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Study on the Degree of Strategic Aggressiveness of Firms in Northeast China under the Background of Northeast Asia Regional Economic Integration

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Abstract

The deepening of Northeast Asia regional economic integration has restructured the regional flow of factors and the market competition pattern, forming multidimensional shocks to corporate strategic decision-making. Based on the resource-based view and dynamic capabilities theory, this paper takes A-share listed companies in Northeast China from 2008 to 2023 as samples, and uses dynamic panel models and moderation effect analysis methods to empirically examine the nonlinear impact of regional economic integration on the degree of corporate strategic aggressiveness, and to reveal the heterogeneous moderating mechanism of the industry life cycle. The study finds that regional economic integration significantly increases the degree of corporate strategic aggressiveness by reducing transaction costs and expanding channels for resource acquisition, with this effect being particularly prominent in the growth and transformation phases of the industry, but showing a marginal diminishing characteristic in the integration and decline phases. This research breaks through the traditional static analysis paradigm and constructs a dynamic framework of "policy shock - life cycle - strategic response," providing micro evidence for the assessment of the policy effects of regional integration, and proposing differentiated paths for Northeast China's firms to embed in cross-border value chains and avoid transformation traps.

Keywords

Regional Economic Integration; Industry Life Cycle; Corporate Strategy; Northeast China; International Trade.

1. Introduction

The acceleration of the Northeast Asia regional economic integration process has brought new opportunities and challenges for enterprises within the region. Regional economic integration, by reducing transaction costs, optimizing resource allocation, and enhancing market vitality, provides enterprises with a broader market space and more development opportunities. However, the degree to which enterprises at different stages of the industry life cycle are affected in their strategic choices may vary. This paper aims to explore the impact of regional economic integration on the degree of corporate strategic aggressiveness and to analyze the moderating role of the industry life cycle, in order to provide a theoretical basis for enterprises in Northeast China to formulate development strategies. This study extends existing theories in the following aspects: First, it proposes an asymmetric evolution framework of "regional integration - corporate strategy," emphasizing the co-evolutionary characteristics of policy and corporate behavior, and challenging the linear causality assumption. Second, it constructs a three-dimensional moderation model of "life cycle - capability - institution," upgrading the industry cycle from a static background variable to a dynamic capability trigger, and

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compensating for the mechanical shortcomings of traditional life cycle theory. Third, it pioneers operational concepts such as "policy digital twin" and "blockchain-style industrial chain," injecting new paradigms of digital governance and complex systems into the study of regional integration. Future research can further explore the bidirectional feedback mechanism between corporate strategic aggressiveness and regional integration, and incorporate the dynamic interaction of technological change and institutional transformation.

2. Regional Economic Integration, Industry Life Cycle, and Corporate Strategy Selection

2.1. Regional Economic Integration: Concept, Characteristics, and Mechanism of Influence

2.1.1. Definition of Regional Economic Integration

Regional economic integration refers to the process by which different countries or regions, in order to promote the acquisition of benefits in production, consumption, trade, etc., achieve the optimal allocation of resources, the free flow of products and factors, and the unification of economic policies through the process of market integration. This process aims to reduce transaction costs, increase inter-regional trade freedom, and thereby enhance the overall welfare level of the integrated region. The essence of regional economic integration is the process or state of eliminating circulation barriers within the region to achieve the optimal economic structure of free circulation and full competition of factors.

2.1.2. Trend of Economic Globalization and Regional Economic Integration

Economic globalization is driving the accelerated development of regional economic integration, with free trade agreements becoming mainstream, expanding in scope, and deepening in integration. The rise of cross-regional mega trade agreements, such as RCEP, TPP, USMCA, etc., is promoting integration towards a broader area. New-generation regional trade agreements require higher standards and higher quality rules, covering areas such as services trade, investment, competition policy, and environmental standards. North-South type regional trade agreements are gradually taking a dominant position, promoting regional economic development and balance.

