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Regional Group Development Promotes Common Prosperity: Social Embedding Perspective and Competitiveness Formation ——A Daxia Jiang, Zhejiang Province Example

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Abstract

China's comprehensive regional group revitalization and common prosperity (CP) model has made strides in addressing the pitfalls of fragmented rural development. With this issue, single social networks are typically prioritized, and limited attention is paid to the underlying transmission mechanisms. Hence, we construct an integrated framework linking social embeddedness, rural regional sustainable competitiveness (SC), and CP to better understand the enablers of common social prosperity: deep cross-village synergy. Enablement entails three dimensions of social embeddedness: organization, rules, and structure. Although the framework does not directly produce CP, it transforms production, life, and ecological activities into sustainable rural competitiveness. Using the Daxia Jiang region in Zhejiang Province as a survey-based econometric study, we find that systematic improvements to competitiveness connects social embeddedness and CP. Furthermore, Rural regional sustainable competitiveness plays a dominant mediating role in the "social embeddedness → common prosperity" pathway, with the indirect effect accounting for 101.48% of the total effect. Subdimension tests show that production competitiveness is the most prominent mediator (82.93%), followed by life and ecological competitiveness. Additionally, the promoting effect of social embeddedness is stronger in economically weaker and remote villages, indicating the need for stronger inclusion. The system through which regional group development progresses from social relationship construction to system capability formation is shown, enabling the strategic achievement of CP. A new theoretical perspective for understanding the internal drivers of coordinated rural regional development is provided, highlighting the importance of cultivating systematic regional competitiveness.

Keywords: *regional group development; social embeddedness; rural regional sustainable competitiveness; common prosperity; Mediating effect*

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1 INTRODUCTION

1.1 RESEARCH BACKGROUND AND QUESTIONS

Under the strategic context of China's comprehensive promotion of rural revitalization and common prosperity (CP), overcoming the development bottlenecks faced by individual villages, such as limited resources, homogeneous industries, and weak growth momentum, has become an urgent issue. The regional cluster development model, in which geographically proximate villages with complementary resources and functional linkages form a development

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consortium through institutionalized coordination mechanisms, has emerged from local experimentation as an important regional policy tool. Its appeal lies in its potential to optimize resource allocation, generate economies of scale, and improve governance efficiency.–The evolution of this model is particularly evident in Zhejiang Province. As a national demonstration area for CP, Zhejiang has explicitly supported the development of regional groups in *Document No. 1* for five consecutive years and issued special guidance in 2025. The policy proposes coordinated development in which 500 key villages will drive more than 3,000 surrounding villages by 2027, indicating that the model is transitioning from spontaneous local experimentation to institutionalized and large-scale promotion.

Academic research has long examined the development of rural clusters or districts. Early studies primarily analyzed mechanisms for reducing transaction costs and improving production efficiency from the economic perspectives of industrial agglomeration (Porter, 1998) and economies of scale (Gordon & McCann, 2000). In recent years, research perspectives have expanded toward social networks (Jackson & Murphy, 2006), institutional embeddedness, and multidimensional embeddedness (Nooteboom, 2005; Zukin & DiMaggio, 1990). Scholars in sociology and institutional economics increasingly emphasize the influence of noneconomic factors (e.g., trust, norms, and network structures) on collaborative development.

Despite these advances, two important gaps remain. First, theoretical integration remains limited. Many studies have focused either on economic efficiency or on social capital, but rarely have they connected the microlevel mechanisms of social embeddedness with the macrolevel performance of regional development within a unified analytical framework. As a result, the "black box" explaining how social relations translate into economic outcomes remains insufficiently explored. Second, the intermediary mechanism remains unclear. Although concepts such as competitiveness and development capacity are occasionally discussed, they are often treated as outcome variables or background conditions. Few studies have systematically examined their mediating role in the transmission process from social interaction to CP, nor do they analyze their multidimensional components, such as production, life, and ecology, and their logical connections with specific dimensions of social embeddedness.

To address these gaps, this study introduces rural regional sustainable competitiveness (SC) as the key theoretical bridge and transmission mechanism. We argue that the effectiveness of regional group development depends on its capacity to cultivate the region's systemic development capability through deep social embeddedness—namely, SC. This competitiveness represents the capability manifestation of embedded social capital at the regional level and encompasses three dimensions: production, life, and ecology.

Based on this perspective, the paper constructs an integrated analytical framework of "social embeddedness → rural regional SC → CP." Social embeddedness is conceptualized across three dimensions (organizational embeddedness, rule embeddedness, and structural embeddedness), while SC is operationalized as production competitiveness, life competitiveness, and ecological competitiveness. This framework seeks to address the following questions:

- How does social embeddedness influence rural regional SC?
- Does SC mediate the relationship between social embeddedness and CP, and if so, how?
- Do differentiated pathways exist across different dimensions of embeddedness and competitiveness?

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Using the *Daxia Jiang* Rural Revitalization Consortium in Chun'an County, Zhejiang Province as an empirical case, the study tests this framework using first-hand survey data. The potential marginal contribution of this research lies in clearly positioning competitiveness as the result of the capability transformation of social embeddedness and the core transmission carrier of CP. In doing so, the study develops a logically integrated framework that clarifies the internal mechanisms of coordinated rural development. By quantifying social embeddedness and multidimensional competitiveness and examining their mediating effects, the study provides new empirical evidence on the relationship between social capital and development performance. From a policy perspective, the findings suggest that policymakers should move beyond a narrow focus on organizational structures or economic indicators and instead prioritize the cultivation of systemic regional capabilities that support sustainable rural development.

1.2 DOMESTIC AND FOREIGN RESEARCH STATUS

Rural regional group development represents an extension of industrial cluster theory. The concept of "clusters" originates from Marshall's theory of industrial districts (Marshall, 2013). Building on this foundation, clusters were further defined as geographic concentrations of interconnected firms and institutions that generate competitive advantage (Porter, 1998). Extending this perspective, clusters have been further classified into distinct types (Gordon & McCann, 2000). The first is the "pure agglomeration economy," based primarily on proximity-driven cost savings and productivity improvements, with little cooperation among participants. The second is the "social network model," derived from institutional sociology, which emphasizes informal networks that facilitate the exchange of tacit knowledge, innovation, and advanced practices.-Because the core logic of connectivity among firms and institutions can also enhance rural competitiveness (Jackson & Murphy, 2002), cluster theory has gradually been applied to rural development contexts.

Current research has explored multiple types of rural clusters, including agricultural clusters (Gálvez-Nogales, 2010), service clusters such as tourism (Jackson & Murphy, 2006), handicraft or industrial clusters (Yang et al., 2021; Guo et al., 2022), and integrated clusters such as agro-industrial clusters (Xu et al., 2025), rural e-commerce clusters (Su et al., 2024), and innovation clusters supporting creative industries and the "culture economy" (Velez-Ospina et al., 2023).

Existing studies have indicated that rural industrial clusters can promote development and contribute to CP, which emphasizes the inclusive sharing of development outcomes and the coordinated pursuit of efficiency and fairness. It extends beyond simple economic growth to include narrowing income gaps, equalizing public services, and improving multidimensional well-being (Nelson & Nieuwenhuis, 2021). International experience shows that agricultural clusters and agro-based industrial clusters can alleviate rural poverty, as demonstrated in West Java Province (Wardhana et al., 2017). Innovative industrial clusters can diversify rural economies, create employment opportunities, substitute for urban services, and strengthen community cohesion by promoting rural enterprises and supporting tourism development, as observed in rural areas of the U.K. (Velez & Siepel, 2022). In China, industrial clustering can reduce inequality and enable vulnerable groups to participate in nonagricultural activities (Guo et al., 2022). In the U.S., rural industrial development relies more heavily on clusters than urban areas, because clustering helps rural firms mitigate disadvantages such as small market size, high transportation costs, limited access to specialized services, and shortages of skilled labor (Barkley & Henry, 1997). In Russia, clustering methods can identify "leader" and "edge"

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clusters, enabling targeted policy support and promoting regional convergence (Gusmanov et al., 2022).

International experience also highlights key factors for successful rural cluster development. Agro-based clusters in Asia, Africa, and Latin America often rely on collective action, institutional support, horizontal and vertical linkages, and integration into global value chains (Gálvez-Nogales, 2010). Tourism clusters depend on place branding, effective utilization of local assets, resident capacity building, strong leadership, cohesive tourism organizations, and clearly defined cluster boundaries, as seen in Ontario's culinary tourism initiatives (Lee et al., 2015), Trinidad (Laing & Lewis, 2017), and Australia (Jackson & Murphy, 2006). Although these studies identified important determinants of cluster performance, agro-based and rural industrial clusters are often constrained by factors beyond cluster characteristics themselves, including technological limitations, small scale, and difficulties integrating into global value chains. More importantly, cluster theory tends to emphasize functional success factors such as collective action and institutional support, but it does not fully explain why these elements emerge and remain effective within particular geographic and social contexts. As a result, cluster analysis often fails to penetrate the underlying social relations and networks that shape economic behavior. To address this explanatory gap, social embeddedness theory provides a critical analytical lens.

