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WHY MANUFACTURING BACKFLOWS TO CENTRAL AND EASTERN EUROPE FAIL TO MATERIALIZE: INTRODUCING THE RESHORING READINESS LADDER (RRL)

Michał MŁODY[1*], Luciano FRATOCCHI[2]

[1] Poznań University of Economics and Business, Department of Strategic Management, Poznań, Poland; michal.mlody@ue.poznan.pl, ORCID: 0000-0001-5368-9719
[2] University of L'Aquila, Department of Industrial and Information Engineering and Economics, L'Aquila, Italy; luciano.fratocchi@univaq.it, ORCID: 0000-0001-9562-0744
* Correspondence author

Purpose: Despite COVID-19 disruptions and geopolitical tensions favoring supply chain regionalization, Central and Eastern Europe (CEE) has failed to capture anticipated manufacturing reshoring flows. This paper seeks to explain why and to introduce a conceptual framework identifying the binding constraints to reshoring in post-transition economies.
Design/methodology/approach: We analyze relocation cases from the Eurofound's European Restructuring Monitor (ERM) and develop a multi-theoretical framework - Reshoring Readiness Ladder (RRL), integrating transaction cost economics, the OLI paradigm, and global value chain governance.
Findings: Eurofound data reveal a critical paradox: while CEE attracts manufacturing relocations (intra-EMEA secondary relocations), none represent confirmed extra-EMEA-to-CEE nearshoring. This pattern reflects a "CEE capability trap" - the region is too developed for cost-based competition yet lacks ecosystem thickness for technology-intensive production.
Research limitations/implications: Our conceptual framework requires empirical validation across sectors and CEE countries. The RRL framework provides a foundation for future quantitative research on manufacturing location decisions.
Practical implications: Policy makers should abandon generic FDI attraction strategies and focus on building specialized ecosystems in narrow domains, while companies should consider staged relocation approaches co-locating engineering with production.
Originality/value: This paper introduces the RRL framework spanning four levels (institutions → capabilities → ecosystems → strategic positioning) and demonstrates that not only formal institutions but the broader ecosystem constitutes the binding constraint for CEE nearshoring success.
Keywords: reshoring, nearshoring, Central and Eastern Europe, Industry 4.0, global value chains.
Category of the paper: Conceptual paper.

1. Introduction

Despite EU integration, geographic proximity to Western markets and improving infrastructure, confirmed reshoring activities[i] to CEE remain limited, while companies mostly optimized logistics, inventories, and multi-sourcing (Młody, Fratocchi, 2022; Fratocchi et al., 2014b; Stępień, Młody, 2017). Although regionalization pressures (e.g. COVID-19, US–China decoupling, Russia-Ukraine war proximity) should have boosted extra EMEA-to-CEE nearshoring, hard evidence is weak. This paradox arises because CEE economies are too developed to sustain durable cost-based competition vis-à-vis Asian locations, yet too thin institutionally and ecosystem-wise - in terms of Industry 4.0 capabilities, dense supplier bases, and specialized services - to anchor nearshoring. We label this configuration the CEE capability trap, which explains why conventional push–pull logics fail to translate into relocations to CEE (Marcinkowska, 2017; Pluta-Zaremba et al., 2024), even if it seemed plausible that this region is natural post-transition reshoring destination[ii].

The paper pursues two linked aims: 1) to provide a systematic assessment of the scale and nature of manufacturing backflows to CEE, distinguishing between first-stage offshoring into the region and potential second-stage relocations; and 2) to develop a conceptual framework that helps explain the conditions under which reshoring to post-transition economies becomes feasible or constrained.

Our conceptual article offers a retrospective and critical reflection on the reshoring debate in CEE by revisiting the earlier predictions through a multi-level lens, combining transaction cost economics and the OLI paradigm with insights from dynamic capabilities, institutional theory, global value chain governance, and path dependence. We introduce the Reshoring Readiness Ladder (RRL) to explain why most CEE locations constitute binding constraints for reshoring. Incorporating institutional, strategic, and capability-based explanations - it seeks to identify structural barriers and contextual mismatches that limit CEE's attractiveness as a destination for reshored manufacturing.

The paper proceeds as follows. Section 2 situates our argument within the reshoring literature and outlines the theoretical lenses. Section 3 contrasts mid-2010s scenarios with subsequent European and CEE evidence and diagnoses ecosystem deficits, policy fragmentation, and strategic lock-ins. Section 4 presents the RRL, boundary conditions, and research avenues. Section 5 concludes with implications for policy and managerial practice.

2. Theoretical background

As classic models predict increasing international commitment with learning (e.g., Uppsala), companies progressively deepen international commitment based on accumulated knowledge and environmental adaptation (Figueira-de-Lemos et al., 2011). Yet empirical evidence increasingly challenges this linear progression. Internationalization often exhibits intermittency rather than persistence (Bernini, Du, Love, 2016), with frequent instances of 'foreign exit' - reductions in international equity or export volumes (Cefis et al., 2022). This reversal phenomenon aligns with Benito and Welch's (1997, p. 9) concept of 'de-internationalization': any action reducing cross-border engagement. Manifestations include international divestments (Boddewyn, Torneden, 1973) and various reshoring configurations - back-shoring to home countries, near-shoring to home regions, or further off-shoring to alternative locations (Fratocchi et al., 2014). These reconfiguration strategies gain prominence as deglobalization (Garg, Sushil, 2018), de-internationalization (da Fonseca, da Rocha, 2022) decoupling (Witt et al., 2023), and regionalization (Enderwick, Buckley, 2020) reshape international business discourse. UNCTAD's (2020b) projection of four alternative trajectories - diversification, replication, reshoring, and regionalization - directly addresses these shifts. The regionalization scenario, involving what Barbieri et al. (2019) term 'second-degree relocations' through nearshoring, theoretically positions CEE as natural destination for Western European production previously offshored to Asia. Yet as our empirical analysis demonstrates (presented in next section), this theoretical potential remains unrealized.

Over the past two decades, the global manufacturing landscape has undergone a significant reconfiguration as companies increasingly reassess offshoring and consider reshoring options (Li et al., 2024; Vanchan et al., 2018). This turn - catalyzed by shifting market requirements, technological advances and shocks such as COVID-19 and geopolitical risk - should be read not as a simple correction of past location choices, but as a broader reconsideration of how production networks are conceived and governed (Nölke, 2022; Pegoraro et al., 2025), with implications for reindustrialization and sustainability in home economies (Di Stefano et al., 2024; Pylypenko, Herasymenko, 2022). Multi-theory approaches now consider environmental and social criteria alongside economics, challenging cost-centric models and linking relocations to policy regimes, regulatory predictability and political stability (McIvor et al., 2022; Di Stefano et al., 2024; Srai, Ané, 2016; Kwon, Hwang, 2023). Empirically, reshoring reflects a dual mechanism: push factors in host locations (e.g. rising wages, political risk, IP concerns, disruption) and pull factors at home (e.g. automation/Industry 4.0, skills, supportive policy) (Kim, Chung, 2022; Kwon, Hwang, 2023). Industry 4.0 narrows labor-cost differentials and increases the value of proximity to design, markets and innovation ecosystems (Stentoft et al., 2024).