Table 1. Development of Major Trade Agreements in 2023

	RCEP		CPTTP		USMCA		EU	
Number of Covered Countries (units)	15		11		3		27	
Average Economic Growth Rate (%)	5.2%		2.2%		2.4%		2.3%	
Population (millions)	2262	(29%)	508	(7%)	493	(6%)	448	(6%)
Economic Aggregate (billion USD)	25816	(29%)	11197	(13%)	24369	(28%)	15593	(18%)
Export Amount (billion USD)	5481	(29%)	2942	(16%)	2551	(13%)	5815	(31%)
Import Amount (billion USD)	4956	(26%)	2851	(15%)	3498	(18%)	5532	(29%)
Foreign Direct Investment (billion USD)	364	(24%)	276	(18%)	329	(21%)	388	(25%)
Outward Direct Investment (billion USD)	441	(34%)	368	(28%)	212	(16%)	424	(32%)

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2.1.3. Mechanism of the Impact of Regional Economic Integration on Corporate Strategy Selection

Corporate strategic decision-making is influenced by multiple factors, including internal governance structure, digitalization level, corporate group structure, and external environmental factors such as policies and economic conditions. The implementation of aggressive strategies relies on external investment opportunities and resources, which motivate firms to increase their investment levels. Regional economic integration affects corporate strategy selection by providing market opportunities and resource support, reducing transaction costs, and making it easier for firms to obtain resource support, thereby inclining them towards more aggressive strategies. Based on this, this paper proposes the following hypothesis:

Hypothesis 1: Regional economic integration will increase the aggressiveness of corporate strategy, that is, firms are more likely to adopt proactive expansion and innovation-driven development strategies to seize regional market opportunities and enhance their competitiveness.

2.2. Industry Life Cycle and Corporate Strategy Selection: Theoretical Analysis

2.2.1. Qualitative Judgment of Industry Life Cycle Stages

Drawing on the classification methods of industry life cycles by Maksimovic and Phillips[3], Xing Fei, et al[5]., this paper divides industries into four stages of the industry life cycle based on two indicators: the growth rate of industry sales and the growth rate of the number of firms. The classification is presented in the following table.

Table 2. Industry Life Cycle Table

	Number of Firms Growth Rate Above Median	Number of Firms Growth Rate Below Median
Industry Sales Growth Rate Above Median	Growth Stage	Integration Stage
Industry Sales Growth Rate Below Median	Transformation Stage	Decline Stage

2.2.2. Impact of Industry Life Cycle on Corporate Strategy Selection

Corporate strategy formulation is profoundly influenced by the stage of the industry life cycle. In the growth, integration, and transformation stages, due to the rapid development speed and significant investment potential of the industry, firms tend to adopt more proactive strategies. Conversely, in the decline stage, with limited development potential of the industry, firms may shift towards more conservative strategies. If regional economic integration can enhance the proactiveness of corporate strategy, this enhancing effect may be more pronounced in the growth, integration, and transformation stages than in the decline stage. Based on this, the following hypothesis is proposed: Hypothesis 2: The impact of regional economic integration on corporate strategy selection may vary across different stages of the industry life cycle, being particularly more evident in the growth, integration, and transformation stages.

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3. Current Status of Northeast Asia Regional Economic Integration

3.1. Research Perspective

This paper selects trade structure as the entry point to study Northeast Asia regional economic integration, mainly because trade structure is a core element of regional economic integration. Its changes directly affect the volume and direction of trade flows within the region, thereby influencing the process and effectiveness of integration. Trade structure is dynamic, constantly changing with economic development and technological progress, and has an impact on integration. Moreover, trade structure can reflect the economic linkages and complementarities between countries, providing important references for integration.

3.2. Similarity in Trade Structures of Major Northeast Asia Countries

In recent years, the trade structures of major countries in Northeast Asia have shown similarities, mainly reflected in the fact that exports are dominated by manufactured goods, while imports are dominated by primary products and manufactured goods. This trend reflects the transformation of the economic structure in Northeast Asia from resource-based to manufacturing and service-oriented, and indicates that there are certain similarities in the stages of economic development and industrial structures among these countries[2].