Social embeddedness theory offers an important perspective for understanding these dynamics. It posits that economic activities are deeply embedded within social relations and institutional structures (Polanyi, 1994; Granovetter, 2015). Subsequent research has expanded the concept to include multiple forms of embeddedness, including relational, institutional, and cognitive dimensions (Kaup, 2015). In regional group contexts, embeddedness reduces transaction costs and strengthens cooperative resilience by fostering trust, norms, and network structures (Gong & Hassink, 2019). Relational embeddedness facilitates CP through trust-building, resource sharing, and collective action. Strong relational networks increase trust, reduce transaction risks, and enhance willingness to cooperate (Gu et al., 2021). However, relational embeddedness may also intensify wealth inequality under certain conditions (Zhang, 2024), highlighting the need for inclusive collective governance frameworks (Albareda & Sison, 2020).

Rule embeddedness emphasizes the continual refinement of institutional arrangements through polycentric governance and adaptive learning to ensure that development aligns with the goal of CP (Albareda & Sison, 2020). Effective institutional rules provide stability and credibility for economic activities while preventing the "de-embedding" of policies during implementation (Yang et al., 2019). For example, research on participatory budgeting shows that cooperative governance and multiactor participation mechanisms enhance both inclusiveness and legitimacy in decision-making (Rey et al., 2020). Value embeddedness further extends beyond purely economic objectives by emphasizing the integration of social, economic, and ecological values, thereby supporting sustainable collective well-being (Whitelock, 2019). Despite these insights, existing studies rarely have provided systematic integration or empirical tests of how multiple dimensions of embeddedness jointly promote CP.

This limitation highlights the need to introduce SC as a key mediating construct. Research on competitiveness has gradually expanded beyond pure economic efficiency to encompass sustainable dimensions that include economic, social, and environmental considerations (Balkyte & Tvaronaviiene, 2010; EU, 2015). SC emphasizes evaluation across multiple

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dimensions—efficiency and fairness, as well as short- and long-term development—and recognizes that long-term economic growth depends on both productivity and equitable distribution (Lever, 1999).

In rural contexts, early research on rural competitiveness focused mainly on industrial efficiency and agricultural profitability (Su, 2005). As rural development has become more multidimensional, competitiveness has increasingly been understood as the comprehensive capacity of rural regions to respond to economic, social, and environmental risks, encompassing industry, market, and ecological conditions. This perspective emphasizes that rural competitiveness depends largely on the overall strength and resilience of the regional system (Jin, 2002). Building on this view, a three-dimensional competitiveness framework of "foundation–reality–potential" was proposed, along with a multifactor evaluation model for rural regional competitiveness (Wang, 2009).

Building on these insights, this study argues that the social embeddedness generated by regional group development—through organizational, rule-based, and structural embedding—does not directly produce CP. Instead, it promotes CP indirectly by cultivating sustainable rural competitiveness across the dimensions of production, life, and ecology. SC therefore serves as the key transmission carrier linking microlevel social mechanisms with macrolevel development outcomes.

In summary, the existing literature provides an important foundation while also revealing key gaps. Cluster research primarily focuses on economic motivations and outcomes; embeddedness research rarely connects systematically with multidimensional competitiveness or the goal of CP; and competitiveness research tends to emphasize static evaluation rather than dynamic transmission mechanisms. Consequently, constructing an integrated analytical framework of “social embeddedness → SC → CP” can bridge the theoretical gap between microlevel social mechanisms and macrolevel development outcomes. Such a framework also offers a new institutional explanation of how regional group development can effectively promote CP.

2 THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

2.1 THEORY

2.1.1 SOCIAL EMBEDDEDNESS: THE SOCIAL FOUNDATION OF CLUSTER DEVELOPMENT

Based on embeddedness theory (Polanyi, 1944; Granovetter, 1985), this study argues that economic action is deeply rooted in social relations and institutional structures and cannot be understood independently of its social context. Drawing on Drawing on the framework of multidimensional embeddedness (Zukin & DiMaggio, 1990), the study applies this perspective to rural development and operationalizes social embeddedness into three core dimensions.

The first dimension is organizational embeddedness. This refers to the establishment of formal or quasiformal cross-village organizations (e.g., joint Party committees, strong village companies, and industrial alliances) that create collaborative decision-making and action entities extending beyond individual villages. Such arrangements provide the structural foundation for coordinating and implementing collective action (Ostrom, 1990).

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The second dimension is rule embeddedness. This one refers to the formal institutional arrangements (e.g., contracts, articles of association, and benefit distribution mechanisms), as well as informal norms including trust, reciprocity, and reputation that are formed, widely recognized, and collectively observed within the regional system. These rules establish stable expectations and legitimacy for long-term cooperation while reducing transaction costs and constraining opportunistic behavior (North, 1990).

The third dimension is structural embeddedness, which refers to the dense and multidimensional relational networks formed among participants, including village collectives, enterprises, farmers, and government agencies. The structure of these networks influences the circulation of information, resources, and influence, thereby shaping the efficiency of knowledge spillovers and the potential for collaborative innovation (Burt, 1992).

Together, these three forms of embeddedness constitute the social foundation of regional group development. Through their interaction, they transform simple geographic proximity into coordinated collective action and the cumulative development of regional social capital.

2.1.2 SC: THE FOUNDATION OF SYSTEMIC DEVELOPMENT

This study moves beyond the traditional view that equates competitiveness solely with economic efficiency by introducing the concept of SC (Balkyte & Tvaronaviiene, 2010). This perspective emphasizes that a region's long-term competitive advantage arises from the coordinated development of economic, social, and environmental dimensions.

Based on the realities of rural development, this study defines rural regional SC as the systemic capacity of rural regions to continuously create value, improve well-being, and maintain resilience by effectively integrating and upgrading resources across the three dimensions of production, life, and ecology. This systemic capability can be further decomposed into four key pillars that together support the integration of *Sansheng*.

The first pillar is industrial competitiveness, whose core lies in the efficiency of value creation and corresponds directly to the dimension of production. It is reflected in the efficient transformation of resources and the continuous enhancement of market value through technological innovation, brand development, and industrial integration, forming the foundation for expanding economic output.

The second pillar is organizational competitiveness, which centers on the effectiveness of collective action and operates across all dimensions of *Sansheng*. It is embodied in the establishment and functioning of efficient and professional governance and operational entities, such as consortium organizations and strong village companies, that coordinate resources, implement development strategies, and deliver public services. These organizational mechanisms provide the institutional capacity needed to translate development plans into practical outcomes.

The third pillar is institutional competitiveness, whose core lies in effective rule governance and which particularly influences the dimensions of life and ecology. It is reflected in the establishment and maintenance of transparent, credible systems of formal and informal rules that ensure fair benefit distribution, constrain opportunistic behavior, and promote environmentally responsible production. Such institutional arrangements form the foundation of trust necessary for sustainable development and shared outcomes.

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The fourth pillar is network competitiveness, which reflects the region's capacity for synergy and linkage across the dimensions of "Sansheng." It emerges from dense and diverse collaboration networks among regional actors—including village collectives, enterprises, farmers, and public institutions—that facilitate the rapid circulation and optimal allocation of knowledge, technology, information, and resources. These networks enable economies of scope, risk sharing, and cross-sector collaboration.

Together, these four forms of competitiveness are mutually reinforcing and jointly constitute a comprehensive capability system for evaluating regional development quality. Their interaction ultimately manifests in the integrated outcomes of productive development, improved living standards, and a healthy ecological environment.

2.1.3 CP: ULTIMATE VALUE-ORIENTED DEVELOPMENT

CP represents a fundamental requirement of socialism with Chinese characteristics. Its meaning extends beyond simple economic growth and emphasizes the integrated realization of inclusiveness (common) and abundance (prosperity) in development outcomes (Liu et al., 2021). Achieving this goal requires balancing efficiency and fairness while promoting comprehensive human development and social progress within a framework of high-quality development.

In this study, CP is operationalized as a multidimensional development objective encompassing economic growth, income distribution, public service provision, and ecological sustainability. It represents the ultimate value orientation guiding regional development.

2.2 CASE SELECTION

This study selected the *Daxia Jiang* Rural Revitalization Consortium in Chun'an County, Zhejiang Province, as the empirical case. Established in 2019, the consortium initially consisted of Xiajiang Village and 24 surrounding villages and later expanded to include 63 administrative villages. Through organizational and market-oriented innovations (e.g., *Joint Party Committee + Strong Village Company + Professional Manager* model), the consortium has achieved notable outcomes in industrial collaboration, brand codevelopment, and benefit-sharing, making it a representative example of regional group development. Compared with 2018, before the consortium was established, the per capita disposable income of permanent residents in the consortium increased by approximately 1.59 times by 2023, exceeding the national average growth rate.

