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Southward Shift of Industrial Chains and the Reshaping of China-ASEAN Manufacturing Division of Labor: An Analysis from the Regional Value Chain Perspective

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ABSTRACT

The relocation of labor-intensive manufacturing from China to ASEAN since 2012 reconfigures the regional division of labor rather than constituting zero-sum industrial transfer. Treating production tasks as the unit of analysis, we integrate global value chain theory, regional value chain analysis, the flying geese model, new economic geography, and the trade-in-tasks literature to identify three reorganization margins—extensive, intensive, and regional integration—shaped by RCEP's institutional architecture. Drawing on the GVC upgrading literature, we differentiate capability-deepening integration, which builds host-country productive capacities, from capability-thinning assembly operations that entrench dependence on external suppliers. The framework yields implications for China's industrial upgrading and ASEAN's industrialization prospects.

KEYWORDS

Regional value chains, Industrial relocation, China-ASEAN division of labor, Trade in tasks, Production fragmentation, RCEP

1. INTRODUCTION

Since approximately 2012, labor-intensive manufacturing has relocated from China's coastal provinces to Vietnam, Cambodia, Indonesia, and other ASEAN economies. Structural drivers include China's working-age population peaking in 2011 and manufacturing wages rising from RMB 30,000 in 2010 to over RMB 90,000 by 2022. Conjunctural factors—US tariffs imposed from 2018 and COVID-19 disruptions—accelerated pre-existing trends.

Crucially, this relocation involves specific production stages—assembly, component manufacturing, processing—while design, R&D, advanced component supply, and brand management remain concentrated in China. Bilateral trade data show China exporting intermediate inputs and capital equipment while importing finished consumer goods from ASEAN-based factories, indicating deepening regional division of labor rather than straightforward industrial substitution. The central research question is: How does the southward shift reshape the China-ASEAN division of labor, and through what theoretical mechanisms?

Our contribution is threefold. First, we integrate global value chain theory [1], regional value chain analysis [2], the flying geese model [3], new economic geography [4], and the trade-in-tasks literature [5, 6] into a unified analytical framework. Second, we extend the trade-in-tasks approach from North-South offshoring to cross-border task allocation among developing economies at different development stages. Third, drawing on the GVC upgrading literature [7] and the premature deindustrialization thesis [8], we introduce the distinction between capability-deepening and capability-thinning regional integration as a normative framework for evaluating outcomes.

2. LITERATURE REVIEW AND THEORETICAL FOUNDATIONS

Global value chain theory conceptualizes production as discrete value-adding activities distributed across countries and governed by lead firms through market, modular, relational, captive, or hierarchical mechanisms [1]; modular governance, in particular, facilitates host-economy upgrading [9]. Regional value chain analysis documents intra-regional concentration sustained by geographic and institutional proximity through frameworks such as AFTA, AEC, and RCEP [2], with RCEP's cumulation provisions projected to deepen integration considerably.

The flying geese model provides a dynamic account of sequential industrial cascading through import, import-substitution, and export-with-relocation phases [3]; Yue [10] characterizes the current shift as the fifth wave, with China as the source economy. New economic geography formalizes the tension between agglomeration forces—backward and forward linkages, knowledge spillovers, labor pooling—and dispersion forces—factor price escalation, congestion—explaining why China's coastal hubs retain R&D and advanced manufacturing while standardized assembly relocates [4].

The trade-in-tasks literature supplies the micro-foundation: Jones and Kierzkowski [6] conceptualize separable "production blocks" connected by "service links"; Grossman and Rossi-Hansberg [5] formalize tasks with heterogeneous offshoring costs and productivity effects. Blinder [11] extends this logic to services, arguing that the boundary of offshorability is continuously shifting. Autor, Levy, and Murnane [12] distinguish routine from nonroutine tasks, clarifying the task-level mechanisms of cross-border allocation.

