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Regional Economic Disparities and Educational Inequality in China: A Problem–Analysis–Solution Framework for Higher Education Resource Allocation

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Abstract. China's rapid growth in the quality of education has given rise to higher education at both the regional and national levels. It analyzes why economic disparity between regions still leads to unequal higher education despite mass participation and policy decisions. Based on both a structural and spatial viewpoint, it relates regional educational inequality with the gap in fiscal capacity, institutional dominance of elite universities, gain by path dependence, labor market selection, and spatial spillover. The results show that an increase in enrollment improves procedural equality but does not produce real equality of education or outcomes. Short-term budget transfers could reduce some quantitative gaps, but they are insufficient to reverse the gap in institutional capacity and educational returns. It considers a policy framework that focuses on measurable, high-quality development, multi-year capacity-building investment, regional coordination to reduce one-way siphoning, outcome-driven support to increase labor market returns in poor areas, and evaluation reform to avoid winner-takes-all dynamics. In general, a reduction of regional educational inequalities is based on linking higher education reform and regional development policies.

Keywords: Regional Economic Disparities, Educational Inequality, Higher Education Resource Allocation

1. Introduction

Higher education has grown rapidly in China in the last two decades, and over 50% of the people are now enrolled in the system. National indicators may have interpreted it as increasing access and the basis of social mobility. However, increasing access does not necessarily mean an all-encompassing country. While the access has improved in provinces, the distribution of resources and quality is not perfect. Exams, universities, and research centers are concentrated in low-tax eastern and western regions, while many central and western provinces lack funding, institutional capacities, and quality despite growing enrollment [1].

This suggests that the main equity problem of modern Chinese higher education is no longer about participation. Procedural equality has been achieved by standardized entrance exams and shared admission, but substantive equality has not been achieved because the quality of schools varies in regions. Students' academic experience and long-term performance depend on the region

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within which institutions are situated. Regional inequality, however, is a structural problem, even in mass higher education [2].

The guiding research question is: Why do regional economic disparities persistently translate into unequal higher education quality in China, even after nationwide expansion and policy intervention?

In this paper, the model of regional educational inequality is presented as an outcome of China's uneven economic environment. Persistent inequality can be driven by interacting mechanisms: fiscal capacity difference, institutional concentration, labor market clustering, and spatial spillovers. These mechanisms mix and form stable divergences that cannot be reproduced by expanding [3].

2. Mechanisms of producing and reproducing regional educational inequality

Regional education inequality is not a simple problem. It comes from the interactions of economics, institutional hierarchy, and spatial dynamics. It describes four mechanisms that jointly explain the regional inequality of higher education: (1) unequal concentration of resources, (2) long-term accumulation and path dependence, (3) sorting and mobility of labour markets, and (4) fiscal redistribution.

2.1. Resource concentration and unequal institutional capacity

Another primary aspect of regional educational inequality is a lack of high-quality institutions and places of learning. Studies have consistently shown that eastern and coastal areas lead higher education development, while central and western areas do not. Economically developing regions benefit from more financial capacity and higher public investment, which provides them with a large percentage of national key universities, "Double First-Class" universities, and research universities. The universities offer faculty recruitment and research funding, laboratory infrastructure, and academic collaboration, and as time goes on, the prestige of institutions and research productivity increase while regional hierarchies become established instead of widening them [2].

In contrast, universities in less developed regions frequently operate under tight budget constraints. Limited fiscal capacity restricts investment in campus facilities, research equipment, faculty development, and postgraduate training. Even when enrollment expands, resource limitations prevent corresponding improvements in quality. Many institutions in disadvantaged regions remain teaching-oriented, with limited capacity for high-level research or doctoral training. The result is a quality gap that is difficult to close because institutional upgrading requires long-term investment and sustained academic accumulation [3].

The unequal distribution of resources also affects educational opportunities. Students from poor regions may formally attend higher education, but may not necessarily reach institutions with strong reputations and labor markets signalling power. High-quality universities tend to be clustered in the region, so the educational paths depend not only on performance but also on location. This spatial setting makes the students unequal even in a formally unifying admissions system [4].