The practice of CP in *Daxia Jiang* begins with the reconstruction of the regional social foundation. The establishment of the consortium in 2019 marked a shift from isolated breakthroughs by individual villages to the creation of a coordinated regional development system based on institutionalized collaboration. In terms of organizational embeddedness, the consortium established a three-tier governance structure composed of the Consortium Party Committee (political leadership), the Council (deliberation and decision-making), and the Strong Village Company (market-oriented execution). This structure transcends traditional administrative boundaries and provides an institutional carrier for cross-village resource coordination and strategic implementation. Through the planning of four major industrial belts and the establishment of Qiandaohu Daxijiang Revitalization Development Co., Ltd., the Joint Party Committee integrated previously fragmented village resources into a unified market-oriented development platform.

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In terms of rule embeddedness, the consortium stabilizes cooperation through a series of institutionalized arrangements. For example, homestay management, including planning, marketing, distribution, and settlement, operates under a "five-unified" management system, standardizing market order. The annual dividend mechanism and the *Gongfu* Workshop model ensure benefit-sharing, while the four-unified management of regional public brands (unified brand, packaging, standards, and pricing) establishes consistent quality and reputation. These institutional arrangements extend trust beyond traditional acquaintance-based social relations, reduce transaction costs, and provide stable expectations for long-term cooperation.

In terms of structural embeddedness, the consortium has formed a dense socioeconomic network among the 63 villages through coordinated industrial layout, shared branding, and integrated infrastructure. This network facilitates the circulation of knowledge, technology, and market information while generating economies of scale and scope. At present, the *Daxia Jiang* brand covers 48 product categories, integrating the products of individual farmers into a regional value network and significantly increasing product premiums (e.g., the price of dried sweet potatoes has risen by approximately 70%).

The social foundation created through embeddedness has driven the systematic enhancement of regional SC, which has evolved through distinct stages. In terms of industrial competitiveness, development progressed from single-sector agriculture (e.g., high-quality orchards) and basic homestay accommodation in the early adaptation stage to industrial chain extension, such as red sorghum brewing and traditional Chinese medicine processing, and integration of primary, secondary, and tertiary industries through cultural tourism and training programs. In the current deepening stage, development has expanded toward digitalization (e-commerce platforms and smart agriculture) and branding through the *Daxia Jiang* regional public brand, allowing the regional value chain to move toward higher value-added segments.

In terms of organizational competitiveness, governance evolved from reliance on village "two committees" and local leaders in the early stage to the establishment of cross-village administrative coordination bodies, including joint Party committees and councils, after the formation of the consortium. Later, market-oriented and professional operating entities, such as strong village companies and professional management teams, were introduced. As a result, the organizational model shifted from simple coordination to professionalized and capital-oriented operation, significantly strengthening execution capacity and innovation capability.

In terms of institutional competitiveness, governance progressed from reliance on informal local norms, such as interpersonal relationships and reputation, to a formalized institutional system covering production, distribution, and ecological governance. This includes the four- and five-unified management systems and formal dividend mechanisms, supported by supervision and dispute mediation institutions such as the Lao Jiang Mediation Room. Institutional governance has thus evolved from fragmented arrangements to a coherent rule-based system with stronger credibility and binding force.

In terms of network competitiveness, the consortium has evolved from loose intervillage connections to a high-density regional network based on industrial specialization, brand sharing, and infrastructure integration. Network nodes have expanded from core villages to surrounding and peripheral villages (from 25 to 63 villages), while collaboration has broadened from simple product sales to technology cooperation, risk sharing, and ecological cogovernance.

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Through this process, social embeddedness promotes CP through the mediating role of regional competitiveness. Between 2018 and 2023, the consortium's per capita disposable income increased by approximately 1.59 times, reflecting the combined effects of regional brand premia (network and institutional competitiveness), market-oriented operation by strong village companies (organizational competitiveness), and institutionalized benefit-sharing mechanisms (institutional competitiveness). These factors ultimately translate into sustained increases in farmers' real incomes.

This case also reveals the boundaries of social embeddedness. Core villages (e.g., Xiajiang) can rapidly convert embedded resources into industrial and branding advantages due to their first-mover advantages, while peripheral villages with limited resources often require more time and additional investment (e.g., transportation infrastructure) to integrate into the network and benefit from institutional arrangements. Differences in location, resource endowment, and initial social capital therefore significantly shape the timing and magnitude of benefits that villages derive from the same consortium framework.

2.3 INTEGRATIVE ANALYSIS FRAMEWORK AND RESEARCH HYPOTHESIS

Based on the preceding theoretical discussion and case analysis, this study constructs an integrated analytical framework (shown in Fig. 1). The framework follows the logical chain that social embeddedness forms the social foundation of regional development, this foundation generates sustainable rural competitiveness, and enhanced competitiveness ultimately promotes CP.

The core argument of this framework is that regional group development does not directly produce CP. Instead, it cultivates and strengthens industrial competitiveness, organizational competitiveness, institutional competitiveness, and network competitiveness by establishing a social foundation embedded in the three dimensions of organization, rules, and structure. These forms of competitiveness manifest across the dimensions of production, life, and ecology, and together drive the comprehensive realization of CP.

First, through the creation of cross-village collective action entities, organizational embeddedness directly enhances organizational competitiveness and provides sustained incentives for cooperation. It establishes an institutional platform that strengthens life-related public service capacity while simultaneously supporting the development of industrial competitiveness, thereby generating economic benefits that contribute to CP.

Second, rule embeddedness strengthens institutional competitiveness through the establishment of credible commitments and fair governance norms. These institutional arrangements provide stable incentives for investment and cooperation, support the development of industrial competitiveness, and form the institutional foundation that safeguards fairness and stability in the dimension of life.

Third, structural embeddedness forms network competitiveness by constructing dense relational networks among regional actors. These networks facilitate the circulation of production factors and knowledge spillovers necessary for industrial development while also supporting collaborative governance mechanisms that strengthen ecological competitiveness.

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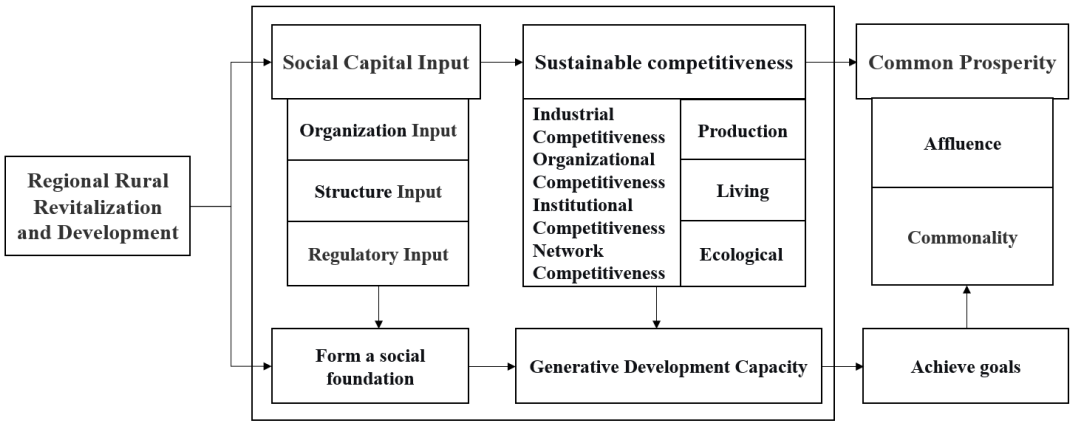

Fig. 1 – Theoretical analysis framework. Source: own research

Based on this analytical framework, the study proposes the following testable hypotheses:

H1: Regional group development significantly improves the level of CP in rural areas through the mechanism of social embeddedness.

H2: Rural regional competitiveness mediates the relationship between social embeddedness and CP.

H3: Village heterogeneity moderates the strength of the effect of social embeddedness on CP.

3 RESEARCH DESIGN AND EMPIRICAL TEST

3.1 DATA SOURCES AND SAMPLES

The data used in this study came from a systematic field investigation of the *Daxia Jiang* Rural Revitalization Consortium in Chun'an County, Zhejiang Province, conducted in 2023. Since its establishment in 2019, the consortium has expanded from 25 villages to 63 administrative villages. Its clear stages of expansion, deepening institutional innovation, and substantial heterogeneity among villages provide a suitable empirical context for examining the mechanisms, mediating pathways, and boundary conditions of social embeddedness.

The survey combined questionnaires, semistructured interviews, and secondary data collection. The questionnaire survey covered all 63 administrative villages in the consortium, with stratified random sampling applied to three key groups: villagers, village cadres, and business entities (enterprise or cooperative managers). A total of 903 valid questionnaires were collected, including 821 villagers, 43 village cadres, and 39 business entities. In addition, 32 key stakeholders, including consortium leaders, professional managers, and representative village cadres, were interviewed in depth to better understand operational mechanisms. The study also collected supplementary materials such as statistical yearbooks, association charters, and village annual reports.

