Distribution of China's Academic Journals and Paper Output: Correlation Characteristics with Publication Regions Based on CNKI Platform Data

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Abstract

[Objective] Regional closure of academic journals is detrimental to their sustainable development. Investigating the regional coverage of academic journals and the characteristics of inter-regional paper publication associations facilitates the high-quality construction of academic journals and their benign interaction with academic output. [Methods] This study employs Moran's I to analyze the spatial pattern of academic journals in China, utilizes the Theil index and econometric methods to examine regional and disciplinary differences in core paper output and publication volumes in 2021, applies social network analysis to investigate association characteristics between core journal paper output provinces and publication provinces in China, and uses geographical detectors to analyze factors influencing regional associations and non-local manuscript sources. [Results] The distribution of academic journals in China is unbalanced, with a few provinces possessing the vast majority of journals and exhibiting overall spatial negative correlation. Shanxi and Hebei are local lowlands, while Guangdong is a local highland. Core paper output and publication demonstrate a certain polycentric pattern, with the latter being more unbalanced. Overall, Central and Northeast China are relatively balanced, while internal differences are greatest in North China. At the disciplinary level, regional journal imbalance is most pronounced in medical and industrial technology categories.

Core paper output-publication association relationships are concentrated in a few provinces. The two "bidirectional spillover blocks" show obvious internal provincial clustering characteristics, while provinces in the "broker block" have adequate academic output capacity but need to strengthen their own journal construction. Journal internal attributes and research investment are the dominant factors influencing regional academic journal development. Provinces

with greater academic output tend to have more prosperous academic journal development but are prone to regional bias. There is synergistic interaction among influencing factors: the more university researchers, economic support, and cooperating institutions within a region, the more conducive it is to forming a favorable academic ecological environment, thereby promoting academic exchange and high-quality construction of academic journals. [Conclusion] The regional imbalance in the development level of academic journals in China is more severe than that of academic output. Strengthening talent cultivation, increasing research investment, and appropriately raising publication frequency are conducive to regional academic journal development and promoting benign academic interaction.

Full Text

The Distribution of Chinese Academic Journals and Regional Correlation Characteristics Between Paper Output and Publication: An Analysis Based on CNKI Platform Data

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Abstract:
[**Purpose**] Regional closure of academic journals undermines sustainable journal development. Investigating the regional coverage of academic journals and the characteristics of inter-regional publication linkages can facilitate high-quality journal construction and foster positive interaction with academic output. [**Methods**] This study employs Moran's I to analyze the spatial patterns of Chinese academic journals, uses the Theil index and econometric methods to examine regional and disciplinary disparities in core paper output and publication volumes for 2021, applies social network analysis to investigate linkage characteristics between paper-producing provinces and publication provinces for core journals, and utilizes geographic detectors to identify factors influencing regional associations and non-local manuscript volumes. [**Results**] (1) China's academic journal distribution is highly unbalanced, with a small number of provinces hosting the vast majority of journals and exhibiting overall spatial negative correlation. Shanxi and Hebei represent local depressions, while

Guangdong constitutes a local highland. Core paper output and publication show a polycentric pattern, with the latter being more unbalanced. Central and Northeast China are relatively balanced overall, while internal disparities are most pronounced in North China. At the disciplinary level, regional imbalances are particularly severe in medical and industrial technology journals. (2) Output-publication linkages concentrate in a few provinces. Two "bidirectional spillover blocs" show distinct internal clustering characteristics, while provinces in the "broker bloc" possess adequate academic output capacity but require strengthened journal development. (3) Journal internal attributes and research investment are the dominant factors influencing regional academic journal development. Provinces with greater academic output tend to have more prosperous journal development but are prone to regional bias. Interaction effects exist among factors: more university researchers, economic support, and cooperative institutions within a region foster a favorable academic ecosystem, thereby promoting academic exchange and high-quality journal construction. [**Conclusions**] Regional imbalances in Chinese academic journal development are more severe than those in academic output. Strengthening talent cultivation, increasing research investment, and appropriately raising publication frequency can facilitate regional journal development and promote healthy academic interaction.