2.2. Structural persistence through long-term accumulation and path dependence

Regional inequity remains because higher education quality depends on long-term development. Universities have long invested in research platforms, faculty teams, laboratories, and continuing academic programs. Smaller economic regions lack budget space and unstable revenue, which limit the ability to invest at a steady pace in higher education. As a consequence, poorer regions are not able to steadily boost institutional capacities over time [4]. Institutional path dependence increases

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this. Universities in rich regions benefit from historical investment, research facilities, alumni, and visibility for national evaluation systems, thus influencing the current performance and future resource allocation decisions. Institutions with large foundations can attract future investment and high-quality talent while poorer regions still maintain low resource trajectories [2].

This persistence can be understood as a cumulative advantage process. Even small initial differences in funding and institutional status can compound over time through research output, rankings, and policy recognition. Once universities in developed regions gain stronger reputations, they become more competitive in attracting grants and faculty, which further strengthens their performance. Peripheral institutions face the opposite dynamic, where limited resources restrict performance improvements and reduce competitiveness for future opportunities [3].

An additional factor that could explain why inequality persists is the timing and sequencing of development. Regions with earlier industrialization and urban growth tend to invest earlier, leaving institutions with better foundations, before they expand out to become more widely established. Once institutions were established and got national recognition, they were more likely to be placed in later policy programmes and funding programmes. Later developed regions entered this competitive environment with fewer foundations and less institutional platforms, thus not only being constrained by current funding, but also by past timing that shaped early institutional patterns.

2.3. Labor market sorting, talent mobility, and opportunity divergence

Labor market mechanisms also contribute to regional educational inequity. High-quality universities in developed areas are more well-connected, have more graduate workers, and have higher signaling value, raising the attractiveness of the students and faculty. This self-reinforcing process involves talent and resources being distributed with high frequency [4].

Student mobility plays a central role in this process. Students from less developed regions frequently seek education in developed regions because of better institutional quality and stronger job prospects. While mobility may improve individual outcomes, it can create long-term human capital outflows from peripheral regions. Graduates who remain in core regions reduce the capacity for local development and institutional upgrading in regions of origin. Over time, this pattern strengthens regional divergence in both education and economic performance [5].

Parties also shift. Undeveloped areas bring higher salaries, good research resources, and stronger academic relationships, which create high-quality faculty and restrict peripheral universities from building stable teams. Even after peripheral universities receive temporary funding, faculty recruitment and retention may not be satisfactory long-term, which suggests that regional inequality is financially and institutionally based [4]. In addition, labor market sorting provides a way to increase inequality through employer behavior and recruitment. Employers often use university reputation as a screening device, especially for highly skilled jobs. University students in the peripheral areas may not have access to competitive recruitment opportunities, even for similar skills. This is the case, and educational outcomes depend not only on learning but also on institutional signaling. Graduation outcome changes with time, which are combined with institutional reputation and demand, boosting the spatial concentration of advantage.

2.4. Limits of fiscal transfers and redistribution policies

Fiscal transfers are intended to alleviate regional disparities in public service. In China, intergovernmental transfers provide financial support for poorer regions and short-term budgetary pressure. In recent work, it has been shown that transfers are not particularly effective in addressing

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structural inequalities of higher education and long-term human capital mobility [6]. One problem is that many transfers are short-term and are partially paid. Higher education quality depends on long-term accumulation instead of long-term injections. Transfers can increase educational costs in the short term, but cannot replace the stable local revenue flows supporting long-term investment in research infrastructure, faculty development, and academic programs [4]. Transfillers also operate under local budget constraints and public service demands. Poor regions are faced with significant budget needs in healthcare, infrastructure, and social security. Thus, transferred resources may be allocated to immediate priorities instead of to long-term university upgrades. Besides, institutional capacities also influence how efficiently funding can be translated into measurable outcomes. Universities in poor regions often convert resources into academic output, and poor institutions may struggle to build long-term improvements from unstable support [3].