The theoretical foundations of reshoring evolved from single-lens explanations to multi-theoretical accounts combining transaction cost economics, the OLI paradigm, and dynamic capabilities (Williamson, 1981; Dunning, 1980; Teece et al., 1997). Recent syntheses emphasize complementarities among efficiency, market, and strategic-asset motives (Fratocchi et al., 2016). Extensions highlight institutional voids that persist despite formal integration (Khanna, Palepu, 2000) and global value chain governance showing how lead-company power constrains reversibility (Gereffi et al., 2005). These lenses are particularly salient in post-transition economies (Götz, Jankowska 2022). Where institutional development is uneven, supplier bases fragmented, and innovation systems immature, the theoretical logic for reshoring may not readily translate into practical feasibility. A comprehensive framework must therefore combine institutional theory (North, 1990) with the notion of capability voids and acknowledge strategic ambiguity in policy and corporate communication when diagnosing why reshoring may be attractive in theory yet unattainable in practice.

Despite advances, gaps persist. Much of the literature still privileges single lenses, exploratory/case designs with limited generalizability, developed-economy sectors, inconsistent definitions and a lack of longitudinal evidence (Li et al., 2024; Bornert, Musolino, 2024; Pegoraro et al., 2025; Siddiqui et al., 2024). This motivates a more contingent theorization that integrates heterogeneity, industry specifics and evolving sources of advantage, and that recognizes qualitative motives alongside economic calculus (Fratocchi et al., 2016). In the CEE context, however, mainstream assumptions of reversibility are problematic: deteriorating Asian conditions plus improved home capabilities have not yielded broad relocations. Drawing on semi-periphery theory and dependent market economies, we posit that CEE is simultaneously too developed for durable cost competition and too thin institutionally and ecosystem-wise for capability-led reshoring.

3. Why reshoring did not happen in CEE: from scenarios to structural, institutional and strategic barriers

Mid-2010s reshoring scenario assessments for WE and CEE envisaged three broad pathways, back-reshoring to Western home countries, near-reshoring to CEE, and further offshoring to lower-cost locations (e.g., Młody, 2016). Those scenarios primarily considered reshoring by Western European lead companies rather than by CEE companies, as these projections anticipated that CEE would capture meaningful reshoring flows as companies balanced cost and market access. The subsequent divergence between prediction and reality requires a deeper diagnosis of why relocations did not materialize on a scale and how this gap maps onto three interlocking barrier sets.

Previous assumptions proved problematic. First, assessments overestimated manufacturing ecosystem fungibility, treating locations as substitutable based on factor costs while underweighting ecosystem depth and embedded capabilities (Sturgeon et al., 2008). Second, they under-valued capability hierarchies in GVCs: market forces alone were expected to move CEE from assembly to comprehensive manufacturing, whereas GVC governance often produces functional lock-ins that limit the mandates of subordinate partners (Gereffi, Humphrey, Sturgeon, 2005; Ponte, Sturgeon, 2014). Third, they misread policy readiness, implicitly presuming the "embedded autonomy" needed to devise and sustain long-horizon industrial strategies - capacity that remains uneven in post-transition settings (Evans, 1995; Bohle, Greskovits, 2012). This amounts to a misspecification: CEE's theoretical potential (proximity, EU membership, educated workforce) has not translated into practical readiness (in terms of ecosystem depth, innovation capacity, strategic autonomy) (Plank, Staritz, 2013). The pattern aligns with the dependent market economy thesis, whereby formal integration masks persistent capability deficits and constrained strategic agency (Nölke, Vliegenthart, 2009).

Our evidence draws on relocation decisions recorded in Eurofound's European Restructuring Monitor (ERM), covering cases announced and/or implemented between 2002-2024. We restrict the sample to manufacturing and classify each observation as first-stage offshoring and second-stage relocation (based on the origin–destination pair and company footprint prior to the move)[iii]. Eurofound's comprehensive database (Table 1) reveals patterns fundamentally contradicting regionalization scenarios. The data reveal a critical pattern: while the database records some nearshoring cases overall, after disaggregation and cleaning, we find no confirmed extra-EMEA-to-CEE nearshoring cases in ERM. The cleaning process involved excluding cases where companies merely expanded existing CEE operations, distinguishing genuine relocations from Asia from intra-European movements.

Table 1.

Manufacturing relocation patterns by destination and type[iv]

Relocation decision	EE increase	EE reduction	Intra EE	Intra WE	n.c.	WE increase	WE reduction	Total
Backshoring	3	16	2	73	-	8	27	129
Further offshoring	2	27	-	-	-	1	124	154
Nearshoring	-	6	-	-	-	2	35	43
Offshoring	708	16	36	106	8	34	155	1063
RTC	284	19	63	139	24	1	29	559
Total	997	84	101	318	32	46	370	1948

Source: Analysis of Eurofound data, authors' calculations.

Table 2 shows 708 first-stage offshoring cases (543 intra-EMEA + 165 extra-EMEA) and indicates that CEE captures initial offshoring rather than second-stage returns from distant locations. Table 2 is a drill-down of the EE-increase bucket from Table 1, disaggregating first- vs second-stage flows.

Table 2.
Detailed relocation flows to Eastern Europe by stage and origin

Relocation decision	Stage	EE increase
I step relocation:		
Offshoring Intra EMEA	First	543
Offshoring from Extra EMEA	First	165
II step relocation:		
RTC intra EMEA	Second	284
Backshoring intra EMEA	Second	3
Further offshoring from Extra EMEA	Second	2
Total		997

Source: Analysis of Eurofound data, authors' calculations.

This pattern - lack of genuine extra EMEA/Asia-to-CEE nearshoring (as indicated in table 1) - directly contradicts both academic predictions (Młody, 2016), UNCTAD's (2020) regionalization scenario and policy expectations following COVID-19 supply chain disruptions. CEE attracts first-stage offshoring but fails to capture second-stage nearshoring from distant locations. The 284 RTC cases require careful interpretation - these represent secondary relocations within the EMEA region - companies already operating in one EMEA country moving to another. However, detailed analysis suggests these are predominantly moves of Western European headquartered companies from higher-cost CEE countries to lower-cost ones, rather than the anticipated Asia-to-CEE nearshoring flows.