The sample exhibits several notable characteristics. Village cadres generally have relatively long tenures and substantial governance experience. The villager sample shows clear aging characteristics, while most business operators remain concentrated in small-scale agricultural

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processing and traditional business activities, with relatively low participation in emerging sectors such as rural e-commerce and rural tourism. Overall, the sample reflects several structural features of current regional development, including continued reliance on traditional industries, the gradual emergence of new growth drivers, and differences in how various actors perceive and integrate into the consortium system. These characteristics provide a realistic basis for analyzing the heterogeneity effect proposed in **H3**.

3.2 DATA QUALITY AND PRELIMINARY ANALYSIS

Reliability tests of the questionnaire scales indicate high reliability for the enterprise-level scale (Cronbach's α = 0.913), while reliability for some dimensions of the villager and village cadre scales is relatively lower and will be addressed in subsequent analyses.

Preliminary correlation analysis shows that relationships among the core variables generally align with theoretical expectations. Notably, the relatively weak correlation between economic performance indicators and public service satisfaction suggests the presence of a potential transmission lag or institutional barrier between economic growth and improvements in livelihoods. This observation further highlights the importance of examining the full transmission mechanism linking social embeddedness, SC, and CP. These data provide the empirical foundation for the econometric models used to test the three proposed hypotheses.

3.3 VARIABLE SELECTION AND MEASUREMENT DESCRIPTION

3.3.1 EXPLAINED VARIABLE: COMMON PROSPERITY(CP)

CP-level indicators of CP are structured around two core dimensions (efficiency and fairness), with weights determined using the entropy weight method. Specifically, the efficiency dimension is measured by the standardized production competitiveness index, the fairness dimension by the standardized life competitiveness index, and the sustainability dimension by the standardized ecological competitiveness index. Based on the entropy weighting results, the CP Index is calculated as

$$CP = 0.45 \times PC_{norm} + 0.35 \times LC_{norm} + 0.20 \times EC_{norm} \quad (1)$$

Note that both CP and RC are derived from the same underlying three-dimensional data structure of production, life, and ecology, but they differ fundamentally in measurement logic and weight allocation. The RC Index adopts an ability-oriented entropy weighting scheme, where production competitiveness (PC), life competitiveness (LC), and ecological competitiveness (EC) are 0.483, 0.284, and 0.233, respectively. In turn, the systematic development capacity of the region is emphasized. In contrast, the CP Index applies a goal-oriented weighting scheme, increasing the weight assigned to the fairness dimension (LC) to reflect the normative emphasis of CP on equitable sharing.

This differentiated weighting establishes a conceptual distinction between capability and outcome while relying on the same underlying data. For example, the weight of life competitiveness in the RC Index is 0.284, whereas the weight of the corresponding fairness dimension in the CP Index increases to 0.35, representing a 23.2% increase. Conversely, the weight of production competitiveness decreases from 0.483 in RC to 0.45 in CP, representing a 6.8% reduction.

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Although the two indices share the same underlying data, their different weighting structures produce meaningful conceptual and statistical distinctions. The Pearson correlation coefficient between CP and RC is 0.934, indicating a strong relationship but not complete collinearity. Variance inflation factor testing further confirms that multicollinearity is not severe (variance inflation factor (VIF) = 7.21, below the critical threshold of 10), suggesting that the two variables remain statistically distinguishable. This supports the methodological validity of using RC as a mediating variable in the empirical analysis.

3.3.2 CORE EXPLANATORY VARIABLE: SOCIAL EMBEDDEDNESS (EMB)

According to the preceding analysis, social embeddedness is decomposed into three dimensions (organizational embeddedness, rule embeddedness, and structural embeddedness) with the weight of each dimension determined using the entropy weight method.

First, the Organizational Embeddedness Index ($X1$) measures the extent to which professional management elements (e.g., introduction of professional managers) are embedded in village governance and economic operations. The indicator for operational normativity ($OE1$) corresponds to the questionnaire item, "What do you think of the degree of operational standardization in the management of village collective economic organizations?" The indicator of resource transformation ($OE2$) corresponds to "What effect do professional managers have on the revitalization and utilization of idle resources?" The indicator for subject synergy ($OE3$) corresponds to "What is the degree of cooperation among village collectives, enterprises, and farmers?"

Second, the Rule Embeddedness Index ($X2$) captures the effectiveness of both formal and informal institutional arrangements. The indicator for distribution transparency ($RE1$) corresponds to the questionnaire item, "How open and transparent is the village collective income distribution scheme?" The normative binding force indicator ($RE2$) corresponds to, "What is the binding effect of village rules and regulations on villagers' behavior?" The indicator for trust contract ($RE3$) corresponds to, "To what extent do you trust the village collective to fulfill its commitments?"

Third, the Structural Embeddedness Index ($X3$) measures the degree of network connectivity and resource integration among villages. The indicator for industrial cooperation ($SE1$) corresponds to the questionnaire item, "What is the degree of cooperation between your village and other villages in industrial development?" The indicator for brand sharing ($SE2$) corresponds to, "What is your level of awareness and use of the regional public brand *Daxia Jiang*?" The indicator for facility interoperability ($SE3$) corresponds to, "How convenient is it for you to use cross-village shared public facilities?"

The weights calculated using the entropy weight method are reported in Table 1. The composite social embeddedness index is calculated as follows:

$$EMB = 0.299 \times OE + 0.353 \times RE + 0.348 \times SE \quad (2)$$

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Tab. 1 – Social embeddedness composite entropy weights. Source: own research

Dimension	Information Entropy value (*e*)	Redundancy (*d*)	Weight (*w*)
Organization Embedding (X_1)	0.9617	0.0383	0.299
Regular Embedding (X_2)	0.9547	0.0453	0.353
Structure Embedding (X_3)	0.9554	0.0446	0.348
Total	—	0.1281	**1.000**

Note: According to the entropy weight method, rule embedding has the highest weight (0.353), indicating that institutional construction is the key dimension of social embedding at the current stage.

3.3.3 MEDIATING VARIABLE: RURAL REGIONAL COMPETITIVENESS (RC)

Based on the theory of rural sustainable development, this study constructed a three-dimensional competitiveness index system encompassing production, life, and ecology. Each dimension incorporates both conventional indicators and digital and green indicators, reflecting the evolving priorities of rural revitalization in the new era.

The introduction of this mediating variable is grounded in the premise that social embeddedness does not directly improve residents' welfare through simple financial transfers. Instead, it indirectly promotes CP by cultivating and strengthening regional competitiveness. In this framework, rural regional competitiveness functions as the key transmission carrier linking social embeddedness to common prosperity (see Table 2).

Tab. 2 – Relationship between rural regional competitiveness and questionnaire responses. Source: own research

Competitiveness dimension	Indicator type	Specific indicator	Measurement method/ questionnaire question
Production Competitiveness (PC)	Conventional indicators	Agricultural labor productivity	Agricultural output value/agricultural labor force
		Land output rate	Agricultural output value/cultivated area
		Degree of industrial integration	Proportion of income from secondary and tertiary industries
	Digital indicators	Production digitization index	E-commerce sales ratio × 0.4 + smart agriculture rate × 0.3 + information platform coverage × 0.3
Life Competence (LC)	Conventional indicators	per capita disposable income	Questionnaire "What is the annual per capita disposable income of your family?"
		Infrastructure Index	Road hardening rate, tap water coverage rate, etc.
	Digital indicators	Life Digitalization Index	Broadband access rate × 0.4 + online government affairs rate × 0.3 + smart platform utilization rate × 0.3

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Competitiveness dimension	Indicator type	Specific indicator	Measurement method/ questionnaire question
Ecological Competitiveness (EC)	Conventional indicators	Forest coverage	Forest area/total area
		Garbage disposal rate	Proportion of harmless treatment of domestic waste
	Green indicators	Ecological digitization index	Environmental monitoring digitization × 0.4 + traceability system application × 0.3 + carbon sink monitoring access rate × 0.3

The calculation results for the competitiveness indicators are presented in Table 3. The composite index of rural regional competitiveness is calculated as follows:

$$RC = 0.483 \times PC + 0.284 \times LC + 0.233 \times EC \quad (3)$$

Tab. 3 – Rural regional competitiveness entropy weight results. Source: own research

Dimension	Information Entropy Value (*e*)	Redundancy (*d*)	Weight (*w*)
Production Competitiveness (PC)	0.9394	0.0606	0.483
Life Competence (LC)	0.9644	0.0356	0.284
Ecological Competitiveness (EC)	0.9708	0.0292	0.233
Total	—	0.1254	**1.000**

Note: Production competitiveness has the highest weight (0.483), reflecting that industrial development is the core driving force of regional competitiveness at the current stage.

3.3.4 CONTROL VARIABLES

To control for potential interference arising from village heterogeneity, the following control variables were included in the analysis:

- Village size ($lnpop$): measured as the logarithm of the resident population. Based on the theory of economies of scale, village size may influence the efficiency of resource allocation.
- Distance from the county seat ($distance$): measured in kilometers. According to location theory, geographic proximity affects market accessibility and development opportunities.
- Per capita cultivated land area ($landPC$): measured in hectares per person. Based on resource endowment theory, land availability influences agricultural development potential.
- Cadre ability ($cadreedu$): measured by the average education score of village cadres. According to human capital theory, the quality of local leadership affects governance effectiveness.