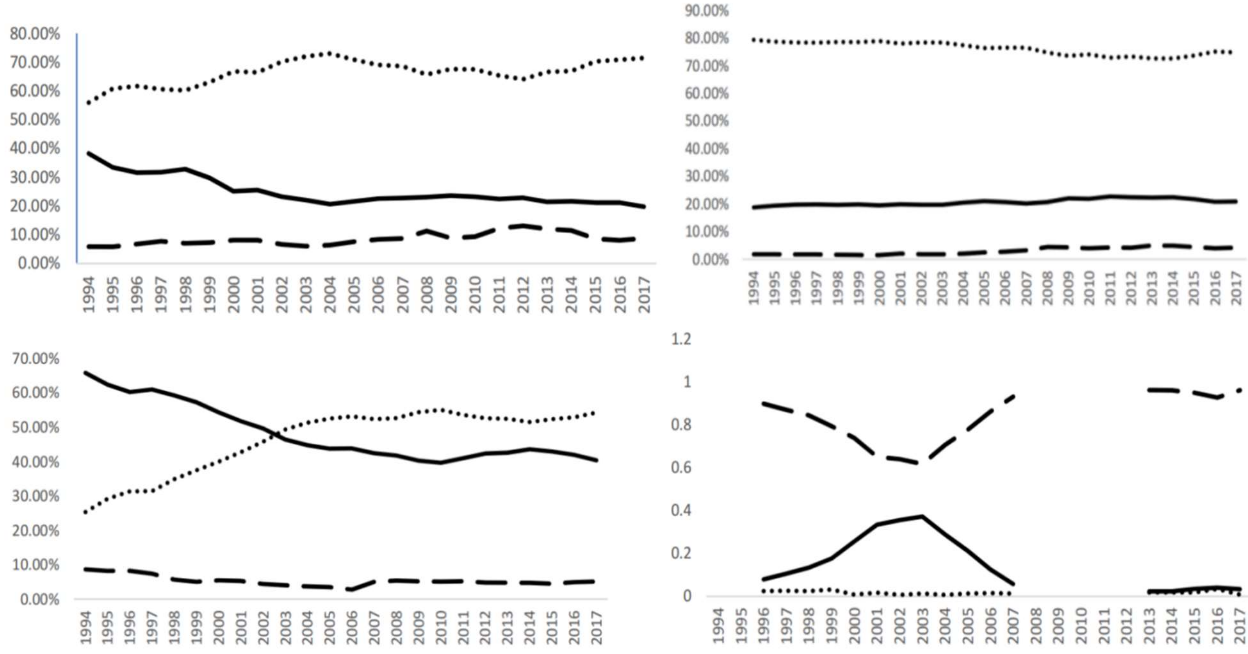

Figure 1. Export Structure Shares of China, Japan, South Korea, and Mongolia in 2023 (from left to right, from top to bottom)

3.3. Complementarity in Trade Structures of Major Northeast Asia Countries

Despite the similarities in the trade structures of major Northeast Asia countries, there is still significant complementarity in specific products among these countries. China, Japan, and South Korea have high complementarity in industrial manufactured goods such as machinery and transport equipment, while Mongolia has high complementarity with China, Japan, and South Korea in primary products. This complementarity provides an important basis for Northeast Asia regional economic integration. Countries can achieve optimal resource allocation and industrial advantage complementarity through trade cooperation, thereby promoting the common development of the regional economy.

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Table 3. Trade Complementarity Index of Major Products in Northeast Asia Countries in 2023

	Crude Materials	Mineral Fuel-Related Materials	Chemicals and Related Products	Manufactured Goods Classified Mainly by Material	Machinery and Transport Equipment	Miscellaneous Manufactures
China-Japan	0.26	0.35	0.45	0.83	0.90	2.04
Japan-China	1.32	0.23	0.77	0.49	1.52	0.35
China-Korea	0.25	0.38	0.46	1.01	1.06	1.48
Korea-China	1.04	0.91	0.93	0.54	1.53	0.32
China-Mongolia	0.02	0.37	0.38	1.37	1.10	0.91
Mongolia-China	38.54	6.11	0.00	0.09	0.02	0.03
Japan-Korea	0.56	0.40	0.75	0.70	1.30	0.49
Korea-Japan	0.46	1.41	0.89	0.63	1.10	0.61
Japan-Mongolia	0.05	0.39	0.63	0.94	1.35	0.30
Mongolia-Japan	17.13	9.51	0.00	0.11	0.01	0.06
Korea-Mongolia	0.04	1.50	0.76	1.05	1.36	0.27
Mongolia-Korea	16.24	10.37	0.00	0.13	0.01	0.05