Keywords: academic journals; papers; region; social network analysis; geographic detector

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Academic journals serve as crucial platforms for academic exchange and important drivers of theoretical innovation and scientific-technological advancement. The 14th Five-Year Plan identifies "building a national high-end exchange platform for research papers and scientific-technological information" as a key initiative for constructing major scientific and technological innovation platforms. The *Opinions on Promoting the Prosperous Development of Academic Journals* issued in May 2021 emphasizes "cultivating young authors and expanding institutional and regional coverage of authors." Existing scholarship has examined the spatial distribution characteristics of Chinese academic journals from perspectives including social sciences, disciplinary levels, Chinese core journals, and CSSCI source journals, revealing regional imbalances in journal development structure and layout primarily attributable to research environments and economic development levels. The *Blue Book on the Development of Chinese Scientific and Technological Journals (2021)* shows that as of end-2020, the top five provincial-level regions in terms of scientific journal publication numbers accounted for over half (53.47%) of the national total, led by Beijing (1,629 titles, 32.82%), Shanghai (355, 7.15%), Jiangsu (254, 5.12%), and Hubei and Sichuan (208 each, 4.19%). Numerous mid- and lower-tier journals suffer from weak development, "small" journals lack vitality, and overall academic journal competitiveness remains weak. Against this backdrop, investigating regional journal coverage and inter-regional publication linkage characteristics can contribute to

high-quality journal development and inform macro-level research management decisions.

Existing research on journal linkages has primarily focused on knowledge dissemination and author collaboration networks, lacking comprehensive analysis of inter-regional interactions between academic paper output and publication. Zhang Liju's study of library and information science core journals found no significant regional correlation between neighboring regions' core journals and local paper publication volumes. Yang Haochuan et al. used geo-index analysis to identify 固化现象 (solidification phenomena) in physical education CSSCI journals, noting that prolonged 固化 could generate psychological resistance in academia and hinder disciplinary development. Qian Rong et al. proposed using local manuscript source rates and author local submission rates to characterize submission regional bias in humanities and social sciences, finding significant regional variation in the association between quality journals and authors across disciplines, manifesting as "closure," "alienation," and "imbalance." These studies demonstrate that journal-author regional interactions affect journal and academic development but focus on single disciplines. Other scholars have examined regional bias in paper publication, academic production, scientific collaboration, and talent mobility, with Zhang Zhenwei noting that localized concentration cannot support world-class scientific power construction, while distributed polycentric patterns represent an inevitable trend.

Given limited research on overall academic journal distribution and inter-regional manuscript source linkages, this paper analyzes the association between journal-hosting regions and paper-producing regions to explore regional layout and linkage characteristics of Chinese academic journals and their influencing factors, aiming to promote balanced development and positive interaction between leading and lagging regions and provide references for high-quality journal development.

Innovations: (1) Conceptually, this study examines the relationship between journal-hosting and paper-producing regions, quantitatively revealing publication regional bias and comparing regional imbalances between output and publication. (2) Data-wise, it employs large-sample data covering all disciplinary categories for greater comprehensiveness. (3) Methodologically, it uses geographic detectors to analyze whether synergistic effects between factor pairs enhance explanatory power.

1.1 Research Data

Considering data comprehensiveness and availability, this study obtained basic information on academic journals from 31 provincial-level regions in mainland China (excluding Hong Kong, Macao, and Taiwan) from CNKI, China's primary academic paper database. The large-sample dataset includes journal titles, publication cycles, publication locations, founding years, impact factors (2021), and indexing status, yielding 6,030 journal metadata records after screening. Meta-

data for papers published in 2020 Peking University core journals (hereafter "core journals") in 2021 were collected, including journal titles, paper titles, authors, and institutional names. Non-academic papers were excluded based on the absence of "keyword" information, resulting in 400,283 core paper metadata records. First authors' institutional names were batch-imported into the Map Location tool (https://maplocation.sjfkai.com/) to obtain coordinates, which were then overlaid in ArcGIS to identify core paper-producing provinces. A publication-output quantity association matrix was established by linking paper-producing provinces with publication provinces (journal locations) using journal titles as the key.

