 2021). Even though these tariffs may have been beneficial to some industries that compete with foreign manufacturers, most of the costs of tariffs have been passed on to domestic consumers and downstream companies (Amiti et al. 2019). Moreover, tariffs did not increase the reshoring activity in manufacturing sectors even though this was an objective of the trade policy. In many sectors, production located in China moved to other East and South Asian countries and Mexico in order to circumvent tariffs (Goldthau et al. 2022).

The incumbent US president Joe Biden has implemented several policies to protect the manufacturing sector and bolster industrial innovation. Public procurement rules were modified by an executive order to give preference to US companies and the requirements for the “Made in America” label have been made stricter (Grumiller et al. 2021). In 2021, the Build Back Better Plan introduced the American Jobs Plan, which included significant public investments in new energy technologies designed to eventually bolster reshoring strategies (Goldthau et al. 2022). The US Congress also voted on the American Foundries Act in order to reshore semiconductor factories to the US territory in order to protect technological supply chain resilience but also create high-value-added jobs in the microelectronics industry. The Infrastructure Investment and Jobs Act signed into law in November 2021 included a USD 1 trillion investment in strategic areas, with an indirect positive effect on reshoring. Moreover, President Biden also signed an Executive Order on America’s supply chain in order to assess the supply chain risks and identify the critical needs for reshoring. More recently, the US Congress passed the Inflation Reduction Act (IRA), which includes significant subsidies for the industry that could bolster reshoring by pulling foreign investments into the United States.

5. Policy Implications of Reshoring Drivers for the Design of Future Reshoring Policies

The analysis of factors driving the firm’s reshoring decision (Section 3) and of the reshoring policies implemented by some Western economies (Section 4) can be combined in order to identify several implications relevant to policy discussions on reshoring.

5.1. Use the Large Diversity of Policy Instruments Available to Address the Myriad of Potential Reshoring Drivers

Firstly, there is a large diversity of policy tools that governments should use in order to cover the myriad of potential drivers for reshoring. This requires integrating reshoring policies into broader horizontal and vertical policies.

Reshoring-oriented policy can include a mix of different innovation and industrial policy tools. For instance, direct sector-specific policies can support reshoring through financial incentives or obligations for firms to source domestically, while horizontal policies have an indirect influence on reshoring through for instance taxes, public procurement preference or due diligence obligations on supply chain robustness (Grumiller et al. 2021). Reshoring is also indirectly influenced by other policies in areas such as infrastructure, education, research or administrative procedures. The vast array of reshoring motivations can indeed be understood only with a broad perspective (Barbieri et al. 2018) that is necessary to design an effective reshoring policy (Srai and Ané 2016). This explains why reshoring policy may be more efficient when designed as a component of a broader framework aiming at stimulating investment and improving competitiveness (De Backer et al. 2016). Moreover, reshoring policy should be adjusted to the characteristics of specific industries, as no general approach to reshoring policy exists (Grumiller et al. 2021). Tailor-made policies to the specific needs of a sector can be designed only through the collaboration of civil servants with academic experts, industry representatives and other experts from civil society.

5.2. Implement Structural Reforms Rather Than Direct Financial Support at the Firm Level

Moreover, financial support for reshoring should be limited to critical sectors of strategic importance, and structural reforms building a long-term attractive economic environment should be preferred for other manufacturing sectors. The costly public investment that represents the grant of financial incentives to companies (e.g., subsidies, tax incentives) should be implemented when a critical issue for supply security has been solidly identified and there exists no other equally efficient policy option. Direct financial intervention is indeed justified and efficient only in the case of risk of shortage of critical products (e.g., pharmaceuticals and medical products) in the case of human-made or natural threats, or of a technology that is essential to face grand societal challenges, such

as the green transition, for which the strategic autonomy of the EU economy is needed (Grumiller et al. 2021).

Furthermore, financial incentives at the firm level should be avoided because, despite being easier to implement and more attractive in politics, they do not address the problems faced by firms that could potentially reshore their production. Subsidies, no matter how generous, will therefore not trigger a long-term wave of reshoring plans. Instead, the reshoring policy needs to be closely associated with other policies aiming at improving the attractiveness of manufacturing investment, with measures either improving product value (i.e., differentiation strategy) or reducing production costs (e.g., efficiency-seeking strategy) (Elia 2022). Lastly, it should be noted that increasing international transaction costs (e.g., tariffs) is not efficient in promoting reshoring because it incurs an economic cost on firms and consumers.