Transfers can also create a dependency pattern. When institutions rely heavily on external support without building local fiscal capacity or stable revenue channels, improvements may be difficult to sustain once programs end or priorities shift. In higher education, sustained quality development requires continuous upgrading, not intermittent interventions. This helps explain why some redistributive programs reduce short-term gaps but fail to produce long-run convergence.

Taken together, these mechanisms show that regional educational inequality is produced and reproduced through structural forces. Expansion improves participation but does not remove the economic and spatial conditions that generate persistent divergence in institutional quality and educational opportunity.

3. Solution path

Providing regional educational inequalities needs to go beyond access-based expansion to long-term qualitative convergence. The mechanisms discussed in Section 2 demonstrate that inequality is still due to resource concentration, cumulative advantage, labor market sorting, and short-term redistribution. Hence, the solution must address the "reproduction process" of inequality instead of only the visible result. A practical policy approach should connect specific tools to specific constraints: universities in poor regions need stable capacity-building resources, incentives to retain talent, and institutional mechanisms to translate investment into measurable academic and labor market results. Five strategies will be implemented, measurable, and consistent with Chinese regional development.

3.1. Define and operationalize "high-quality development" as measurable institutional capacity

A shift toward high-quality development requires a clear operational definition of "quality." If policy discourse treats quality as a general goal, it risks becoming symbolic and difficult to implement. A more feasible approach is to define quality through measurable institutional capacity. In practice, at least three dimensions are essential: faculty capacity, research and training platforms, and student development outcomes [7].

Faculty Capacity (more than instructors) A member of research teams, an academic supervisor with experience, professional development systems, and other people are at the core of professional development. Peripheral universities often experience turnover and low recruitment competitiveness. So it will be important to measure if institutions are capable of building stable teams, have supervision capabilities, and could improve teaching quality by trained professional experts. Research and training platforms. Infrastructure and systems that allow universities to learn

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and train advanced students, such as laboratories and data platforms, research funding access, interdisciplinary research centers, and postgraduate program structures. Research capacity (corresponding to institutional competitiveness in national evaluation systems) determines if universities may attract external collaboration and grant opportunities. Otherwise, peripheral universities may not have research platforms and may not reap long-term benefits [4].

Student development outcomes refer to whether students obtain opportunities that translate education into mobility. This includes internship access, career services, employment quality, and whether graduates obtain jobs aligned with their training. In a labor market where institutional reputation acts as a signal, peripheral universities must compensate for weaker signaling power by improving practical training quality and professional pathways. Therefore, high-quality development should measure not only enrollment or graduation rates, but also outcomes such as employment match quality and local labor market integration.

Importantly, high-quality development should be well-suited to higher-quality institutional activities. Deep universities should not be replaced by coastal elite universities. A realistic approach should support region-specific specialization. Some institutions may focus on research conducted from regional industries, others might focus on professional training, teacher education, public service, or health care programs. Differentiation reduces inefficient competition for prestige-based indicators and enables sustained improvement. When evaluation frameworks recognize several development paths, universities in poor regions can better motivate themselves to build positive assets that fit the local economy and social needs [8].

This strategy directly targets the mechanism of resource concentration by shifting attention from "how many universities exist" to "what capacity universities possess." It also targets persistence by emphasizing capacity accumulation rather than short-term expansion [1,2].

3.2. Multi-year investment frameworks for capacity building

Section 2 shows that regional inequality persists partly because higher education quality is a cumulative asset. It is built through long-term investment in research infrastructure, faculty development, and academic programs. Therefore, policy must prioritize predictability and continuity rather than one-time interventions. A feasible approach is to establish multi-year investment frameworks that are tied to measurable capacity-building targets [4].