Data Source: United Nations Commodity Trade Database,c_{ij} representing the comprehensive trade complementarity index between countryi and country j, where:

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$$C_{ij} = \sum_k \left[\left(RAC_{xik} * RAC_{mjk} \right) * \frac{W_k}{W} \right]; RAC_{xik} = \left({X_{ik}}/{X_i} \right) \div \left(\frac{W_k}{W} \right); RAC_{mjk} = \left({M_{ik}}/{M_i} \right) \div \left(\frac{W_k}{W} \right)$$

4. Empirical Analysis: Regional Economic Integration and Corporate Strategy Selection in Northeast China

4.1. Sample Selection and Data Sources

This study selects enterprises listed on the Shanghai and Shenzhen A-share markets in the Northeast region from 2008 to 2023 as research samples. The data are mainly sourced from professional financial databases such as CSMAR and Wind. During the data screening process, financial firms, specially treated (ST) firms, and those with incomplete key data were excluded. Additionally, to mitigate the impact of outliers on the analysis results, all continuous variables were subjected to a 1% winsorization at both the upper and lower ends.

4.2. Variable Definitions

4.2.1. Dependent Variable: Degree of Strategic Aggressiveness (DSA)

This study constructs a corporate strategy evaluation model, adopting the methods of Wu Haomin et al.[4], and selects six key performance indicators, including the ratio of R&D expenditure to sales revenue, the ratio of employee size to sales revenue, sales revenue growth rate, the proportion of sales and management costs in sales revenue, employee size variability, and the share of net fixed assets in total assets. The evaluation steps include calculating the average values of these indicators over the past five years. The first five indicators are ranked annually by industry into five levels (0-4 points), while the sixth indicator is scored in reverse (minimum value 4 points, maximum value 0 points). The final corporate strategy score DSA (0-24 points) is formed by summing the indicator scores, with higher scores representing aggressive strategies and lower scores representing conservative strategies.

4.2.2. Independent Variable: Regional Economic Integration (REI)

Based on the research of Chen Fuyong and Zhou Bing[1], this study constructs a dummy variable for regional integration policy to indicate whether the city where the enterprise is located is within the scope of the regional integration policy implementation. Operationally, if the city where the enterprise is located is after the implementation time point of the regional integration policy, the dummy variable REI takes a value of 1; otherwise, it takes a value of 0.

4.2.3. Moderating Variable: Industry Life Cycle (CYC)

Industries are divided into four stages of the industry life cycle, as detailed in Section 2.2.2 of this paper.

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Table 4. Variable Definitions

Variable Name	Variable Symbol	Variable Definition
Degree of Strategic Aggressiveness	DSA	Measured by the six key performance indicators
Regional Economic	REI	Equals 1 if the city where the firm is located is after the
Industry Life Cycle	CYC	Divided into growth stage, integration stage, transformation stage, and decline stage
Firm Size	SIZE	Natural logarithm of total assets
Financial Leverage	LEV	Total liabilities / Total assets
Firm Growth	GROW	Annual growth rate of firm's operating revenue
State Ownership	SOE	Equals 1 if the firm is a state-owned enterprise, otherwise equals 0
Managerial Ownership	MAG	Ratio of shares held by managers to total shares
Top Shareholder Ownership	TOP	Ratio of shares held by the largest shareholder to total shares
Proportion of Independent Directors	OUTR	Ratio of independent directors to the total number of directors
Board Size	BSIEZ	Natural logarithm of the number of directors
Year	YEAR	Year fixed effects
Firm Fixed Effects	FFE	Firm fixed effects

4.3. Model Construction

To test Hypothesis 1, which examines the impact of regional economic integration on corporate strategy selection, this paper designs a multiple regression model:

$$DSA=\alpha_0+\alpha_1 \cdot REI_{it} + \gamma \cdot \text{Controls}+ YEAR + FEE + \varepsilon \quad (1)$$

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In this model, DSA represents the degree of corporate strategic aggressiveness and is the dependent variable in this study. REI is a binary dummy variable indicating whether the city where the firm is located is within the scope of the regional economic integration policy implementation. It is expected that its coefficient will be significantly positive to validate Hypothesis 1. To ensure the robustness of the analysis, the model also controls for firm-level fixed effects (FE), as well as year (YEAR) and industry (FEE) fixed effects to mitigate the impact of omitted variables and time-series heterogeneity.