Influencing factors included GDP, public science and technology expenditures, number of CAS research institutes, number of universities, university R&D personnel, total R&D personnel, number of R&D institutions in industrial enterprises above designated size, and number of publishing/printing enterprises, sourced from the 2021 *China Statistical Yearbook* and *China Science and Technology Statistical Yearbook*.

1.2 Research Methods

1) **Spatial Autocorrelation**: Global Moran's I measures overall regional spatial autocorrelation, while local Moran's I reflects spatial correlation between a location and its neighbors. Moran's I > 0 indicates positive spatial correlation (higher values = stronger correlation); Moran's I < 0 indicates negative spatial correlation (lower values = greater spatial disparity); Moran's I 0 indicates random spatial distribution.

2) **Theil Index**: This index measures contributions of within-region (Tw) and between-region (Tb) disparities to total disparity (T). With n = 31 provinces and K = 7 geographic divisions (following established regionalization schemes), where nk represents provinces in division k, and yki, yk, and y represent provincial values, divisional totals, and national totals respectively, total disparity is expressed as: T = Tw + Tb.

3) **Social Network Analysis (SNA)**: A two-dimensional output-publication quantity matrix was constructed and dichotomized at the median threshold (excluding zero values), where values > threshold = 1 (linkage exists) and values < threshold = 0 (no linkage). Provinces serve as nodes and linkages as edges, analyzed using Ucinet software. Individual network characteristics include degree centrality (in-degree/out-degree), betweenness centrality, closeness centrality, and eigenvector centrality. Overall network characteristics include connectivity, network efficiency, network hierarchy, and near-upper bound. The CONCOR module reveals internal structures and spillover pathways, identifying each bloc's role in the spatial linkage network.

4) **Geographic Detector**: This method requires minimal assumptions and overcomes limitations of traditional statistics in handling categorical vari-

ables. Factor contribution q-values range [0,1], with values approaching 1 indicating stronger influence. Interaction detection assesses whether variable pairs enhance or weaken explanatory power. Independent variables should be categorical; continuous variables require classification using methods like the natural breaks (Jenks) approach, which minimizes within-class variance and maximizes between-class variance for optimal data differentiation.

2.1 Journal Quantities

Figure 1 [Figure 1: see original paper] shows total academic journals and Peking University core journals by province. The top five provinces are Beijing, Shanghai, Jiangsu, Hubei, and Sichuan, accounting for 49.3% and 58.9% of national totals respectively. Low-value regions are primarily western provinces. Core journal proportion leaders are Beijing (0.42), Chongqing (0.40), Shanghai (0.38), Shaanxi (0.38), and Jilin (0.34), with low-value regions including western provinces plus Inner Mongolia, Hebei, Shanxi in North China and Hainan in South China. Beijing dominates absolutely in total journals, core journals, and core journal proportion, with core journals exceeding one-third of the national total. Xinjiang, Jilin, Chongqing, and Shaanxi have fewer journals but higher core journal proportions.

Global Moran's I values under inverse distance weighting are -0.003 (Z=0.575, P=0.565) for total journals, -0.046 (Z=-0.348, P=0.727) for core journals, and 0.170 (Z=2.492, P=0.013) for core journal proportion. Under squared inverse distance weighting, values are -0.200 (Z=-1.265, P=0.206), -0.351 (Z=-2.5621, P=0.0101), and -0.328 (Z=-1.240, P=0.215) respectively. Core journal quantity and proportion show significant negative spatial autocorrelation at the 95% level, with core journal quantity being more spatially sensitive. Local Moran's I LISA cluster maps identify Shanxi and Hebei as local depressions and Guangdong as a local highland in academic journal development.