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3.4 MEASUREMENT MODEL SETTING

3.4.1 VERIFICATION OF ASSUMPTION 1:

Based on **H1**, the following baseline regression model is constructed to test the direct impact of social embeddedness on CP. In the model, ϵ represents the error term:

$$CP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \quad (4)$$

Through mechanisms such as resource sharing, industrial complementarity, and scale effects, the *Daxia Jiang* regional group is expected to enhance economic performance and improve villager well-being, thereby promoting common prosperity CP.

To verify **H1**, it is first necessary to examine whether a significant positive relationship exists between cluster development variables and the CP Index. In the questionnaire data, regional group development is reflected in indicators such as resource integration, industrial collaboration, and unified services, while the CP Index captures outcomes including income growth, cost reduction, and improvements in satisfaction.

Therefore, Pearson correlation analysis is conducted between the development variables and the CP indicators derived from the survey data. The formula is as follows:

$$r = \frac{\sum_{i=1}^{n}(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^{n}(X_i - \bar{X})^2 \sum_{i=1}^{n}(Y_i - \bar{Y})^2}} \quad (5)$$

Tab. 4 – Pearson correlation coefficients. Source: own research

		Ecological Effect	**Accumulation Effect of Human Resources**	**Effect of Rural Technological Innovation**	**Common Prosperity Indicator**
Regional Collaborative Development	Pearson Correlation Coefficient	0.084**	0.094**	0.174**	0.641**

The results of the Pearson correlation analysis (Table 4) indicate that, using 0.01 and 0.05 significance levels in a two-tailed test, CP shows a highly significant positive correlation with regional group development, with a correlation coefficient of R = 0.641.

In contrast, the correlations between CP and several other factors (e.g., ecological effect, human resource accumulation effect, and income growth effect associated with rural technological innovation) are close to zero. This indicates very weak linear relationships, suggesting that these factors operate relatively independently as potential driving forces.

Overall, the results suggest a positive relationship between regional group development and the level of CP. To further quantify this relationship, a multiple regression model is constructed to estimate the net effect of cluster development on CP while controlling for potential confounding variables.

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Based on the baseline regression specification:

$$Y = \beta_0 + \beta_1 X + \epsilon \tag{6}$$

where β_0 represents the intercept term, β_1 denotes the core regression coefficient, and ε is the error term. The coefficient for β_1 is expected to be greater than zero and statistically significant ($p < 0.05$), indicating that regional group development promotes CP.

To evaluate statistical significance, a *t*-test was applied:

$$t = \beta_j / \mathrm{SE}(\beta_j) \sim t(n - k - 1) \tag{7}$$

where $SE(\beta_j)$ denotes the standard error of β_j.

Tab. 5 – Area development intensity correlation. Source: own research

	Standardized Coefficient β	***t***	**Significance**	**Standard Deviation**
Intensity of Area Development	0.516	5.116	<0.01	0.123

According to the correlation analysis, there is a positive relationship between regional group development and CP, with $R \approx 0.6$ ($p < 0.01$). The regression $results\ further\ show\ that\ \beta_1$ = 0.516 ($p < 0.05$), indicating that when the development intensity of the regional group increases by one unit, the CP Index increases by 0.516 units.

These results support **H1**, suggesting that regional group development significantly promotes the level of CP. The underlying logical chain can be summarized as follows: "regional group development → resource integration (e.g., land transfer) → reduced production costs → increased villagers' income → improved satisfaction and well-being." Evidence from the survey data is broadly consistent with this mechanism.

Based on these findings, the hypothesis that regional group development promotes CP is supported. To further evaluate the explanatory power of the model, a goodness-of-fit test is conducted by calculating the coefficient of determination (R^2):

$$R^2 = \frac{SSR}{SST} = 1 - \frac{SSE}{SST} \tag{8}$$

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Tab. 6 – Goodness-of-fit simulation results. Source: own research

Model	R	R^2	Standard Error
1	0.718	0.611	0.56

To verify **H1**, several conditions must be satisfied. First, the strong correlation condition requires a sufficiently large correlation coefficient between regional group development (X) and common prosperity (Y). In this study, $R = 0.641 \geq 0.5$ and $p < 0.01$, indicating a strong and statistically significant correlation.

Second, the significant influence condition requires that the regression coefficient in $Y = \beta_0 + \beta X + \varepsilon Y$ be positive and statistically significant. The results show that $\beta = 0.516 > 0$, and the t-test is significant ($p < 0.05$), confirming that regional group development has a positive effect on CP.

Third, the explanatory power condition requires the model to demonstrate sufficient explanatory strength. The coefficient of determination, $R^2 = 0.611 \geq 0.3$, indicates that regional group development explains more than 60% of the variation in CP.

Taken together, these empirical results confirm **H1**, indicating that regional group development significantly promotes CP.

3.4.2 VERIFICATION OF ASSUMPTION 2

Based on embeddedness theory, regional group development affects CP through a triple embeddedness mechanism combined with economies of scale. This mechanism operates through three forms of embeddedness.

Organizational embeddedness, centered on the professional manager governance model, improves coordination through the introduction of professional management teams. This approach overcomes the limitations of traditional village governance and enables more efficient resource allocation and industrial collaboration. Professional managers act as key organizational nodes linking government institutions, market actors, and village communities, thereby forming a multiactor collaborative governance network.

Rule embeddedness reduces transaction costs and protects the interests of participants by establishing unified industrial standards, service rules, and benefit distribution mechanisms. Formal institutions, such as contracts and management regulations, work alongside informal norms, including village rules and cultural identity, to stabilize cooperation.

Structural embeddedness reshapes the fragmented development pattern of individual villages through spatial integration, industrial chain extension, and shared public services. These processes foster network-based regional development and generate both economies of scale and economies of scope.

In the empirical analysis, villages are distinguished according to whether they joined the *Daxia Jiang* Consortium before 2023. Specifically, 25 villages had joined the consortium by that year,

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while 38 villages had not yet participated. Accordingly, a binary variable, Z, is set to 1 if a village participates in the regional cluster, and 2 otherwise.

To examine the specific role of the triple embeddedness mechanism, the following decomposition model was constructed:

$$Y = \alpha_0 + \beta_1 Z + \beta_2 OE + \beta_3 RE + \beta_4 SE + \sum_{k=1}^{n} \gamma_k Control + \varepsilon \quad (9)$$

where OE represents the organizational embeddedness index, RE represents the rule embeddedness index, and SE represents the Structural Embeddedness Index. $Control$ denotes the set of control variables, and ε represents the random disturbance term.

Based on the data reported in Table 1, the composite social embeddedness index is calculated as

$$EMB = 0.299 \times OE + 0.353 \times RE + 0.348 \times SE \quad (10)$$

Notably, the relationship between regional group development and CP is not a simple direct causal relationship. Instead, it operates through specific transmission mechanisms. The mediating effect test helps open this "black box" by revealing how regional group development affects CP through embeddedness mechanisms. In addition, the mediation test allows identification of which embeddedness dimension contributes most strongly to the promotion of CP.

This study adopts the classical three-step regression approach. The first step examines the total effect of the independent variable on the dependent variable:

$$Y = c_0 + c \times Z + \varepsilon_1 \quad (11)$$

The second step tests the effect of the independent variable on the mediating variable:

$$EMB = a_0 + a \times Z + \varepsilon_2 \quad (12)$$

The third step includes both the independent variable and the mediating variable in the regression model.

$$Y = b_0 + c' \times Z + b \times EMB + \varepsilon_3 \quad (13)$$

Tab. 7 – Three-step regression results (1). Source: own research

Steps for Reversion	*t* Value	*p*-Value	R^2	Adjust R^2
Step 1	14.271	0	0.469	0.463
Step 2	18.341	0	0.565	0.56
Step 3	1.719	0.088	0.672	0.665

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	16.978	0

Tab. 8 – Three-step regression results (2). Source: own research

Steps for Reversion	Dependent Variable	Independent Variable	Coefficient Estimate	Standard Error
Step 1	*CF*	*PZT*	0.685	0.048
Step 2	*EMB*	*PZT*	0.752	0.041
Step 3	*CF*	*PZT*	0.098	0.057
	CF	*EMB*	0.781	0.046

Tab. 9 – Mediating effect results. Source: own research

Effect Type	Effect Size	Standard Error	Lower Bound of 95% Confidence Interval	Upper Limit of 95% Confidence Interval	Percentage (%)
Total Effect (a)	0.685	0.048	0.59	0.78	100
Direct effect (c')	0.098	0.057	−0.014	0.21	14.3
Mediating Effect ($a*b$)	0.587	0.042	0.505	0.669	85.7

In the first step, the total effect of the independent variable Z on the dependent variable Y is statistically significant (c = 0.685, p < 0.001), satisfying the precondition for mediation analysis.

In the second step, the independent variable, Z, has a significant effect on the mediating variable, EMB ($a = 0.752$, $p < 0.001$), indicating that regional group development significantly influences the level of social embeddedness.