Each tradition captures an essential dimension, yet none is sufficient alone. GVC theory illuminates governance without fully specifying locational determinants; RVC analysis addresses regional concentration but lacks formal micro-foundations; the flying geese model provides dynamic sequencing at the industry rather than task level; new economic geography offers rigorous spatial models without task heterogeneity; and the trade-in-tasks literature supplies the task as the unit of analysis but has been applied primarily to North-South offshoring. Our synthesis uses trade-in-tasks theory as the micro-foundation, incorporates NEG and GVC/RVC factors into the locational calculus, updates flying geese dynamics to the task level, and draws on RVC analysis for the institutional architecture.

3. CONCEPTUAL FRAMEWORK: A TASK-BASED MODEL OF REGIONAL PRODUCTION REORGANIZATION

3.1. The Analytical Unit: Tasks, Not Industries

We shift the unit of analysis from industries to tasks—discrete production activities whose locational determinants (factor prices, agglomeration economies, coordination costs, institutional requirements) vary more across tasks within industries than across whole industries. Tasks are classified into three categories: pre-production tasks (R&D, design, engineering) concentrated in China's coastal innovation hubs; labor-intensive fabrication tasks (assembly, processing, packaging) relocating to ASEAN; and post-production tasks (branding, distribution, after-sales) tied to final consumer markets.

3.2. Locational Determinants and the Three Margins of Reorganization

Task allocation depends on the interaction between task characteristics and location attributes—unit labor costs, skill availability, infrastructure quality, supplier network depth, institutional quality, and policy incentives. Labor-intensive, low-agglomeration tasks (garments, footwear, basic electronics) relocate first as Chinese wages rise, while capital-intensive industries with strong agglomeration economies (automobiles, advanced electronics, aerospace) exhibit minimal relocation; mixed-task

industries show selective relocation, producing deepening intra-industry trade between China and ASEAN.

Reorganization operates along three interacting margins. The extensive margin captures tasks relocating from China to ASEAN as rising wages offset agglomeration benefits. The intensive margin captures deepening specialization: China's remaining tasks become more capital- and skill-intensive, while ASEAN economies may deepen their capabilities in received tasks through supplier development and skill accumulation. The regional integration margin measures whether relocated tasks remain embedded in China-centered supply chains or develop autonomous linkages, with outcomes shaped by RCEP's cumulation provisions and lead firm strategies.

3.3. Equilibrium and Dynamics

A regional equilibrium allocates tasks across countries to minimize effective unit cost. Comparative statics yield four predictions: rising Chinese wages expand relocation; ASEAN productivity improvements shift the relocation threshold upward; reduced coordination costs expand the relocatable task set; and deepening Chinese agglomeration economies narrow the scope for relocation. China's projected decline of approximately 200 million in the working-age population between 2020 and 2050 generates sustained upward wage pressure; the net welfare effect depends on the upgrading response in higher-value-added tasks [3, 13]. Dunning's [14] OLI paradigm illuminates the FDI dimension: Chinese firms' ownership advantages combined with ASEAN location advantages drive internalization of cross-border production networks. ASEAN outcomes depend critically on whether host-country policies promote intensive-margin deepening—local supplier development, skill upgrading, technology transfer—or whether relocated operations remain footloose assembly platforms [7].

The realization of these dynamic outcomes hinges on the institutional architecture governing cross-border economic activity, to which the analysis now turns.

4. THE INSTITUTIONAL AND POLICY ARCHITECTURE

The Regional Comprehensive Economic Partnership (RCEP), in force since January 2022, covers approximately 30 percent of global GDP. Its unified rules of origin with cumulation provisions resolve the pre-RCEP "noodle bowl" of inconsistent bilateral agreements, reinforce China-centered supply chain linkages, and are estimated to increase intra-RCEP intermediate goods trade by 8–12 percent over a decade [15].