2.2 Publication Frequency

Chinese academic journals and core journals are predominantly bimonthly (48.3% and 46.4% respectively), followed by monthly (33.64% and 42.73%). Monthly core journals show the highest ratio to total journals (0.41), reaching 0.51 in Chongqing. Other provinces exceeding 0.40 include Beijing (0.48), Shanghai (0.47), Sichuan (0.47), Shaanxi (0.45), Anhui (0.44), Jilin (0.43), Liaoning (0.43), Tianjin (0.42), Hunan (0.41), and Hubei (0.40). Only Beijing and Shaanxi achieve >0.40 in bimonthly core ratios (both 0.41). Average publication frequency ranges from 5.52-10.34 issues/year for all journals and 5-18 issues/year for core journals. Most provinces show higher core journal frequencies than overall journal frequencies, while disadvantaged regions (Tibet, Qinghai, Ningxia, Gansu) show the opposite pattern, indicating that provinces with better journal development achieve higher publication timeliness.

Table 1 presents publication frequency statistics by province. (Note: Values in parentheses represent core journal data.)

2.3 Core Journal Paper Publication and Output Overview

Given their quality and influence, core journals are the focus of analysis. Under squared inverse distance weighting, Moran's I values are -0.361 (Z=-2.887825, P=0.003879) for publication volume and -0.386 (Z=-1.943, P=0.052) for output volume, indicating significant negative spatial correlation sensitive to neighboring provinces. The scatter plot bubble chart (Figure 2 [Figure 2: see original paper], with bubble size representing local manuscript source rate) shows that a few provinces (Beijing, Heilongjiang, Hubei) have publication volumes substantially exceeding output, while most provinces (Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Jiangsu, Inner Mongolia, Ningxia, Qinghai, Shandong, Xinjiang, Yunnan, Zhejiang) show the opposite. Some provinces (Anhui, Tianjin, Shaanxi, Hunan, Shanghai, Chongqing) maintain approximate balance.

The Theil index (Table 2) reveals that total disparity in core paper publication volume (0.4152) exceeds that in output volume (0.1894), indicating greater imbalance in core journal development than in academic output. Between-group disparities are lower than within-group disparities for both metrics, suggesting a polycentric pattern. Within-group disparities in publication exceed those in output across most regions except Northeast and South China. Output disparities are highest in North and South China, lowest in Central and Northeast China. Publication disparities are highest in North, Northwest, and Southwest China, lowest in Central and Northeast China, indicating that Central and Northeast China achieve internal balance in both academic output and journal development, while Northwest China shows large internal journal development gaps and North China exhibits the greatest internal disparities in both dimensions.

Analysis of 2021 core journal frequencies and local manuscript source rates across 10 disciplinary categories (Table 3) shows: (1) Fifteen provinces (including Beijing, Guangdong, Henan, Heilongjiang) cover all disciplines across all seven geographic divisions. Tianjin lacks agricultural science and technology core journals despite having many journals and broad disciplinary coverage. Uncovered disciplines are most common in Social Science I (10 provinces), Medical and Health Technology (10), Information Technology (8), Engineering Technology II (8), Philosophy and Humanities (7), Economics and Management (7), Agricultural Science (5), Engineering Technology I (5), Basic Science (3), and Social Science II (1). Top three disciplines by core journal count are Basic Science (293), Engineering Technology II (281), and Medical and Health Technology (258), aligning with G7 country patterns where medical and industrial technology journals dominate, indicating China's journal disciplinary layout follows national S&T development priorities. However, medical journals, while most numerous overall, cover only two-thirds of provinces. (2) Social Science I shows the highest local manuscript source rate, followed by Basic Science. Correlations between local manuscript source rate and core journal frequency

(0.194, P<0.002), publication quantity (0.095, P<0.5, non-significant), and output quantity (0.249, P<0.001) suggest that higher provincial output or more core journals increase regional bias, while local publication quantity has limited impact, likely due to extreme spatial imbalance. (3) Provinces with high output and publication show significant positive correlations across disciplines, indicating adaptive journal development and healthy internal interaction.