The CEE capability trap translates into three interlocking barriers that explain why Asia-to-CEE nearshoring failed to materialize. These barriers concern: (1) the technology-ecosystem gap undermining productivity gains, (2) institutional fragmentation reducing investor confidence, and (3) strategic lock-ins within global value chains that constrain functional upgrading. We discuss each barrier in turn.

At the core is a technology-ecosystem gap: robot density in major CEE economies remains far below WE benchmarks, and adoption of advanced Industry 4.0 is markedly lower (IFR, 2023). Technology deficit directly undermines any productivity gains that could offset CEE's higher labor costs relative to Asia (Szalavetz, 2019; Éltető 2019). Moreover, thin supplier bases and scarce specialized services (tooling, testing, certification) limit just-in-time orchestration, even in ostensibly strong sectors like automotive (Pavlínek, 2018, 2020; Bečicová, Blažek, 2015). The development of Industry 4.0 technologies - including automation, robotics, digital twins, and artificial intelligence - may render reshoring economically viable, as automation and digitalization reduce the importance of low labor costs and enhance supply chain resilience (Yaqub, Alsabban, 2023). Literature reviews indicate that these technologies enable more flexible and integrated production management, thereby increasing the attractiveness of locations closer to end markets (Farboodi et al., 2024). Although a meta-analysis of empirical studies shows mixed effects of automation on reshoring decisions (Pinheiro et al., 2023), specific implementations of Industry 4.0 technologies report significant operational gains (e.g. reduction in cycle time, decrease in defect rates) which indirectly support the economic rationale for reshoring (Damasceno et al., 2024).

These ecosystem weaknesses are further amplified by institutional fragmentation that undermines investor confidence. Although formal institutions exist across CEE, their quality and predictability fall short of requirements for long-horizon manufacturing investments. Electoral cycles drive frequent policy revisions that elevate perceived risk, preventing the stable industrial strategies necessary for complex manufacturing to take root (North, 1990; Bohle, Greskovits, 2012). Inconsistent regulatory enforcement and lengthy administrative timelines increase compliance costs for technology-intensive activities (Kwon, Hwang, 2023).

Compounding these structural and institutional barriers, strategic lock-ins prevent the transformative changes necessary for reshoring. Companies facing shifting global costs increasingly pursue incremental optimization through automation, multi-sourcing, and inventory buffers rather than fundamental footprint reconfiguration (Cohen et al., 2017). Global value chain governance reinforces this inertia as buyer-driven chains and capability hierarchies constrain subsidiary mandates, creating functional lock-ins that prevent upgrading beyond assigned roles (Gereffi, Humphrey, Sturgeon, 2005; Ponte, Sturgeon, 2014).

These three barriers converge to reinforce the CEE trap. The trap's economic dimension manifests in an untenable positioning: manufacturing labor costs are much below Western European levels, seemingly attractive for nearshoring. Yet these same costs exceed Asian benchmarks (e.g., Vietnam, Bangladesh) (Eurostat, 2024; European Commission, 2025). This intermediate position creates a "valley" where CEE is simultaneously too expensive for pure labor-cost arbitrage from Asia while lacking the Industry 4.0 capabilities and ecosystem density necessary for productivity-based competition with Western Europe. Without advanced automation to offset wage differentials, stable institutions to attract patient capital, or strategic reorientation toward capability building, the region remains locked in the CEE capability trap - a self-perpetuating cycle where incremental adjustments substitute for the transformative relocations that regionalization pressures should theoretically produce.

4. Toward a post-transition theoretical lens: the Reshoring Readiness Ladder (RRL)

Three decades after the socialist-to-market transition, CEE economies face a paradox that mainstream frameworks struggle to explain. While transition economics anticipated convergence through liberalization and institutional reform (Kornai, 2006), the reshoring experience reveals that formal EU integration and substantial FDI have not automatically produced the capability depth required for Industry 4.0-intensive manufacturing. The dependent market economy thesis (Nölke, Vliegenthart, 2009) helps explain this persistence but offers limited guidance on escaping subordinate value-chain roles.

The empirical patterns demand reconceptualization. We propose the Reshoring Readiness Ladder (RRL) - a framework explaining structural barriers to regionalization in post-transition economies. Our framework differs from existing readiness assessments (e.g. OECD FDI Restrictiveness Index) by capturing dynamic capability accumulation rather than static institutional metrics.

Building on the barriers identified in the previous section, we conceptualize Reshoring Readiness as an emergent property arising from the interaction of four progressive dimensions: institutions (I), capabilities (C), ecosystems (E), and strategic positioning (S). Rather than viewing these as independent factors, we see them as interconnected layers that build upon each other, creating a developmental ladder from basic market functioning to innovation leadership.

Level 1 - institutional foundations (I) establish the essential preconditions for any modern manufacturing operation. Most CEE EU members formally comply with Level 1 requirements in terms of legal frameworks and macroeconomic stability. However, formal compliance does not automatically translate into *effective credibility*. Investors perceive high volatility due to frequent policy shifts, selective enforcement, and unpredictable administrative practices. Thus, while L1 foundations are legally in place, their credibility remains fragile, reducing the long-horizon certainty needed for complex manufacturing investment. In this sense, CEE countries are *formally at Level 1* but often *functionally below the effective threshold* of L1 maturity.

Level 2 - capability building (C) emerges when locations move beyond routine assembly toward more complex operations. This transition requires technical education systems aligned with automation needs, local suppliers progressing from build-to-print to build-to-spec manufacturing, and rising company-level absorptive capacity for new technologies (Cohen, Levinthal, 1990; Szalavetz, 2019). This level responds to the skills and absorptive-capacity gaps identified among structural ecosystem deficits (e.g. selected automotive clusters in CEE demonstrate partial Level 2 characteristics).

Level 3 - ecosystem development (E) materializes when dense networks of specialized capabilities create self-reinforcing advantages that transcend individual company efforts. Mature ecosystems feature specialized service providers for tooling, testing, and certification and active university-industry collaboration generating joint intellectual property (Porter, 1998; Etzkowitz, Leydesdorff, 2000). This level directly addresses the structural ecosystem thinness that constrains CEE's reshoring potential.