In the third step, when both Z and EMB are included in the regression model, EMB has a significant effect on the dependent variable, Y ($\beta = 0.781, p < 0.001$). Similarly, the direct effect of Z on Y becomes statistically insignificant ($c' = 0.098$, $p = 0.088 > 0.05$).

The estimated mediating effect equals: $a \times B = 0.587$. This mediating effect accounts for 85.7% of the total effect, whereas the direct effect represents only 14.3% of the total effect and is not statistically significant.

These results indicate that the embeddedness mechanism plays a fully mediating role in the relationship between regional group development and CP. After controlling for the embeddedness mechanism, the direct effect of regional group development on CP becomes insignificant ($p = 0.088 > 0.05$), while the mediating effect explains 85.7% of the total effect.

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This finding supports the research hypothesis that the regional group model promotes the realization of CP by strengthening organizational embeddedness, rule embeddedness, and structural embeddedness. These three mechanisms operate jointly. Among them, organizational embeddedness has the strongest effect, followed by structural embeddedness, while rule embeddedness plays a relatively smaller but still essential role. As the core component of organizational embeddedness, the professional manager governance model contributes approximately 33% of the overall effect.

3.4.3 ROBUSTNESS TEST OF SOCIAL EMBEDDEDNESS PROMOTING CP

To ensure the reliability of the benchmark regression results, this study conducted robustness tests from three perspectives: replacing the explanatory variables, applying tail-trimming (winsorization) treatment, and controlling for time effects (see Table 10).

Tab. 10 – Robustness test results. Source: own research

Variable	**(1) Replace DV**	**(2) Shrinkage 5%**	**(3) Control Period**
Organization embedding (*OE*)	0.198*	0.112**	0.095**
	(0.108)	(0.046)	(0.044)
Rule embedding (*RE*)	0.090	0.150*	0.041
	(0.199)	(0.083)	(0.086)
Structural embedding (*SE*)	0.436**	0.316***	0.047
	(0.169)	(0.065)	(0.081)
Number of years to join	—	—	0.066***
			(0.015)
Control variable	Yes	Yes	Yes
N	63	55	63
R^2	0.634	0.867	0.905

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively; Standard error in parentheses.

The results of the three robustness tests show that the coefficient of structural embeddedness remains significantly positive ($\beta = 0.436$, $p < 0.05$) after replacing the explanatory variables, while the coefficient of organizational embeddedness reaches marginal significance ($\beta = 0.198$, $p < 0.10$).

After applying tail-trimming (winsorization) treatment, the coefficients for organizational embeddedness ($\beta = 0.112$, $p < 0.05$), rule embeddedness, and structural embeddedness remain significant, and the directions of the coefficients remain consistent with the baseline regression results.

After controlling for time effects, the coefficient for years of participation in the consortium is significantly positive ($\beta = 0.066$, $p < 0.01$), indicating that the coprosperity effect of social embeddedness strengthens over time. In addition, the coefficient of organizational embeddedness remains significantly positive ($\beta = 0.095$, $p < 0.05$), further confirming its independent contribution to the promotion of CP.

Notably, organizational embeddedness reaches the 5% significance level in both the winsorization test and the time-effect control test, and remains marginally significant at the

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10% level in the variable substitution test. These results indicate that organizational embeddedness plays a robust positive role in promoting CP.

Combined with the persistent significance of structural embeddedness across multiple tests, the results suggest that three-dimensional embeddedness exerts an independent driving effect on CP. Among the three dimensions, the structural embeddedness effect is the strongest, followed by organizational embeddedness, while rule embeddedness, although relatively weaker, remains an essential component of the mechanism.

Overall, the signs and significance levels of the core explanatory variables remain stable across robustness tests, indicating that the benchmark regression results are highly robust.

3.4.4 HETEROGENEITY OF SOCIAL EMBEDDEDNESS AFFECTING CP

To examine whether the effects of social embeddedness differ across village types, heterogeneity analysis was conducted based on two dimensions: economic foundation and geographical location.

To group by economic base, the sample was divided into low-income (31) and high-income (32) villages based on the median per capita disposable income of 28,500 yuan. Separate regressions were then conducted to test the effect of social embeddedness on CP for each group. The results are reported in Table 11.

Tab. 11 – Analysis of heterogeneity: Grouping by economic base. Source: own research

Grouping	**N**	***EMB* Coefficient**	**Standard Error**	***R²***
Low-income villages	31	0.538	(0.283)	0.196
High-income villages	32	0.387***	(0.125)	0.736

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively; Standard error in parentheses.

The results indicate that the promoting effect of social embeddedness on CP is significant in both low-income and high-income villages. However, the embeddedness coefficient for low-income villages ($\beta = 0.538$, $p < 0.05$) is higher than that for high-income villages ($\beta = 0.387$, $p < 0.01$), suggesting that social embeddedness has a stronger marginal effect in villages with weaker economic foundations. This finding reflects the inclusive growth characteristics of the regional group development model.

Several mechanisms may explain this pattern. First, the law of diminishing marginal returns. High-income villages already possess relatively strong development foundations and established market connections, so the incremental benefits generated by additional social embeddedness are comparatively limited. In contrast, low-income villages often begin from a relatively isolated development position; therefore, the marginal gains from organizational coordination, institutional rules, and network integration introduced by regional group development are more substantial.

Second, the “shortcoming-compensation” effect. The social embeddedness mechanism can effectively compensate for structural weaknesses in low-income villages, particularly in organizational capacity, institutional governance, and information access. By integrating these villages into broader regional development networks, embeddedness mechanisms help unlock previously constrained development potential.

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Third, the explanatory power of the model differs between the two groups. The coefficient of determination for high-income villages ($R^2 = 0.721$) is higher than that for low-income villages ($R^2 = 0.584$), indicating that the CP level of high-income villages can be better explained by the model variables. In contrast, the development outcomes of low-income villages appear to be influenced by a wider range of unobserved factors, such as individual capability differences and informal social networks.

When grouping by geographical location, the sample was further divided into two groups based on distance from the county seat, using the median distance of 42 km as the threshold. Villages located within this threshold were classified as "suburban" (30), while those beyond it were classified as "remote" (33). The regression results for these two groups are presented in Table 12.

Tab. 12 – Heterogeneity analysis: Grouping by geographical location. Source: own research

Grouping	N	**EMB Coefficient**	**Standard Error**	R^2
Suburban village	30	0.361***	(0.121)	0.693
Remote village	33	0.519**	(0.207)	0.562

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively; Standard error in parentheses.

The results of geographical location grouping further verify the characteristics of inclusive growth: the social embeddedness coefficient of remote villages ($\beta = 0.519$, $p < 0.05$) was higher than that of suburban villages ($\beta = 0.361$, $p < 0.01$), indicating that the social embeddedness mechanism of regional groups had a stronger driving effect on villages with remote geographical location and weak market accessibility. This finding and the conclusion of the economic basis grouping corroborate each other and jointly support **H3**. Social embedding mechanism effectively shortens the "institutional distance" and "market distance" of remote villages by building cross-village organizational collaboration, rule sharing and network connection, so that they can break through geographical barriers and access regional development networks.

3.5 SOCIAL EMBEDDEDNESS MECHANISM AFFECTING CP

3.5.1 MEDIATING EFFECT OF RURAL REGIONAL COMPETITIVENESS

To further reveal the internal mechanism through which social embeddedness affects CP, this study introduced rural regional competitiveness, composed of the three dimensions of production, life, and ecology, as the mediating variable for mechanism testing.

The analysis followed the classical stepwise regression framework. Specifically, Model (4) tests the total effect, Model (4) estimates path *a*, and Model (6) simultaneously tests path *b* and direct effect *c′*. The empirical results are presented in Table 13.

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Tab. 13 – Stepwise regression mediation effects. Source: own research

Inspection steps	Coefficient	Standard Error	*t*-Value	*p*-Value
Step 1: *EMB* → *CP* (Total effect *c*)	0.473***	0.086	5.47	<0.001
Step 2: *EMB* → *RC* (Path *a*)	0.475***	0.085	5.57	<0.001
Step 3: *EMB* → *CP* (Direct effect *c*')	–0.007	0.011	–0.61	0.542
Step 3: *RC* → *CP* (Path *b*)	1.010***	0.14	7.214	<0.001

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively; Standard error in parentheses.

Tab. 14 – Decomposition and mediation effects. Source: own research

Indicators	Numerical Value
Total effect (*c*)	0.473
Direct effect (*c*')	–0.007
Indirect effect (*a* × *b*)	0.480
Proportion of mediating effect	101.48%
Sobel test z-value	5.555***
Bootstrap 95% CI	[0.278, 0.612]
Type of Mediation	**Full Mediation**

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively; Standard error in parentheses. Bootstrap used 5,000 repeated samples.

The test results support several conclusions. First, path *a* is statistically significant. The effect of social embeddedness on *Sansheng* competitiveness is $a = 0.475$ ($p < 0.001$), indicating a clear transmission path. Second, path b is also significant. The effect of *Sansheng* competitiveness on CP is $b = 1.010$ ($p < 0.001$). Third, after controlling for competitiveness, the direct effect of social embeddedness on CP becomes $c' = -0.007$ (p = 0.542), which is not statistically significant.