3.1 Network Characteristics

The core paper output-publication province association matrix (Figure 3 [Figure 3: see original paper]) classifies cell values into five categories by 20th, 40th, 60th, and 80th percentiles, with provinces sorted by total output and total publication. Except for Qinghai, Tibet, and Ningxia, all provinces publish most papers locally. Notable strong linkages include Xinjiang→Heilongjiang, Heilongjiang→Xinjiang, Qinghai→Henan, and Inner Mongolia→Anhui. Provincial academic output and journal development are unbalanced, with a few provinces dominating paper linkages. Provinces where publication ranking substantially exceeds output ranking (Jilin, Heilongjiang, Hubei, Anhui, Liaoning, Hainan, Shanxi, Gansu) have relatively weaker academic output, while those where output ranking exceeds publication ranking (Zhejiang, Yunnan, Shandong, Inner Mongolia, Guangxi) have relatively weaker journal development.

Dichotomizing disciplinary and overall matrices at median thresholds (excluding zeros) yields the core paper output-publication network, where in-degree and out-degree represent received and initiated linkages. Network characteristics (Table 4) show most provinces exhibit large in-degree/out-degree imbalances. Beijing, Jiangsu, Shanghai, and Hubei achieve balance across disciplines, while Engineering Technology I shows the greatest imbalance and Basic Science the most balance. In total centrality, Fujian, Guangxi, Guizhou, Inner Mongolia, Jiangxi, Xinjiang, and Yunnan show higher out-degree, while Heilongjiang, Jilin, Liaoning, and Chongqing show higher in-degree. Consistent rankings in betweenness and closeness centrality indicate that provinces with many direct connections also mediate others' interactions, controlling inter-provincial academic exchange (e.g., Beijing, Hubei, Liaoning, Shanghai, Shaanxi, Sichuan). Eigenvector centrality based on linkage counts (EC1) and manuscript volumes (EC2) shows Beijing, Guangdong, Shanghai, Hubei, Liaoning, Shaanxi, and Sichuan rank high in EC1, while EC2's top seven replace Hubei, Shaanxi, and Liaoning with Jiangsu, Zhejiang, and Shandong, suggesting the latter three have high volumes but fewer linked provinces (potential regional bias), while the former three have extensive linkages but relatively lower volumes.

Network connectivity is 1, indicating universal direct/indirect linkages. Network efficiency is 0.4207, suggesting ~58% redundant linkages representing dense manuscript connections. Network hierarchy is 0.1818, indicating strong symmetry. Near-upper bound is 0.9931, approaching 1, showing any two provinces share common neighbors. By discipline, Social Science I shows lowest connectivity (0.8731) due to fewer journals and lower publication frequency. Social

Science II shows lowest hierarchy (0.1269), indicating symmetric linkages, while Engineering Technology II and Medical and Health Technology show highest hierarchy (0.5128), indicating asymmetric linkages dominated by a few provinces. All disciplinary networks show higher efficiency than the overall network, with Social Science I highest (0.6508), indicating sparser linkages. Basic Science and Social Science II exceed the overall near-upper bound, approaching 1, indicating dense linkages, while Engineering Technology II and Medical and Health Technology are lowest (0.8892) due to fewer hosting provinces. Overall, linkages concentrate in certain provinces with symmetric structure but sparse overall density, indicating that a minority of provinces control most academic exchange resources.