To realize this strategy, investment should be organized around "stock-building" and "flow spending". Stock-building is an asset maintained in an institution and up-to-date. Examples are lab equipment, digital research facilities, long-term faculty contracts, structured postgraduate programs, and stable academic governance. Flow spending is a short-term amount of debt that does not improve long-run capacity. For example, temporary projects with no maintenance budget, short-run campaigns, or fragmented projects ending in no follow-up effort are examples of short-term expenses. If the budget is poor, universities may rely heavily on flow spending since it produces fast outputs but does not make a significant improvement. Multi-year investment policies should focus on stock-building groups, and institutions should submit capacity-building plans at annual milestones. A practical idea is to link funding tranches to progress indicators. An institution may receive staged support when it establishes postgraduate supervision capacity, builds research labs satisfying certain standards, or builds stable research groups. This implies that every university must become research-intensive, but that investments should have measurable gains in institutional capacity rather than only short-term expansions.

This strategy also addresses local government incentives. Local governments in disadvantaged regions may face competing spending needs in healthcare, infrastructure, and social welfare. Higher

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education investment can appear less urgent because returns are long-term and may spill over through migration. Predictable multi-year programs reduce uncertainty and make long-term planning feasible. They also allow institutions to commit to long-term faculty recruitment and program development, which is difficult under unstable funding. In addition, predictable investment reduces the risk that universities shift strategies repeatedly to match changing policy priorities, a pattern that undermines sustained upgrading [6].

Finally, a multi-year design can be designed to strengthen accountability and not weaken the winner-takes-all. Instead of allocating all competitive funding to already strong institutions, capacity-building programs can reserve part of the time for emerging platforms in poor regions. Such programs could evaluate performance trajectories instead of absolute output and target path dependence and persistence by supporting peripheral institutions with escape from low-resource equilibria [3].

3.3. Reduce one-way talent and resource siphoning through structured regional coordination mechanisms

Localism leads to spatial deprivation. Talent, funding, and prestige tend to concentrate in core regions as they offer better research environments, higher salaries, and more labor markets. If policy only promotes peripheral institutions without changing spatial dynamics, a decline of high-performing students and faculty will continue to occur. In practice, there must be mechanisms that generate two-way flows of knowledge and talent and not one-way migration to core regions [5]. A practical approach to this is to create structured inter-university relationships between core and peripheral universities. These relations should not be symbolic, but should be correlated with shared platforms and measurable outputs. For example, joint graduate training programs could allow graduate students in peripheral universities to access high-level coursework, supervision networks, and research without permanent departure. Also, shared research platforms could connect peripheral institutions to national research agendas and external funding channels as they are less isolated from high-level academic networks. Faculty circulation mechanisms are also required. Permanent recruitment is usually difficult for peripheral institutions due to salary gaps, limited research infrastructure, and weak professional networks. Policy can support joint appointments, visiting professor programs, rotating research teams, and cross-region teaching collaborations, and so improve the teaching quality and research output while allowing peripheral institutions to gradually build internal capacity. Circular systems may help develop stable local academic teams for long-term development.

Regional coordination should also extend to research collaboration and funding access. Peripheral institutions often face disadvantages in competitive grant systems because they lack existing platforms and reputational signals. Joint projects with core universities can increase visibility and improve grant competitiveness. However, collaboration should be designed to avoid dependency. Peripheral institutions should gain real capacity through shared training, co-authorship, and infrastructure access rather than serving as minor partners. Therefore, partnership programs should set requirements for capacity transfer, such as training workshops, joint supervision of postgraduate students, and shared data infrastructure development.

This strategy targets labor market sorting and spatial spillover mechanisms. By strengthening institutional linkages and building two-way academic networks, coordination policies reduce the structural barriers that prevent peripheral universities from accumulating academic advantages. This can weaken the self-reinforcing concentration of talent and resources in core regions [4,5].