Fourth, the indirect effect is a × B = 0.480, which accounts for 101.48% of the total effect. When the sign of the direct effect, c′, is opposite to that of the indirect effect, a × b (i.e., when a masking effect occurs or when the direct effect reflects weak statistical noise), the calculated proportion of the mediation effect ($a \times b / c$) may exceed 100%. In this study, the direct effect, $c' = -0.007$, is statistically insignificant ($p = 0.542$) and very close to zero, suggesting that it reflects random statistical fluctuation rather than a meaningful inhibitory effect.

In this context, the fact that the mediation proportion exceeds 100% does not invalidate the conclusion of complete mediation, a situation widely discussed in the applied mediation analysis literature (MacKinnon et al., 2007; Rucker et al., 2011). and more substantively, the mediator (RC) and the dependent variable (CP) are derived from the same underlying three-dimensional indicator system—production, life, and ecology—under different weighting schemes . This shared measurement foundation is reflected in the high pairwise correlation and the strong path-b coefficient, and partially inflates the observed mediation proportion. Accordingly, we interpret the high mediation ratio as evidence regarding the directionality of the transmission pathway—namely, that the effect of social embeddedness on CP operates almost entirely through the cultivation of regional Sansheng competitiveness, rather than through any parallel non-competitiveness route—rather than as a precise quantification of

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mediation magnitude.Additional tests confirm the robustness of the mediation effect: the Sobel test yields z = 5.555 (p < 0.001), and the Bootstrap 95% confidence interval [0.278, 0.612] excludes zero, both indicating a highly significant mediation effect.

Overall, the results indicate that rural regional Sansheng competitiveness functions as the principal transmission carrier in the 'social embeddedness → CP' pathway, supporting H2 in its directional claim. . This finding indicates that the positive effect of social embeddedness on CP operates almost entirely through the enhancement of regional "Sansheng" competitiveness, rather than through a direct pathway independent of competitiveness.

3.5.2 MEDIATING EFFECT OF *SANSHENG* COMPETITIVENESS IN DIFFERENT DIMENSIONS

To further clarify the internal mechanism through which social embeddedness affects CP, this study separately tests the mediating roles of production competitiveness, life competitiveness, and ecological competitiveness. The results are reported in Table 15.

Tab. 15 – Mediating effect of subdimensions of *Sansheng* competitiveness. Source: own research

Mediating Variable	**Corresponding Dimension**	**Path *a***	**Path *b***	**Indirect Effects**	**Proportion (%)**	**Sobel *z***
Production competitiveness (*PC*)	Efficiency	0.575***	0.681***	0.392	82.93	4.13***
Life competence (*LC*)	Fair	0.422***	0.548***	0.231	48.92	2.88***
Ecological competitiveness (*EC*)	Sustainable	0.330***	0.349***	0.115	24.37	2.43**

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively; Standard error in parentheses. Proportion of indirect effect = Indirect effect / Total effect × 100%.

The results across subdimensions reveal a differentiated transmission structure characterized by "efficiency > fairness > sustainability."

The mediating effect of production competitiveness is the most prominent (indirect effect = 0.392, accounting for 82.93% of the total effect). Social embeddedness significantly improves agricultural production efficiency (a = 0.575), and improvements in production efficiency directly promote CP (b = 0.681). This finding indicates that, at the current stage of development, industrial and productive development remains the primary pathway for achieving CP.

The mediating effect of life competitiveness ranks second (indirect effect = 0.231, accounting for 48.92%). Social embeddedness improves regional livability by enhancing infrastructure accessibility and the provision of public services, thereby translating development gains into improvements in residents' well-being.

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The mediating effect of ecological competitiveness is comparatively smaller (indirect effect = 0.115, accounting for 24.37%). This may reflect the longer transformation cycle of ecological value, as well as the fact that the "Two Mountains" transformation mechanism remains in an exploratory stage.

4 DISCUSSION

Based on the theories of social embeddedness and rural sustainable development, this study constructs a theoretical framework of "social embeddedness → rural regional competitiveness → CP." Using 63 administrative villages in the Daxiajiang Consortium of Chun'an County, Zhejiang Province as the empirical sample, the analysis yields the following conclusions.

First, social embeddedness significantly promotes CP in rural areas (**H1** supported). When the composite index of social embeddedness increases by one unit, CP increases by 0.473 units, and the explanatory power of the model reaches 81.1%. Among the three dimensions, structural embeddedness has the strongest effect ($\beta = 0.316, p < 0.01$), while organizational embeddedness ($\beta = 0.112$, $p < 0.05$) and rule embeddedness ($\beta = 0.150$, $p < 0.10$) also exert significant independent effects. These findings reveal the internal logic of regional group development: cross-village industrial collaboration and resource network construction constitute the primary driving forces, institutional standardization provides essential support, and specialized organizational carriers function as efficiency enhancers.

Second, Sansheng competitiveness plays a fully mediating role in the relationship between social embeddedness and CP (H2 supported). The mediation effect accounts for 101.48% of the total effect (the proportion slightly exceeds 100% because the direct effect is a weak and statistically insignificant negative value, representing normal statistical fluctuation; see MacKinnon et al., 2007). Both Sobel tests and Bootstrap tests confirm the high significance of the mediation effect. We therefore interpret this finding as evidence of pathway directionality—the embeddedness-to-CP transmission operates almost entirely through the cultivation of regional Sansheng competitiveness—rather than as a precise quantification of mediation strength.These results indicate that social embeddedness promotes CP primarily by cultivating and strengthening regional *Sansheng* competitiveness, rather than through a direct effect independent of competitiveness. The subdimension analysis reveals the transmission pattern "efficiency > fairness > sustainability:" production competitiveness accounts for 82.93% of the mediation effect and represents the core pathway at the current stage; life competitiveness accounts for 48.92%, reflecting the livelihood transformation of development achievements; and ecological competitiveness accounts for 24.37%, laying the foundation for long-term sustainable development.

Third, the effects of social embeddedness are stronger in economically weaker and geographically remote villages, reflecting clear characteristics of inclusive growth (**H3** supported). The economic-foundation grouping shows that the social embeddedness coefficient for low-income villages ($\beta = 0.538, p < 0.05$) is higher than that for high-income villages ($\beta =$

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0.387, $p < 0.01$). Similarly, the geographical-location grouping indicates that the coefficient for remote villages ($\beta = 0.519$, $p < 0.05$) exceeds that for suburban villages ($\beta = 0.361$, $p < 0.01$). These heterogeneity results suggest that the embeddedness mechanism exerts a stronger marginal effect in villages with weaker development foundations or limited market accessibility. This finding highlights the advantages of regional group development in compensating for structural shortcomings and narrowing regional disparities, suggesting that such mechanisms should be strengthened in future policy design.

Fourth, the benchmark regression results demonstrate strong robustness. The signs and significance levels of the core explanatory variables remain stable across the robustness tests, including variable substitution, winsorization treatment, and time-effect controls. In addition, the positive coefficient for years of consortium participation indicates that the coprosperity effect of social embeddedness increases over time.

5 CONCLUSION

Through empirical analysis, this study verifies the promoting effect of regional group development on rural CP through mechanisms of social embeddedness and economies of scale, and highlights the key roles of the professional manager system, institutional rule construction, and industrial collaboration. However, several limitations remain, which also suggest directions for future research. By constructing an integrated analytical framework of "social embeddedness → SC → CP," this study identifies the complete transmission chain of regional group development: from the construction of social relationships, to the generation of systemic development capabilities, and ultimately to the realization of CP. The empirical results show that the coprosperity effect of social embeddedness is transmitted almost entirely through regional "Sansheng" competitiveness, with production competitiveness serving as the dominant pathway at the current stage of development. Future research can extend this work in several directions. First, because the analysis relies on cross-sectional data, the strength of causal inference remains limited. Longitudinal follow-up surveys could be conducted to capture the dynamic accumulation and potential threshold effects of social embeddedness over time. Second, the external validity of a single-case study is inherently constrained. Future studies could conduct cross-regional comparative analyses to identify the most effective pathways for social embeddedness and competitiveness formation under different development conditions. Third, the interactions among the embeddedness dimensions and their internal coupling mechanisms warrant further investigation. Understanding how organizational, rule, and structural embeddedness interact may provide deeper insight into the institutional dynamics of regional development. Fourth, the enabling role of digital technology in the embeddedness mechanism deserves closer examination. For example, digital platforms may reshape rural social networks and improve the efficiency of resource matching and information circulation.