Level 4 - strategic positioning (S) represents the apex where locations shape global industry standards rather than merely participating in established value chains. These regions host lead companies that orchestrate global production networks, repeatedly introduce innovations that reset industry benchmarks, and possess distinctive specializations recognized worldwide (Gereffi et al., 2005). This level transcends the strategic inertia and cognitive lock-ins discussed in Section 3, requiring locations to define rather than follow industry trajectories. Probably no CEE location has achieved comprehensive Level 4 status (benchmark regions like Baden-Württemberg in automotive).

The progression is non-linear: achieving Level 2 does not guarantee Level 3 emergence, as ecosystem development requires critical mass effects that policy alone cannot generate. The relationship between these levels and our earlier analysis of barriers reveals why CEE struggles with reshoring. Institutional ambiguity undermines Level 1 stability, capability gaps prevent solid Level 2 achievement, ecosystem thinness blocks Level 3 emergence and strategic inertia preclude Level 4 aspirations. To diagnose where specific locations stand, we identify observable signatures for each level (Fig. 1).

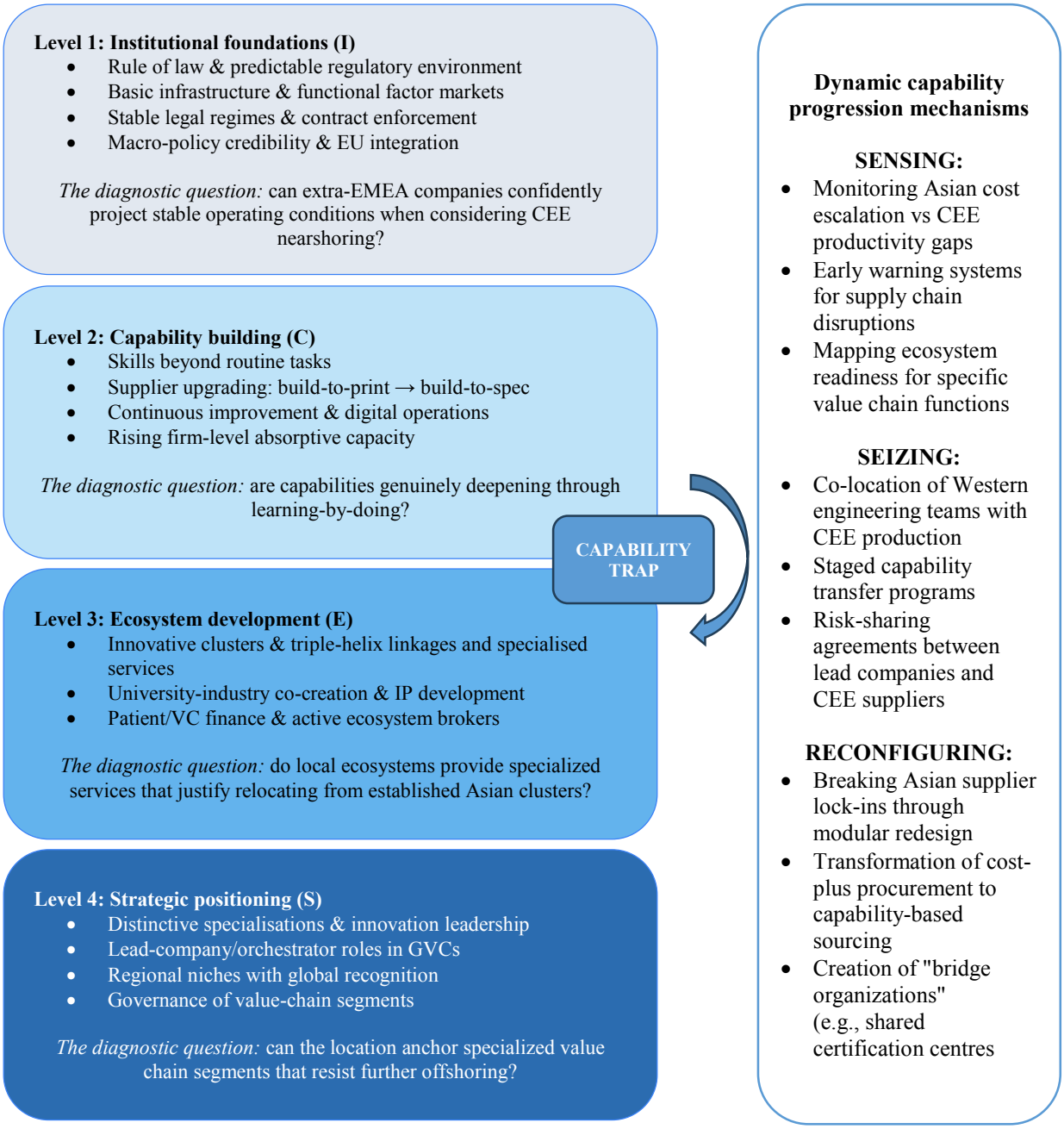

Figure 1. The Reshoring Readiness Ladder (RRL).

Source: own elaboration.

Understanding how locations advance between levels requires examining both the mechanisms enabling progression and the contextual factors shaping their effectiveness. Drawing on dynamic capabilities theory (Teece et al., 1997), we identify three interconnected processes driving upward movement: sensing, seizing and reconfiguring.

Sensing involves systematically recognizing opportunities and threats through strategic intelligence gathering: industry foresight exercises anticipating technological shifts, lead-company road mapping aligning supplier development with future needs, and monitoring global best practices. Effective sensing prevents locations from being blindsided while identifying capability development windows. Seizing requires mobilizing resources to capture opportunities before windows close: forming coalitions that combine patient capital with coordinated training, using mission-oriented procurement to stimulate capability development, and creating demonstration projects that prove feasibility to skeptics. Successful seizing often requires overcoming coordination failures that plague fragmented institutional environments. Reconfiguring enables locations to abandon obsolete practices and build new advantages through institutional learning that improves policy design, company-level unlearning of cost-only competition models, and ecosystem brokers that facilitate knowledge flows between otherwise disconnected actors.

These mechanisms, however, operate on fundamentally different timescales, creating the temporal trap identified earlier. Companies make location decisions on few year horizons, political cycles rarely exceed 4-5 years (Zhao et al., 2023), yet ecosystem development unfolds over decades (Salamatov et al., 2021). This mismatch explains why policy interventions often disappoint: they promise transformation on political timescales but deliver results on evolutionary ones. Extended timescales underscore why short-term policy horizons prove particularly problematic.