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3.4. Improve student opportunity and labor market returns through outcome-oriented support systems

Improving regional inequality requires outcomes and not only inputs. Even if investment improves facilities and staffing at peripheral universities, inequality may persist if students in poor regions still have weak labor market signaling and fewer opportunities. Policy should further support outcome-based support that translates education to mobility [4]. One of the important areas is career development. Peripheral institutions may have weaker employer networks and fewer recruitment pipelines. Strengthening career service, internship matching, and employer cooperation can improve graduate outcomes. Internships provide skill development and signaling power that partially compensates for a weak institutional reputation. If students can learn applied skills from internships and project training, labor market outcomes could improve even when institutional prestige differs. Another significant area is university–industry collaboration. Developed regions benefit from dense industrial networks that create demand for specific training and research. Several regions may not have high-value industries, but collaboration can still be achieved by targeted partnerships with regional enterprises, public sector institutions, and emerging industries. For example, applied research projects and cooperative education can achieve employment pathways that retain talent locally. When local employment paths are stronger, economic incentives for permanent outmigration or regional human capital accumulation are reduced. Outcome-based support also matters for subjective well-being. Educational inequalities have been linked to lower well-being, especially in regions with scarce educational resources [9,10]. If the students get less return to education because of structural constraints, social optimism decreases, and relative deprivation increases. Leveraging stronger labor market performance and opportunities can benefit mobility as well as social stability.

This strategy targets the mechanism of labor market sorting by reducing the degree to which institutional location determines career opportunities. By strengthening practical training and employment pathways, peripheral institutions can improve educational returns and reduce the reproduction of inequality through labor market channels.

3.5. Reform evaluation and funding rules to prevent "winner-takes-all" resource concentration

National evaluation and performance-based funding can promote regional hierarchies because the current level of excellence is located in a geographic sense. If competition grants frequently come to already strong institutions, the regional inequalities are still strong even when the disadvantaged regions receive incentives for further improvement. Evaluation and funding should be adapted to support balanced development and provide incentives for improvement. One possible approach is to combine absolute performance metrics and improvement-based evaluation. Absolute metrics such as publication counts, grant income, and rankings favor higher-ranked universities. Improvement-based assessment metrics may be used whether institutions are building capacity over time, such as increasing postgraduate supervision ability, better research facilities, or improving graduate employment performance. With improvements trajectory, evaluation can recognize progress in disadvantaged regions and provide financial incentives to continue upgrading. Funding can also be allocated to reduce winners-take-all dynamics. Half of the research and development funding can be allocated for the emerging platforms in disadvantaged areas, with accountability for progress. It removes competition but allows one to avoid being permanently disadvantaged. Capacity-building funding should prioritise long-term infrastructure and faculty development instead of short-term output targets, and reflect funding rules for long-term accumulation of higher education quality [3].

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Finally, evaluation reform should recognize differentiated institutional missions. If all universities are assessed by identical prestige-based indicators, peripheral institutions will remain disadvantaged regardless of local contributions. A more balanced approach is to evaluate institutions based on mission-consistent outcomes, such as regional service capacity, applied research contributions, and talent cultivation aligned with local development needs [6]. This reduces the structural bias that favors core-region elite institutions and creates a more realistic pathway for convergence.

This strategy directly targets resource concentration and path dependence mechanisms. By adjusting evaluation and funding rules, policy can reduce the structural reinforcement of inequality and support capacity accumulation in disadvantaged regions.

4. Conclusion

China has achieved major progress in expanding access to higher education, yet regional educational inequality remains significant. The central equity challenge has shifted from participation to quality. Elite institutions and high-quality resources remain concentrated in economically developed regions, while many central and western provinces face persistent constraints despite rising enrollment.

Regional educational inequality is a structural outcome embedded in China's uneven economic geography. Unequal resource concentration, long-term accumulation and path dependence, labor market sorting, and spatial spillover dynamics jointly sustain persistent disparities. Fiscal transfers can narrow certain quantitative gaps but rarely change the structural foundations of inequality.

Reducing regional educational inequality requires moving beyond access-based reforms and focusing on long-term qualitative convergence. Policies should emphasize high-quality development, predictable investment mechanisms, regional coordination strategies that reduce siphoning effects, outcome-oriented support for students in disadvantaged regions, and evaluation reforms that promote balanced development. Integrating higher education reform with broader regional development strategies is necessary for promoting more equitable educational outcomes and reducing persistent spatial inequality.

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