Addressing these questions will require long-term, multidisciplinary collaboration, which can further deepen the theoretical and empirical understanding of regional group development and rural CP.

https://doi.org/10.7441/joc.2026.02.11

Reference:

1. Albareda, L., & Sison, A. J. G. (2020). Commons Organizing: Embedding Common Good and Institutions for Collective action. Insights from Ethics and Economics. *Journal of Business Ethics*，*166*(4), 727-743. https://doi.org/10.1007/s10551-020-04580-8.
2. Balkyte, A., & Tvaronaviciene, M. (2010). Perception of Competitiveness in the Context of Sustainable Development: Facets of "Sustainable Competitiveness". *Journal of Business Economics and Management, 11*(2), 341–365.

   https://doi.org/10.3846/jbem.2010.17.
3. Barkley, D. L., & Henry, M. S. (1997). Rural Industrial Development: To Cluster or not to Cluster? *Review of Agricultural Economics,19*(2), 308-325.

   https://doi.org/10.2307/1349744
4. Burt, R. S. (1992). *Structural Holes: The Social Structure of Competition.* Cambridge, MA:Harvard University Press.
5. Commission, E. (2011). Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth. *Revija Za Socijalnu Politiku, 18*(1), 119-124.
6. Gálvez-Nogales, E. (2010). *Agro-based Clusters in Developing Countries: Staying Competitive in a Globalized Economy* (Occasional Papers No.25). Rome, Italy: Food and Agriculture Organization of the United Nations (FAO).
7. Gordon, I. R., & McCann, P. (2000). Industrial Clusters: Complexes, Agglomeration and/or Social Networks? *Urban Studies (Routledge)*. 37(3), 513–532.

   https://doi.org/10.1080/0042098002096.
8. Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *The American Journal of Sociology, 91*(3), 481–510.

   https://doi.org/10.1086/228311.
9. Gong, H., & Hassink, R. (2019). Co-evolution in Contemporary Economic Geography: Towards a Theoretical Framework. *Regional Studies, 53*(9), 1344–1355. https://doi.org/10.1080/00343404.2018.1494824.
10. Gu, H., Zhang, T.C., Lu, C., & Song, X. (2021). Assessing Trust and Risk Perceptions in the Sharing Economy: An Empirical Study. *Journal of Management Studies, 58*(4), 1002–1032. https://doi.org/10.1111/joms.12678.
11. Guo, D., Jiang, K., Xu, C., & Yang, X. (2022). Industrial Clustering, Income and Inequality in Rural China. *World Development, 154*, 105878.

    https://doi.org/10.1016/j.worlddev.2022.105878.
12. Gusmanov, R., Stovba, E., Kuznetsova, A., Gusmanov, I., Taipov, T., Muhametshina, G., & Akhmetova, L. (2022). Rural AreaSustainable Development Strategies on the Basis of a Cluster Approach. *Regional Science Policy & Practice, 14*(4), 778–796. https://doi.org/10.1111/rsp3.12270.
13. Jackson, J., & Murphy, P. (2002). Tourism Destinations as Clusters: Analytical Experiences from the New World. *Tourism and Hospitality Research, 4*(1), 36–52. https://doi.org/10.1177/146735840200400104.

https://doi.org/10.7441/joc.2026.02.11

14. Jackson, J., & Murphy, P. (2006). Clusters in Regional Tourism: An Australian Case. *Annals of Tourism Research, 33*(4), 1018–1035.

https://doi.org/10.1016/j.annals.2006.04.005

15. Kaup, B. Z. (2015). Markets, Nature, and Society: Embedding Economic & Environmental Sociology. *Sociological Theory, 33*(3), 280–296.

https://doi.org/10.1177/0735275115599186.

16. Laing, C., & Lewis, A. (2017). Exploring Clustering as a Destination Development Strategy for Rural Communities: The Case of La Brea, *Trinidad. Journal of Destination Marketing & Management, 6*(3), 184–195.

https://doi.org/10.1016/j.jdmm.2016.03.006

17. Lee, A. H. J., Wall, G., & Kovacs, J. F. (2015). Creative Food Clusters and Rural Development Through Place Branding: Culinary Tourism Initiatives in Stratford and Muskoka, Ontario, Canada. *Journal of Rural Studies, 39*, 133–144. https://doi.org/10.1016/j.jrurstud.2015.05.001 .

18. Lever, W. F. (1999). Competitive Cities in Europe. *Urban Studies, 36*(5-6), 1029–1044. https://doi.org/10.1080/0042098993349.

19. Liu, P., Qian, T., Huang, X., & Dong, X. (2021). The Connotation, Realization Path and Measurement Method of Common Prosperity. *Management World, 37*(8), 117–128. https://doi.org/10.19744/j.cnki.11-1235/f.2021.0112.

20. Marshall, A. (2013). *Principles of Economics*, Palgrave Macmillan. (Original work published 1920).

21. Nelson, K., & Nieuwenhuis, R. (2021). Towards a New Consolidated Framework for Analysing Benefit Coverage. *Journal of European Social Policy, 31*(3), 352–362. https://doi.org/10.1177/0958928721996653.

22. Nooteboom, B. (2006). Innovation, Learning and Cluster Dynamics. In B. Asheim, P. Cooke, & R. Martin (Eds.), *Clusters and regional development* (pp. 137–163). Routledge.

23. North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge, UK: Cambridge University Press.

24. Ostrom, E. (1990). *Governing the ommons: The volution of nstitutions for ollective action*. Cambridge, UK: Cambridge University Press.

25. Polanyi, K. (1944). *The reat ransformation: The Political and Economic Origins of Our Time.* Farrar & Rinehart.

26. Porter, M. E. (1998). Clusters and The new Economics of Competition. *Harvard Business Review, 76*(6), 77–90.

27. Rey, S., Endriss, U., & Haan, R. D. (2020). Designing Participatory Budgeting Mechanisms Grounded in Judgment Aggregation. In *Proceedings of the Seventeenth International Conference on Principles of Knowledge Representation and Reasoning (KR 2020)*(Vol. 2, pp. 691–701). International Joint Conference on Artificial Intelligence (IJCAI). https://doi.org/10.24963/kr.2020/71.

28. Su, H. (2005). *Evaluation and Comparative Study of Regional Agricultural Competitiveness in China*. [Unpublished doctoral dissertation]. Southwest Agricultural University.

29. Su, T., Tao, Y., & Wang, J. (2024). FinTech Adoption and the Clustered Development of Rural E-commerce: Evidence from Taobao Village. *Pacific-basin Finance Journal*, 85, 102315.

https://doi.org/10.1016/j.pacfin.2024.102315.

30. Velez-Ospina, J., Siepel, J., Hill, I., & Rowe, F. (2022). Mapping and Examining the Determinants of England's Rural Creative Microclusters (NICRE Research Report No. 7). National Innovation Centre for Rural Enterprise.

https://www.nicre.co.uk/research/understanding-england-s-rural-creative-microclusters/.

31. Velez-Ospina, J. A., Siepel, J., Hill, I., & Rowe, F. (2023). Determinants of Rural Creative Microclustering: Evidence from Web-scraped Data for England. *Papers in Regional Science, 102*(5), 903–944. https://doi.org/10.1111/pirs.12754.

32. Wang, J., & Wang, L. (2009). Design of the Evaluation Index System for Rural Regional Competitiveness and Empirical Analysis. *Journal of University of Electronic Science and Technology of China (social Science Edition), 11*(03), 9–14.

https://doi.org/10.3969/j.issn.1008-8105.2009.03.003.

33. Wardhana, D., Ihle, R., & Heijman, W. (2017). Agro-clusters and Rural Poverty: A Spatial Perspective for West Java. *Bulletin of Indonesian Economic Studies, 53*(2), 161–186. https://doi.org/10.1080/00074918.2017.1298722.

34. Whitelock, V. G. (2019). Multidimensional Environmental Social Governance Sustainability Framework: Integration, Using a Purchasing, Operations, and Supply Chain Management Context. *Sustainable Development, 27*(5), 923–931.

https://doi.org/10.1002/sd.1951.

35. Xu, W., Zhou, S., & Lei, H. (2025). Agro-industrial Clusters, Spatial Effects and Agricultural Total Factor Productivity: An Empirical Analysis Based on County-level Panel Data from China. *International Review of Economics & Finance, 102*, 104395. https://doi.org/10.1016/j.iref.2025.104395.

36. Yang, L., & Yang, X. (2019). An Analysis of the Policy Implementation of Inclusive Preschool Education: From the Perspective of Embeddability Theory. *Journal of Teacher Education,6*(5), 90–95. https://doi.org/10.13718/j.cnki.jsjy.2019.05.012.

37. Yang, X., Xu, H., & Ni, S. (2021). The Creative Renewal of a Craft Cluster: the Role of Materiality and Mobility in Cluster Evolution. *Regional Studies, 55*(3), 546–555. https://doi.org/10.1080/00343404.2020.1802417.

38. Zukin, S., & Dimaggio, P. (Eds.). (1990). *Structures of Capital: The Social Organization of the Economy (S. Zukin & P. Dimaggio, Eds.).* New York, NY: Cambridge University Press.

39. Zhang, W. (2024). Network Reciprocity and *I*nequality: The Role of Additional Mixing Links Among Social Groups. *Chaos, Solitons & Fractals, 182*, 114857. https://doi.org/10.1016/j.chaos.2024.114857.

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