The ladder's application may vary significantly across contexts, making boundary conditions essential to specify. Besides, geographic heterogeneity within CEE suggests selective rather than uniform upgrading metropolitan clusters with existing strengths show greater L2→L3 progression potential than peripheral regions starting from scratch. Path dependence creates both opportunities and constraints-regions specialized in assembly face substantial switching costs when attempting functional upgrading, as established competencies and mental models resist change (Pavlínek, 2020; Martin, Sunley, 2006). This reinforces the value chain subordination lock-in identified by Grodzicki & Geodecki (2016), whereby integration as efficient assemblers paradoxically constrains advancement. Building on this framework, we advance three propositions connecting theoretical development to testable empirical claims, followed by our framework's contributions to existing theory.

1) In post-transition economies with basic institutional foundations (L1), ecosystem thickness (L3) rather than institutional quality constitutes the primary barrier to advanced manufacturing attraction (binding constraint).

2) Manufacturing reshoring probability increases when multinational companies co-locate R&D facilities with production (engineering co-location).
3) Regions achieving L3 readiness in narrow specializations demonstrate higher reshoring success rates than those pursuing broad-based upgrading strategies (specialization advantage).

These propositions require empirical validation across sectors, periods, and contexts, suggesting research designs ranging from matched comparisons to event-history analyses. The RRL framework advances reshoring literature through several contributions. First, it synthesizes dynamic capabilities with the literature on institutional voids (Khanna, Palepu, 2000; Szalavetz, 2019) to explain development under partial institutional conditions - formal institutions alone are insufficient without complementary informal institutions and intermediaries that emerge through repeated interaction. Second, by incorporating global value chain governance (Gereffi et al., 2005; Ponte, Sturgeon, 2014), the framework highlights how positional constraints hinder functional upgrading within existing chains proves harder than developing new specializations, as governance structures resist role redefinition, reinforcing value chain subordination (Grodzicki, Geodecki, 2016). Third, drawing on economic geography insights on cluster stickiness (Martin, Sunley, 2006) and institutional thickness, it explains why established locations retain advantages despite cost convergence. By identifying concrete progression pathways, the framework offers cautious optimism, suggesting that successful CEE reshoring (mainly nearshoring) requires more than correcting market failures. In this way proposed framework the offers analytical clarity and practical guidance for sustained upgrading.

5. Conclusions and implications

Our multi-level analysis reveals that CEE's failure to capture nearshoring flows despite regionalization pressures is not a failure of policy but a structural paradox. Policy volatility matters, but without ecosystem depth even stable regimes won't attract complex relocations. The RRL framework replaces generic attraction narratives with structured progression. Most CEE economies have not reached the ecosystem maturity (L3) where complex relocations become both viable and repeatable. The promise of proximity will transform into production reality in CEE only when patient policy meets pragmatic business strategy on the long climb toward capability maturity. Until then, the region's manufacturing renaissance remains an aspiration waiting for its foundation. For nearshoring specifically, CEE countries must abandon generic attraction strategies and focus on building specialized ecosystems in narrow domains where they can achieve Level 3 readiness. Our RRL framework contributes to reshoring theory by (1) moving beyond binary push-pull models to multi-level readiness

assessment, (2) identifying ecosystem thickness rather than institutional quality as the binding constraint in post-transition economies, and (3) explaining why proximity and formal integration fail to generate expected nearshoring flows.

Policy implications

Four priorities emerge. First, simplify and stabilize the policy landscape - reduce the number of instruments, specify clear service standards, and guarantee continuity across political cycles. Second, invest in connective infrastructure - technical systems and institutional support. Third, link incentives to measurable capability gains - support should reward suppliers who graduate from build-to-print to build-to-spec. Fourth, extend time horizons through mission-oriented programs - multi-year procurement commitments can create the patient capital that ecosystem development requires. The EU holds a unique lever: cross-border ecosystem integration. Besides, existing EU instruments could support RRL progression through various mechanisms, e.g. Digital Innovation Hubs for technology transfer, Horizon Europe's Widening Actions for capability building in peripheral regions, the European Chips Act for mission-oriented ecosystem development, and Recovery and Resilience Facility funds for strategic infrastructure investments (European Commission, 2021-2023).

Managerial implications

The RRL suggests practical strategies that preserve future options while reducing risk. The first approach involves designing for staged relocation. By modularizing products and processes, complexity can migrate in manageable waves. During this phase, the company runs intensive supplier-development programs focused on changeover efficiency and yield improvement. Only after suppliers demonstrate specific capabilities do motor and control systems follow. This transforms reshoring from a single decision into a sequence of measured steps. The second approach requires co-locating engineering talent with production. Procurement contracts should reflect this logic, rewarding capability development alongside cost reduction through shared improvement gains and milestone-based commitments. CEE suppliers pursuing upgrades should specialize deeply in narrow capabilities and demonstrate progress through verifiable metrics.

Limitations and avenues for future research

Our conceptual framework requires empirical validation - we proposed diagnostic signatures for each RRL level but avoided numerical scoring to prevent false precision. Besides, we acknowledge that our analysis treats CEE as relatively homogeneous, while significant sub-regional and sectoral diversity exists across the region. Advanced manufacturing clusters in the Czech Republic or Western Poland demonstrate different readiness levels than peripheral areas in Romania or Bulgaria. Future applications of the RRL framework should account for this

heterogeneity through differentiated sectoral and sub-regional analyses. Additionally, the temporal scope may be insufficient to capture delayed reshoring responses to recent geopolitical disruptions (post-2019). Three research priorities stand out. First, researchers should develop practical diagnostic tools - combining structured interviews, document analysis, and observable indicators. Second, proposed hypothesis needs empirical testing. Do investments in technical infrastructure and intermediaries generate better outcomes in terms of reshoring examples than generic institutional improvements once basics are satisfied? Does co-locating engineering with production measurably increase relocation probability after accounting for costs? Matched comparisons and event-history analyses offer feasible approaches. Third, the temporal dimension deserves focused attention. Which policy instruments successfully extend planning horizons beyond electoral cycles? How do government initiatives interact with company-level sequencing strategies? Understanding these dynamics could reveal how incremental gains compound into ecosystem transformation rather than dissipating with each political transition.

The reshoring paradox in CEE reveals fundamental misalignments between theoretical potential and practical readiness. Our analysis demonstrates that successful manufacturing relocation requires more than geographic proximity or cost advantages - it demands ecosystem maturity, institutional stability, and strategic vision operating on generational timescales. The RRL framework provides both diagnostic tools and development pathways, but its implementation requires patience and sustained commitment beyond typical policy cycles. As global value chains continue to reconfigure, CEE's ability to capture reshoring flows will depend not on competing for yesterday's advantages but on building tomorrow's capabilities. The journey from peripheral assembly platform to integrated manufacturing hub remains challenging, yet the framework presented here offers a roadmap for those willing to undertake this transformation.