3.2 Block Model Results

CONCOR classification of the core paper output-publication network (Figure 5 [Figure 5: see original paper]) yields four blocs (Table 5) with 141 internal and 329 inter-bloc linkages, showing pronounced spillover effects. Bloc 1 receives 0 relations and sends 11, with no internal relations, thus classified as a "net spillover bloc" comprising Ningxia, Qinghai, and Tibet. Bloc 2 sends 145 and receives 70 external relations, with low internal relations (11.6% actual vs. 36.7% expected), exhibiting mediating functions and classified as a "broker bloc" distributed across 12 provinces in Northwest, North, East, and Southwest China. Bloc 4 receives the most external relations (165), with actual internal relations exceeding expectations and significant internal/external spillovers. Bloc 3 is similar. Both are classified as "bidirectional spillover blocs" involving Northeast China, Beijing-Tianjin, and parts of the Yangtze River basin, overlapping with high-value areas in Figure 1.

Density and image matrices (Table 7) use overall network density as the threshold. Bloc 4 shows the highest spillover degree, significantly affecting itself, Bloc 2 (broker), and Bloc 3 (bidirectional spillover), representing the most active academic paper dissemination bloc, followed by Bloc 3. Bloc 2 shows significant net spillover to Blocs 3 and 4, indicating adequate output capacity requiring enhanced journal development. Diagonal values of 1 for Blocs 3 and 4 in the image matrix indicate high reflexivity and internal clustering.

4.1 Factors Influencing Network Degree Centrality

Correlations between network degree centrality (in-degree/out-degree) and factors including journal quantity, quality, average publication frequency, economic support, R&D institutions, and publishing industry (Table 8) show that core journal proportion (X3), core paper output (X5), number of 211 universities (X11), and university R&D personnel (X13) significantly affect both in-degree and out-degree. Core journal proportion shows the strongest correlation with in-degree, while university R&D personnel correlates most strongly with out-degree. Science and technology public expenditure (X9) correlates

more strongly with in-degree than GDP (X8), with the opposite pattern for out-degree.

Interaction detection among factors weakly correlated with in-degree (Table 9) reveals that local manuscript source rate (X7) produces the most non-linear enhancements (7 factors), while R&D institutions in industrial enterprises (X15) and publishing/printing enterprises (X16) each show non-linear enhancement with 3 factors, and science and technology public expenditure (X9) with 2 factors.

4.2 Factors Influencing Non-Local Manuscript Volume

Factor detection using non-local manuscript volume as the dependent variable Y (Table 10) shows: (1) High q-values for core journal quantity (X1) and total journal quantity (X2), as prosperous journal development naturally attracts quality non-local manuscripts. (2) High q-value for core paper output (X5), as strong output correlates with higher journal development, creating virtuous cycles that attract non-local manuscripts. (3) High q-values for CAS institute count (X10) and 211 university count (X11), as these institutions possess high-quality disciplinary resources and form prestigious journal clusters with strong appeal, while regular universities show lower q-values due to variable journal quality.

Interaction detection (Table 11) reveals universal interactive enhancement, mostly non-linear: (1) Regarding journal attributes, the output-publication ratio (X6) negatively correlates with Y and other factors, likely due to greater publication capacity imbalances in high-output regions. Average publication frequency (X4) shows many interactions with q-values >0.95 and positive correlation with Y, indicating that higher frequency attracts non-local manuscripts. (2) Regarding external environment, synergies are strong between university R&D personnel (X13) and GDP (X8), university count (X12), total R&D personnel (X14), and industrial R&D institutions (X15). University count (X12) also shows strong synergies with science and technology expenditure (X9) and publishing enterprises (X16). Positive correlations among university R&D personnel, GDP, science and technology expenditure, and publishing enterprises suggest that more researchers, economic support, and cooperative institutions foster favorable academic ecosystems that promote exchange and high-quality journal development.