China's dual-circulation strategy frames relocation as a consequence of industrial advancement, while Belt and Road Initiative investments in ASEAN transport, energy, and industrial parks simultaneously facilitate relocation and bind ASEAN economies into China-centered networks [16]. ASEAN member states have responded with varied policies: Vietnam has attracted substantial FDI, though domestic value capture remains limited; Thailand targets higher-value manufacturing through "Thailand 4.0"; and Indonesia pursues resource-based downstreaming. A coordination problem persists—ASEAN states compete for the same FDI, while frameworks for industrial policy coordination remain weak [17]. Jin [18] emphasizes that successful industrialization requires building indigenous capabilities beyond FDI attraction alone.

US tariffs and "friend-shoring" incentivize supply chain diversification beyond cost-driven predictions, though the depth of diversification is constrained by the density of China-centered production networks [19]. A triangular trade pattern has emerged—Chinese FDI financing ASEAN manufacturing for export to US and European markets—whose developmental implications depend on whether it generates genuine capability building or merely substitutes one assembly location for another [20].

5. IMPLICATIONS AND DISCUSSION

For China, the southward shift reflects industrial upgrading; relocating labor-intensive tasks is productivity-enhancing in aggregate, though the adjustment of displaced workers remains a contested policy challenge [21]. Trade is evolving toward Chinese intermediate exports and ASEAN-assembled finished goods imports, deepening a complementary division of labor whose stability depends on whether ASEAN develops upstream capabilities over time.

For ASEAN, the shift offers a historic industrialization opportunity, yet its realization hinges on domestic policies and institutional quality. Premature deindustrialization and AI-driven automation may further reduce developmental potential for the least-developed ASEAN economies, making institution-building and human capital investment essential [8, 18].

The preceding analysis reveals a fundamental distinction between two forms of regional integration with profoundly different developmental consequences. Deep integration—which we term capability-deepening integration—involves technology transfer from lead firms to host-economy suppliers, progressive deepening of linkages between foreign-invested and domestically owned firms, sequential movement into higher-value-added tasks following the upgrading logic identified in the GVC literature [7], and governance structures that ensure broadly distributed value. This form builds productive capacities—skills, supplier networks, technological capabilities, and institutional competencies—that raise the host economy's long-run growth trajectory.

Shallow integration—which we term capability-thinning integration—is characterized by footloose assembly operations that import most inputs, add limited local value, and remain only as long as labor cost advantages persist. Regulatory arbitrage in labor, environmental, or tax standards substitutes for genuine productivity advantages. Value concentrates in external lead firms, and host economies risk entrenchment in low-value-added tasks vulnerable to the next wave of relocation or automation [8]. This echoes [7] finding that GVC insertion does not automatically generate upgrading—the form of insertion, the governance structure of the chain, and the strategic choices of lead firms and policymakers jointly determine whether integration becomes a ladder or a trap.

Host-country industrial policy and lead-firm strategies regarding supplier development and technology sharing are jointly decisive in determining which form of integration prevails [20]. RCEP's provisions for economic and technical cooperation represent an institutional mechanism that, if adequately resourced and implemented, could tilt outcomes toward deep integration.

6. CONCLUSION

The southward shift represents a reorganization of regional production tasks, not zero-sum industrial relocation. Integrating global value chain theory, regional value chain analysis, the flying geese model, new economic geography, and the trade-in-tasks literature, we identify three margins of reorganization—extensive, intensive, and regional integration—shaped by market forces, institutional architecture, and firm strategies. The paper contributes threefold: synthesizing five theoretical traditions into a unified analytical framework; extending trade-in-tasks theory to cross-border task allocation among developing economies at different industrialization stages; and introducing the deep-shallow integration distinction as a normative framework for evaluating regional integration outcomes.

China must manage labor transitions and support domestic upgrading through sustained R&D investment. ASEAN must move beyond passive FDI attraction to active management of integration terms through supplier development, skill accumulation, and technology absorption. Regional cooperation requires implementing RCEP's cooperation provisions and addressing governance gaps in labor and environmental standards that otherwise incentivize shallow integration. Future research should develop the task-based model into a general equilibrium framework incorporating

agglomeration economies and task-level datasets, while monitoring AI-driven automation's impact on developmental benefits and the evolving geopolitical dynamics of triangular trade.

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