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References

1. Barbieri, P., Ciabuschi, F., Fratocchi, L., Vignoli, M. (2018). What do we know about manufacturing reshoring? *Journal of Global Operations and Strategic Sourcing*, *Vol. 11, Iss. 1,* pp. 79-122. doi: 10.1108/JGOSS-02-2017-0004
2. Barbieri, P., Elia, S., Fratocchi, L., Golini, R. (2019). Relocation of second degree: Moving towards a new place or returning home? *Journal of Purchasing and Supply Management*, *Vol. 25, Iss. 3.* doi: 10.1016/j.pursup.2018.12.003
3. Bečicová, I., Blažek, J. (2015). Is there a credit-gap in a periphery? *Journal of Rural Studies*, *Vol. 42,* pp. 11-20. doi: 10.1016/j.jrurstud.2015.09.009
4. Benito, G.R.G., Welch, L.S. (1997). De-internationalization. *Management International Review*, *Vol. 37, Iss. 2*, pp. 7-25.
5. Bernini, M., Du, J., Love, J.H. (2016). Explaining intermittent exporting: Exit and conditional re-entry in export markets. *Journal of International Business Studies*, *Vol. 47, Iss. 9,* pp. 1058-1076.
6. Boddewyn, J.J., Torneden, R. (1973). U.S. foreign divestment: A preliminary survey. *Columbia Journal of World Business*, *Vol. 8, Iss. 2,* pp. 25-29.
7. Bohle, D., Greskovits, B. (2012). *Capitalist Diversity on Europe's Periphery*. Ithaca: Cornell University Press.
8. Bornert, X., Musolino, D. (2024). The manufacturing reshoring phenomenon: A policy-oriented analysis of factors driving the location decision. *Economies*, *Vol. 12, Iss. 5,* p. 100. doi: 10.3390/economies12050100
9. Cefis, E., Bettinelli, C., Coad, A., Marsili, O. (2022). Understanding firm exit: A systematic literature review. *Small Business Economics*, *Vol. 58, Iss. 2*, pp. 923-947.
10. Cohen, M.A., Cui, S., Ernst, R., Huchzermeier, A., Kouvelis, P., Lee, H.L., Matsuo, H., Steuber, M., Tsay, A.A. (2017). *OM Forum—Benchmarking Global Production Sourcing Decisions: Where and Why Firms Offshore and Reshore* (Georgetown McDonough School of Business Research Paper, No. 2791373). doi: 10.2139/ssrn.2791373
11. Cohen, W.M., Levinthal, D.A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, *Vol. 35, Iss. 1*, pp. 128-152. doi: 10.2307/2393553
12. da Fonseca, L.N.M., da Rocha, A. (2022). Setbacks, interruptions and turnarounds in the internationalization process: A bibliometric and literature review of de-internationalization. *Management Review Quarterly*, *Vol. 73*, pp. 1351-1384. doi: 10.1007/s11301-022-00276-7
13. Damasceno, A.H., Leite, J.C., Brito, J.A., Sette Pinheiro Júnior, F.A.F. (2024). Digital transformation in the Manaus industrial hub: Increased efficiency in the production of lithium batteries through industry 4.0. *Proceedings of the 7th International Conference on*

Industrial Engineering and Operations Management, pp. 37-98. doi: 10.56238/sevened2024.037-098

14. Di Stefano, C., Fratocchi, L., Martínez-Mora, C., Merino, F. (2024). Manufacturing reshoring and sustainable development goals: A home versus host country perspective. *Sustainable Development*, *Vol. 31, Iss. 6*, pp. 4665-4683. doi: 10.1002/sd.2710
15. Dunning, J.H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies*, *Vol. 11, Iss. 1*, pp. 9-31. doi: 10.1057/palgrave.jibs.8490593
16. Éltető, A. (2019). *Effects of Industry 4.0 on Reshoring Investments—Hungarian Experiences* (Centre for Economic and Regional Studies HAS Institute of World Economics Working Paper, No. 251). Budapest: Centre for Economic and Regional Studies.
17. Enderwick, P., Buckley, P.J. (2020). Rising regionalization: Will the post-COVID-19 world see a retreat from globalization? *Transnational Corporations*, *Vol. 27, Iss. 2*, pp. 99-112.
18. Etzkowitz, H., Leydesdorff, L. (2000). The dynamics of innovation: From national systems and "Mode 2" to a triple helix of university-industry-government relations. *Research Policy*, *Vol. 29, Iss. 2*, pp. 109-123. doi: 10.1016/S0048-7333(99)00055-4
19. Eurofound (n.d.). *European Restructuring Monitor (ERM) Database - Reshoring Cases*. Retrieved from: https://www.eurofound.europa.eu/data/european-restructuring-monitor, 30.09.2025.
20. European Commission (2021a). *Digital Innovation Hubs in Digital Europe Programme*. Retrieved from: https://digital-strategy.ec.europa.eu/en/activities/edihs, 01.10.2025.
21. European Commission (2021b). *Horizon Europe*. Retrieved from: https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en, 01.10.2025.
22. European Commission (2021c). Recovery and Resilience Facility, Regulation (EU) 2021/241.
23. European Commission (2023). The European Chips Act, Regulation (EU) 2023/1781.
24. European Commission (2025). *Labour Cost Index - Recent Trends*. Retrieved from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Labour_cost_index_-_recent_trends
25. Eurostat (2024). *Manufacturing Statistics - NACE Rev. 2*. Retrieved from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Manufacturing_statistics_-_NACE_Rev._2, 30.09.2025.
26. Evans, P. (1995). *Embedded Autonomy: States and Industrial Transformation*. Princeton: Princeton University Press.
27. Farboodi, S., Goodarzian, F., Molaei, A.A. (2024). Harnessing the power of Industry 4.0. In: *Smart Supply Chain and Logistics Management* (pp. 187-203). Boca Raton: CRC Press. doi: 10.1201/9781003503057-11