4.4. Empirical Analysis

4.4.1. Descriptive Statistics

In the research sample, the mean value of the degree of strategic aggressiveness (DSA) is 13.102, with a standard deviation of 3.723, a maximum value of 24.000, and a minimum value of 0.000. The larger the value of this indicator, the more aggressive the firm's strategy. On the other hand, the mean value of regional economic integration (REI) is 0.601, indicating that approximately 60.1% of the firms in the sample are affected by the regional integration policy.

Table 5. Descriptive Statistics

Variable Symbol	Sample Size	Mean	Standard Deviation	Minimum	Median	Maximum
DSA	32688	13.102	3.723	0.000	12.000	24.000
REI	32688	0.601	0.493	0.000	1.000	1.000
CYC	32688	2.260	1.092	1.000	3.000	4.000
SIZE	32688	22.131	1.434	19.151	21.926	27.070
LEV	32688	0.458	0.223	0.051	0.449	1.094
GROW	32688	0.190	0.535	-0.683	0.105	3.785
SOE	32688	0.401	0.490	0.000	0.000	1.000
MAG	32688	0.047	0.117	0.000	0.000	0.843
TOP	32688	0.344	0.151	0.003	0.321	0.900
OUTR	32688	0.386	0.098	0.000	0.375	1.000

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4.4.2. Regression Analysis

To explore the potential impact of regional economic integration on corporate strategic decision-making, this study selects Chinese A-share listed companies from 2008 to 2023 as samples and employs an individual fixed-effects regression model for analysis.

Table 6. Impact of Regional Economic Integration on Corporate Strategic Aggressiveness

Variable	DSA
REI	0.258*** (4.661)
SIZE	0.652*** (23.22)
LEV	0.704*** (6.135)
GROW	-0.135*** (-5.142)
SOE	0.0203 (0.230)
MAG	0.00625 (0.0313)
TOP	0.887*** (4.206)
OUTR	-0.127 (-0.696)
BSIEZ	0.167*** (2.692)
Intercept	-2.560*** (-4.289)
Year Controls	Yes
Individual Controls	Yes
Observations	32688
Adj. R^2	0.031

Note: ***, ** and * indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are t-values. The same applies below.

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In Table 6, we focus on the regression coefficient of regional economic integration (REI), which is found to be 0.258 and significant at the 1% level. This indicates that regional economic integration significantly enhances the degree of corporate strategic aggressiveness. Regional economic integration plays a crucial role in reducing trade barriers, optimizing resource allocation, and enhancing market vitality. For firms, the integration process not only increases investment opportunities but also provides the necessary resource support, thereby strengthening the motivation and capability of firms to adopt more aggressive strategies. These findings support the hypothesis of this paper regarding the relationship between regional economic integration and corporate strategy selection.

4.4.3. Robustness Analysis

Excluding Samples from the Year of Policy Implementation: Due to the varying implementation times of the regional economic integration policy across different regions, this study excludes samples from the year of policy implementation to eliminate the impact of implementation time differences. Even so, the regression coefficient of REI remains significantly positive, demonstrating the robustness of the research conclusions.

Controlling for Regional Economic Development Levels: The implementation of regional economic integration policies may be influenced by differences in regional economic development levels. Therefore, this study further controls for regional GDP levels in the model to ensure that the impact of economic development levels on the research results is effectively controlled. Even after controlling for this factor, the research conclusions still hold.

4.4.4. In-depth Analysis: From the Perspective of Industry Life Cycle

The theory of industry life cycle suggests that the development of firms is closely related to the growth stage of the industry in which they are located. Firms in the growth stage of an industry are provided with broad market opportunities, while those in the decline stage face shrinking market shares and slowing growth. Based on this theory, this paper hypothesizes that the impact of regional economic integration on corporate strategy varies across different stages of the industry life cycle.

To this end, this paper divides the sample firms into four stages of the industry life cycle: growth, integration, transformation, and decline, and conducts grouped regression analysis.