Comparative analysis shows slight differences between factors influencing network degree centrality and non-local manuscript volume, as the former emphasizes linked province count (regional coverage) over manuscript volume. Core paper output and 211 university count significantly and positively affect both, while local manuscript source rate and publishing enterprises have indirect positive effects. Increasing core journal proportion and university R&D personnel expands regional coverage. The negative correlation of output-publication ratio with both metrics primarily reflects weaker publication capacity in low-output

regions, necessitating measures like talent cultivation, research investment, publishing enterprise support, and shortened publication cycles to promote balanced development.

5 Conclusions and Discussion

Based on large-sample CNKI data, this study analyzes regional coverage of Chinese academic journals and core paper output-publication network characteristics using spatial autocorrelation, Theil index, social network analysis, and geographic detectors, yielding the following conclusions:

(1) **Unbalanced distribution**: Core paper publication and output volumes show significant negative spatial correlation. Shanxi and Hebei are local depressions, Guangdong a local highland. Regional imbalance in core journal development exceeds that in academic output, with a polycentric pattern. Central and Northeast China achieve internal balance, while Northwest China shows large internal journal development gaps and North China exhibits the greatest internal disparities. Disciplinary imbalances are particularly pronounced in medical and industrial technology journals—key national S&T development areas.

(2) **Concentrated linkages**: Ningxia, Qinghai, and Tibet constitute a "net spillover bloc" with lagging journal development. The "broker bloc" comprises 12 provinces across Northwest, North, East, and Southwest China, showing mediating functions with adequate output capacity requiring enhanced journal development. Two "bidirectional spillover blocs" in Northeast China, Beijing-Tianjin, and Yangtze River basin regions exhibit significant internal/external spillovers, high reflexivity, and internal clustering, with a minority of provinces controlling most journal resources.

(3) **Dominant factors**: Journal internal attributes and research investment are key. Core paper output and 211 university count directly and significantly affect both network centrality and non-local manuscript volume. Local manuscript source rate and publishing enterprises have indirect positive effects. Stronger academic output correlates with prosperous journal development but risks regional bias. Increasing core journal proportion and university R&D personnel expands coverage. Synergistic effects among factors show that more researchers, economic support, and cooperative institutions foster favorable academic ecosystems. Core journals have shorter publication cycles than overall journals, and longer cycles hinder impact improvement.

Influenced by historical-cultural accumulation, university disciplinary support, urban functional positioning, and socio-economic development needs, China's research capacity and output show significant regional disparities. While some studies note weakening polarization in journal paper output and more balanced basic research resource allocation, academic journal layout imbalances and regional biases are more pronounced, posing major challenges for healthy academic

interaction. Results show provincial journal quantities follow long-tail distributions with disciplinary imbalances. Journal internal attributes and research investment are dominant factors. To maintain relative balance between leading and lagging regions and avoid "oligopolization," we recommend:

(1) **Macro-level**: Enhance local roles in regional first-class journal construction, optimize publishing environments, and accelerate overall progress. Implement performance incentives, establish region-specific support programs, promote two-way mobility between researchers and publishing staff, and launch "local versions" of excellence initiatives to support journal clustering.

(2) **Meso-level**: Leverage professional societies to share resources and experiences while competing, enhancing academic vitality and creating conditions for regional journal clustering and group development. Encourage East-West co-publishing and cross-regional development.

(3) **Micro-level**: Publishing institutions should address regional layout issues, guard against regional protectionism, adopt national/global perspectives, and support authors in academically weaker regions. Journals in resource-scarce regions should strengthen exchanges with stronger regions, highlight distinctive features, and indirectly stimulate local academic vitality. Appropriately increasing publication timeliness can significantly enhance impact, with monthly cycles being suitable.

This study innovatively uses large-sample, multi-disciplinary data to quantitatively examine journal-hosting and paper-producing region associations, revealing publication regional bias and comparing output-publication imbalances. Geographic detectors identify synergistic effects on non-local manuscript attraction. Limitations include focusing only on Peking University core journals for one year without trend analysis or in-depth disciplinary factor analysis, requiring further data collection for more comprehensive results.

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Note: Figure translations are in progress. See original paper for figures.