28. Figueira-de-Lemos, F., Johanson, J., Vahlne, J.-E. (2011). Risk management in the internationalization process of the firm: A note on the Uppsala model. *Journal of World Business*, *Vol. 46, Iss. 2,* pp. 143-153. doi: 10.1016/j.jwb.2010.05.008
29. Fratocchi, L., Ancarani, A., Barbieri, P., Di Mauro, C., Nassimbeni, G., Sartor, M., Vignoli, M., Zanoni, A. (2016). Motivations of manufacturing reshoring: An interpretative framework. *International Journal of Physical Distribution & Logistics Management*, *Vol. 46, Iss. 2*, pp. 98-127. doi: 10.1108/IJPDLM-06-2014-0131
30. Fratocchi, L., Di Mauro, C., Barbieri, P., Nassimbeni, G., Zanoni, A. (2014). When manufacturing moves back: Concepts and questions. *Journal of Purchasing & Supply Management*, *Vol. 20, Iss. 1*, pp. 54-59.
31. Fratocchi, L., Iapadre, L., Ancarani, A., Di Mauro, C., Zanoni, A., Barbieri, P. (2014b). Manufacturing reshoring: Threat and opportunity for East Central Europe and Baltic countries. In: A. Vecchi (Ed.), *Manufacturing Renaissance: Return of Production to Western Countries* (pp. 67-89). Hershey: IGI Global. doi: 10.4018/978-1-4666-6054-0.CH004
32. Garg, S., Sushil (2018). Deglobalisation as a challenge: A case study of the USA. *Journal of Global Business Advancement*, *Vol. 11, Iss. 6,* pp. 753-775. doi: 10.1504/JGBA.2018.097778
33. Gereffi, G., Humphrey, J., Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, *Vol. 12, Iss. 1*, pp. 78-104. doi: 10.1080/09692290500049805
34. Götz, M., Jankowska, B. (2022). When reality diverges from expectations... Industry 4.0, FDI and post-transition economy. *Technology in Society*, *Vol. 68*, p. 101824. doi: 10.1016/j.techsoc.2021.101824
35. Grodzicki, M.J., Geodecki, T. (2016). New dimensions of core-periphery relations in European automotive value chains: The case of Central and Eastern European countries. *Eastern European Economics*, *Vol. 54, Iss. 5*, pp. 377-404. doi: 10.1080/00128775.2016.1201426
36. IFR (2023). *World Robotics 2023: Industrial Robots*. Frankfurt: International Federation of Robotics. Retrieved from: https://ifr.org/worldrobotics/, 30.09.2025.
37. Khanna, T., Palepu, K. (2000). The future of business groups in emerging markets: Long-run evidence from Chile. *Academy of Management Journal*, *Vol. 43, Iss. 3,* pp. 268-285. doi: 10.2307/1556395
38. Kim, Y.G., Chung, B.D. (2022). Closed-loop supply chain network design considering reshoring drivers. *Omega*, *Vol. 109*, p. 102610. doi: 10.1016/j.omega.2022.102610
39. Kinkel, S., Maloca, S. (2009). Drivers and antecedents of manufacturing offshoring and backshoring—A German perspective. *Journal of Purchasing and Supply Management*, *Vol. 15, Iss. 3*, pp. 154-165. doi: 10.1016/j.pursup.2009.05.007

40. Kornai, J. (2006). The great transformation of Central Eastern Europe: Success and disappointment. *Economics of Transition*, *Vol. 14, Iss. 2*, pp. 207-244. doi: 10.1111/j.1468-0351.2006.00252.x
41. Kwon, C., Hwang, U. (2023). The effect of reshoring policy on the host and home countries. *International Economic Journal*, *Vol. 37, Iss. 4,* pp. 595-615. doi: 10.1080/10168737.2023.2261005
42. Li, H., Hilletofth, P., Eriksson, D., Tate, W. (2024). Understanding the manufacturing reshoring decision-making content through the lens of the eclectic paradigm: A systematic literature review. *European Business Review*, *Vol. 36, Iss. 1*, pp. 125-150. doi: 10.1108/ebr-10-2023-0300
43. Marcinkowska, E. (2017). Institutional approach in the assessment of competitiveness of the offshoring service locations in Poland. *Optimum: Economic Studies*, *Vol. 5, Iss. 89*, pp. 221-238. doi: 10.15290/OSE.2017.05.89.15
44. Martin, R., Sunley, P. (2006). Path dependence and regional economic evolution. *Journal of Economic Geography*, *Vol. 6, Iss. 4*, pp. 395-437. doi: 10.1093/jeg/lbl012
45. McIvor, R., Bals, L., Dereymaeker, T., Foerstl, K.D. (2022). Reshoring for sustainability: A multi-theory decision-making framework. *Academy of Management Proceedings*, *Vol. 2022, Iss. 1*, p. 11230. doi: 10.5465/ambpp.2022.11230abstract
46. Młody, M. (2016). Reshoring trend and CEE: An assessment of possible scenarios on the example of Poland. *Management*, *Vol. 11, Iss. 1*, pp. 29-50.
47. Młody, M., Fratocchi, L. (2022). Manufacturing offshoring and reshoring in Poland: Evidence from the fashion and electromechanical meta-sectors. *Central European Review of Economics & Finance*, *Vol. 37, Iss. 2,* pp. 35-56. doi: 10.24136/ceref.2022.008
48. Nölke, A. (2022). Global production networks: Diversification or reshoring? In: *Post-Corona Capitalism: The Alternatives Ahead* (pp. 109-114). Bristol: Bristol University Press. doi: 10.1332/policypress/9781529219425.003.0017
49. Nölke, A., Vliegenthart, A. (2009). Enlarging the varieties of capitalism: The emergence of dependent market economies in East Central Europe. *World Politics*, *Vol. 61, Iss. 4*, pp. 670-702. doi: 10.1017/S0043887109990098
50. North, D.C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
51. OECD (2020). *Investment Promotion Agencies and the COVID-19 Response*. Paris: OECD Publishing. doi: 10.1787/50f79678-en
52. Pavlínek, P. (2018). Global production networks, foreign direct investment, and supplier linkages in the integrated peripheries of the automotive industry. *Economic Geography*, *Vol. 94, Iss. 2*, pp. 141-165. doi: 10.1080/00130095.2017.1393312
53. Pavlínek, P. (2020). Restructuring and internationalization of the European automotive industry. *Journal of Economic Geography, Vol. 20, Iss. 2,* pp. 509-541. doi: 10.1093/jeg/lby070