5.3. Improve the Firms' Access to Relevant Information (Especially for SMEs)

Public authorities can improve reshoring attractiveness by making information useful for location decisions more available, especially for SMEs. The success of the Colbert 2.0 tool and the Reshore UK initiative shows that many firms potentially interested in reshoring need to be supported in assessing the total benefits and costs associated with re/offshoring, as well as identifying business opportunities and supplier networks in the home country. This support can focus on the calculation of the total costs of ownership (TCO) and provide decision models with rich heuristics (Gray et al. 2017). Moreover, it is important to support firms in adopting a holistic approach to the location decision that includes other factors than just cost-related elements (Hartman et al. 2017).

This can be particularly useful for SMEs, which face specific challenges when considering reshoring because of the limited volume of time and resources available to dedicate to location decision making. Policymakers should collaborate closely with SMEs in order to effectively understand the potential challenges that they face and how such barriers can be removed (e.g., facilitate access to policy tools) (EY 2022).

5.4. Create Industrial Hubs with Collaborations between Manufacturing Firms and Research Centers

Reshoring policy must also be designed in close relationship with innovation policy, especially regarding hubs and Industry 4.0. In order to benefit from expertise and technological readiness, manufacturing firms already rely on major hubs that have been created with the collaboration of public authorities (Nujen et al. 2019). The development of industrial hubs must be encouraged because the reshoring phenomenon will be able to become more significant only if strong supplier ecosystems are built in Western economies (Kearney 2022). Manufacturing supply chains rely on complex interactions and interdependencies between suppliers that need to be taken into account by firms and policymakers. Therefore, reshoring policy should focus on industries for which meaningful ecosystems or potential for ecosystems can be identified in the country (Ketokivi et al. 2017). This is important because the reshoring of a specific product often requires the reconstruction of the entire value chain, which calls for an “orchestrator” in charge of managing the complex interdependencies between actors. The government’s industrial policy can play this role, but its action would be relevant only if taken in collaboration with private actors (Elia et al. 2021).

In addition, industrial hubs are particularly efficient when associated with innovation and research hubs. As the development of Industry 4.0 supports reshoring decisions (Section 2.3) both through cost efficiency (e.g., automation) and differentiation (e.g., IoT), there is a need for improving collaboration between manufacturing firms, on the one hand, and research centers and universities, on the other hand.

The current lack of skilled workers in manufacturing fields resulting from previous decades of offshoring is a major barrier to reshoring decisions (Kearney 2022). In association with innovation and education policy, reshoring policy should support education, training and apprenticeships in industrial areas where there is a lack of high-skilled workers (e.g.,

green transition) through for instance new collaborations between firms and educational institutions (Elia 2022). Universities play a key role in preparing students to take on high-skilled manufacturing jobs and should be encouraged to provide training and internal apprenticeship programs to both new hires and current workers (Kearney 2022).

6. Conclusions and Future Research

This paper aims to analyze the reshoring drivers of firms with a policy-oriented approach in order to provide recommendations for the design and implementation of future reshoring policies. The literature review of reshoring motivations showed the great diversity of drivers that have been extensively analyzed by the supply chain management literature. Several trends such as Industry 4.0, sustainability issues, the “made-in” effect and the increasing relative competitiveness in developed countries represent significant drivers for reshoring at the firm level. These issues have been taken into account by reshoring policies, but there is still room for improving the existing policies.

Despite the intense development of the reshoring literature in recent years, some dimensions of this phenomenon remain poorly understood. While reshoring drivers have been frequently studied both theoretically and empirically, reshoring policies remain a blind spot in the reshoring literature and deserve further investigation. A detailed evaluation of the effectiveness of each existing policy would be interesting in order to obtain a more accurate and operational analysis of the relevance of economic intervention by governments in the location decisions of firms. Moreover, little has been written about local reshoring policies, even though some US states and regions in Europe have been active in supporting companies wishing to set up new manufacturing facilities on their territory. This deserves further study because of the great diversity of territorial situations and the complex links between local policies and national or even supranational policies. Lastly, given the diversity of issues faced by companies depending on their sector, a sector-specific analysis of reshoring policies could help to distinguish levers specific to each type of company, thus strengthening the precision and relevance of policy recommendations.

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