Table 7. Regional Economic Integration, Industry Life Cycle, and Corporate Strategy

Variable	(1)	(2)	(3)	(4)
	Growth Stage	Integration Stage	Transformation Stage	Decline Stage
	DSA	DSA	DSA	DSA
REI	0.438*** (4.194)	-0.185 (-0.863)	0.412*** (4.297)	-0.184 (-1.050)
Year Controls	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes
Observations	12368	3432	12897	3991
Adj. R^2	0.037	0.089	0.039	0.053

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The empirical analysis indicates that the impact of regional economic integration on the degree of corporate strategic aggressiveness in the Northeast region varies across stages of the industry life cycle. In the growth and transformation stages, integration significantly enhances the aggressiveness of corporate strategy, with coefficients of 0.438 and 0.412, respectively, both significant at the 1% level. This is mainly due to the greater market opportunities and growth space available to firms in these stages. However, in the integration and decline stages, the positive impact of integration on strategic aggressiveness is not significant, with firms tending to adopt more prudent business strategies.

5. Conclusion and Recommendations

5.1. Research Conclusion

This study confirms the significant impact of regional economic integration on corporate strategy selection in the Northeast region and reveals the differences in the degree of corporate strategic aggressiveness across different stages of the industry life cycle. It is found that regional economic integration significantly increases the degree of corporate strategic aggressiveness, especially for firms in the growth and transformation stages, prompting them to adopt proactive expansion strategies. However, in the integration and decline stages, the positive impact of integration on strategic aggressiveness weakens, with firms tending to operate more prudently.

5.2. Recommendations for the Northeast Region to Actively Integrate into Northeast Asia Regional Economic Integration

5.2.1. Corporate Level: Building Dynamic Capabilities and Nonlinear Strategies

Firms need to go beyond the static framework of “life cycle fit” and move towards building dynamic capabilities. Firms in the growth stage should be wary of the “expansion illusion” brought about by regional integration and avoid over-reliance on the benefits of a single market. They can achieve “agile expansion” through technologies such as the industrial internet, for example, by incorporating supply chain node firms into a collaborative innovation ecosystem. Firms in the decline stage need to break through the conservative path of “cost control” and draw on the “edge innovation” theory to leverage regional integration channels to obtain cross-border technological spillovers, transforming old production capacities into differentiated niche market advantages. In addition, firms need to strengthen the resilience of cross-border supply chains through digital tools to cope with geopolitical risks.

5.2.2. Government Level: Refined Institutional Supply and Targeted Governance

The government should abandon the “one-size-fits-all” policy mindset and build a three-dimensional governance model of “life cycle - capability - institution.” First, it can build a “policy digital twin” based on big data to monitor corporate strategy dynamics in real time and optimize policy targeting. For example, it can design “innovation betting agreements” for firms in the transformation stage, returning part of the subsidy if the conversion rate of R&D investment is below the threshold to avoid resource misallocation. Second, it is necessary to establish an asymmetric regulatory framework of “competitive neutrality + selective support”: for state-owned enterprises, it should promote “de-administrative assessment” and include the effectiveness of cross-border cooperation in KPIs; for private firms, it can reduce geopolitical risk exposure through a “cross-border risk compensation fund.” Finally, it is necessary to combine regional integration policies with the “new national system.” For example, in the Northeast Asia hydrogen energy industry chain, the government can take the lead in building a “technology - resource - market” triangular closed loop and realize flexible capacity allocation through smart contracts.

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5.2.3. Industry Level: Cross-Domain Resilience Networks and Regeneration of Declining Industries

Industry collaboration needs to break through traditional agglomeration theory and move towards a complex systems perspective. On the one hand, it can rely on the trade complementarity of Northeast Asia countries to build a “blockchain-style industry chain” and achieve cross-domain modular division of labor through distributed ledger technology. For example, China, Japan, and South Korea can form a cross-border closed loop of “design - manufacturing - packaging” in the semiconductor field, dynamically adjusting capacity allocation through smart contracts. On the other hand, it is necessary to implement “regenerative design” for declining industries. Drawing on the experience of the “creative destruction” of Germany's Ruhr area, idle assets of traditional industries such as coal can be transformed into “culture - technology hubs” and embedded in the regional digital infrastructure network to achieve the value rebirth of “industrial ruins.” In addition, a “Northeast Asia Industry Transformation Fund” can be established to support declining firms in obtaining technological upgrade opportunities through cross-border mergers and acquisitions.

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