54. Pegoraro, D., Chidlow, A., De Propris, L. (2025). Exploring factors influencing manufacturing home-shoring strategies: Insights from three diverse geographical regions. *Journal of International Business Policy*, *Vol. 8, Iss. 1*, pp. 53-79. doi: 10.1057/s42214-024-00207-1
55. Pinheiro, A., Sochircă, E., Afonso, Ó., Neves, P. (2023). Automation and off(re)shoring: A meta-regression analysis. *SSRN Electronic Journal*. doi: 10.2139/ssrn.4290721
56. Plank, L., Staritz, C. (2013). *Precarious Upgrading in Electronics Global Production Networks in Central and Eastern Europe: The Cases of Hungary and Romania* (Capturing the Gains Working Paper, No. 31). Manchester: University of Manchester.
57. Pluta-Zaremba, A., Cichosz, M., Nowicka, K., Paprocki, W., Marzantowicz, Ł., Woliński, B. (2024). Reconfiguration of global supply chains—The role of enterprises from Central and Eastern Europe. In: *Logistics and Supply Chain Management* (pp. 167-194). Warsaw: SGH Publishing House. doi: 10.33119/978-83-8030-677-6_167-194
58. Ponte, S., Sturgeon, T. (2014). Explaining governance in global value chains: A modular theory-building effort. *Review of International Political Economy*, *Vol. 21, Iss. 1*, pp. 195-223. doi: 10.1080/09692290.2013.809596
59. Porter, M.E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, *Vol. 76, Iss. 6*, pp. 77-90.
60. Pylypenko, H., Herasymenko, T. (2022). Reasons and dynamics of reshoring in the European Union and USA. *Economic Bulletin of Dnipro University of Technology*, *Vol. 80, Iss. 4*, pp. 34-41. doi: 10.33271/ebdut/80.034
61. Salamatov, A., Maltsev, Y., Pavlov, N. (2021). Region innovative development in the Russian economy technological transformation: Ecosystem approach. *E3S Web of Conferences*, *Vol. 258*, p. 12004. doi: 10.1051/E3SCONF/202125812004
62. Siddiqui, M.F., Khalid, W., Arsalan, M. (2024). Reshoring concepts: Definitions and a structured bibliometric review. *Modern Supply Chain Research and Applications*, *Vol. 6, Iss. 1*, pp. 22-45. doi: 10.1108/mscra-04-2024-0012
63. Srai, J.S., Ané, C. (2016). Institutional and strategic operations perspectives on manufacturing reshoring. *International Journal of Production Research*, *Vol. 54, Iss. 23*, pp. 7193-7211. doi: 10.1080/00207543.2016.1193247
64. Stentoft, J., Mikkelsen, O.S., Wickstrøm, K.A. (2024). Reshoring manufacturing: The influence of industry 4.0, Covid-19, and made-in effects. *Operations Management Research*, *Vol. 18*, pp. 353-372. doi: 10.1007/s12063-024-00504-1
65. Stępień, B., Młody, M. (2017). Reshoring: A stage in economic development or a false patriotic tune? The case of the Polish apparel and footwear industry. In: A. Vecchi (Ed.), *Reshoring of Manufacturing: Measuring Operations Performance* (pp. 225-250). Cham: Springer. doi: 10.1007/978-3-319-58883-4_10

66. Sturgeon, T.J., Van Biesebroeck, J., Gereffi, G. (2008). Value chains, networks and clusters: Reframing the global automotive industry. *Journal of Economic Geography*, *Vol. 8, Iss. 3,* pp. 297-321. doi: 10.1093/jeg/lbn007
67. Szalavetz, A. (2019). Digitalisation, automation and upgrading in global value chains—Factory economy actors versus lead companies. *Post-Communist Economies*, *Vol. 31, Iss. 5*, pp. 646-670. doi: 10.1080/14631377.2019.1578584
68. Teece, D.J., Pisano, G., Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *Vol. 18, Iss. 7*, pp. 509-533.
69. UNCTAD (2020). *World Investment Report 2020: International Production Beyond the Pandemic*. Geneva: United Nations Conference on Trade and Development.
70. UNCTAD (2020b). *Investment Trends Monitor: Impact of the Coronavirus Outbreak on Global FDI*. Geneva: United Nations Conference on Trade and Development.
71. Vanchan, V., Mulhall, R., Bryson, J.R. (2018). Repatriation or reshoring of manufacturing to the U.S. and UK: Dynamics and global production networks or from here to there and back again. *Growth and Change*, *Vol. 49, Iss. 1*, pp. 97-121. doi: 10.1111/GROW.12224
72. Williamson, O.E. (1981). The economics of organization: The transaction cost approach. *American Journal of Sociology*, *Vol. 87, Iss. 3*, pp. 548-577. doi: 10.1086/227496
73. Witt, M.A., Lewin, A.Y., Li, P.P., Gaur, A. (2023). Decoupling in international business: Evidence, drivers, impact, and implications for IB research. *Journal of World Business*, *Vol. 58, Iss. 1, Article 101399*. doi: 10.1016/j.jwb.2022.101399
74. Yaqub, M.Z., Alsabban, A. (2023). Industry-4.0-enabled digital transformation: Prospects, instruments, challenges, and implications for business strategies. *Sustainability*, *Vol. 15, Iss. 11*, p. 8553. doi: 10.3390/su15118553 \
75. Zhao, Y., Choy, L.H.T., Chau, K.W. (2023). Political circles and land supply for the service and industrial sectors: Evidence from 284 cities in China. *Land*, *Vol. 12, Iss. 3, Article 573.* doi: 10.3390/land12030573

Footnotes

[i] Reshoring is an umbrella term for the return of previously offshored activities. It includes both back-reshoring (relocation to the company's home country) and nearshoring (relocation to a geographically closer third country). The literature also recognizes further offshoring (to another low-cost location) and relocation to a third country - RTC within the same macro-region (Fratocchi et al., 2014; Barbieri et al., 2019).

[ii] We distinguish between "post-transition" - referring to CEE's completed institutional transformation from planned to market economies - and "semi-peripheral" - denoting the region's intermediate structural position in global value chains between core economies (controlling technology and capital) and peripheries (providing basic inputs). CEE has achieved post-transition status through EU integration and market reforms yet remains semi-peripheral in its functional specialization as an assembly platform. This dual characterization may explain why formal institutional convergence has not translated into the deep capabilities required for Industry 4.0-intensive reshoring.

[iii] Manufacturing (NACE C) cases from ERM (2002-2024); ERM events are derived from media-sourced narratives. Under our coding scheme, we identify no unambiguous cases of extra-EMEA-to-CEE nearshoring duplicates removed. ERM entries do not always allow a full reconstruction of prior locations in second-stage relocations, so such flows may be underestimated. RTC = Relocation to a Third Country (secondary relocation within EMEA).

[iv] Definitions: WE = Western Europe; EE = Eastern Europe/CEE; n.c. = not classified; Backshoring = relocating production to the home country; *Nearshoring* = relocating to a third country within the home region (e.g., company from CEE / Western Europe → China → CEE); *Offshoring* = relocating to a distant region (e.g., Western Europe → Asia or CEE); *RTC (Relocation to a Third Country)* = second-stage relocation within EMEA (e.g., WE → CEE or CEE → CEE).