Research on Determinants of Inclusiveness of China Rural Infrastructure

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Abstract. Since the founding of the theory of inclusive growth, it has been widely researched worldwide. However, most of the researches are more focused on the macro-level measurement, but lack of systematic research on micro-level implementation and viable path. From a micro view prospective, this article studies Chinese rural infrastructure with its influence factors and defining inclusive infrastructure. The literature review will clarify the influencing factors of inclusive infrastructure, as to lay the assessment and policy decision foundation of rural infrastructure.

1 Introduction

From 2004 to 2020 China government continuously published 17 series of the Nov.1 central document which are all related to agricultural and rural areas. Obviously, the “Three rural issues” (agriculture, rural areas, and farmers) are the most important and urgent problems need to be solved by China. To improve agricultural productivity, economic and living level of the rural population, China already implemented multi preferential policies and measurement for farmers. For example targeted poverty alleviation, new rural area construction, rural revitalization, and other measurements. In connection with rural development in developing countries, OECD proposed countries should set regulatory, multi-department, urban and rural connection, inclusion, and other rural strategic goals[1]. China has kept high-speed development since Reform and Opening-up, due to its economic development, the poverty incidence rate rapidly decreases. However, the gap between urban and rural areas, the income gap between citizens, uneven development between urban and city due to imbalance income distribution was larger than before. These problems have not been solved with China’s economic growth[2]. A path to establishing a development model to improve the equity of society, keep a balance between productivity and social equity is what our rural areas need to explore[3].

2 Definition of Inclusive growth

In the term of the development of human society, economic growth has always been an important issue. Researchers have conducted in-depth research on

poverty[4]. People’s understanding of poverty has gone through three stages: (1) income poverty: poverty is defined by income level; (2) skill poverty: the poor people fall into poverty is that their skill is deprived. Many factors such as low income, insufficient human capital, and weak social security system have led to the loss of income ability and passively fall into poverty. (3) entitlement poverty: Poverty is caused by people's low development ability (education, health, nutrition, etc.), being forbidden to take advantage of new economic opportunities, and social exclusion. Corresponding to this, three concepts of economic growth have been formed: purely emphasizing polarized “trickle-down effect” to “broad-based growth” to “pro-poor growth”. However, in subsequent studies, it was found that economic growth did not completely solve the problem of poverty, and the proportion of poor people did not decline. Because of policies, infrastructure, environment, and other reasons, the result is that the poor are not the people who benefit the most from economic growth[5]. To solve the broader problem of how to eliminate poverty in economic growth and allow more people to benefit from economic growth, ADB is working on “growth-friendly to the poor”. Inclusive growth theory, and defined inclusive growth in its 2007 report “Inclusive Growth: Towards a Prosperous Asia”[6]. The report recommended that Asian countries pay attention to the increasingly unequal economic growth. It also defines inclusive growth, which emphasizes ensuring that the economic opportunities created by growth are available to all-particularly the poor-to the maximum possible extent. In fact, inclusive growth and inclusive development are gradually developed by international organizations such as ADB and WB in the process of Poverty Reduction Strategy (PRS) (Figure 1.).

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Figure 1. Corresponding diagram of economic growth theory and poverty awareness stage

After the inclusive growth theory was formally proposed, scholars and institutions have carried out research on this theory. The concept of inclusive growth has been widely used by major international organizations such as the UN, WB, WEF, ADB, and OECD in policy formulation[7], but there is no consensus has been established. The World Bank also defined inclusive growth. The main idea is reflected in three reports: the “2004 World Development Report: Making Services Work for the Poor People”[8], “2006 World Development Report: Equity and Development”[9] and “2008 Growth Report-Sustainable Growth and The Strategy for Inclusive Development”[10]. These reports determined that inclusive development should be a global goal and theme. Equity and equal opportunities are strategic elements of sustainable growth. Although the rural poor have enjoyed some of the benefits of economic growth, nonpoor gains more economic growth benefits because its productivity is 3-4 times of the rural population. Moreover, this kind of inequality is increasing with the widening of people's economic income gap, so the government should find ways to control inequality. Ali[11] made addition based on the World Bank, describing it as sustainable and equitable growth, not only to create new economic growth opportunities but also to ensure that every group in society has fair access to such opportunities. Every group and individual can participate in the process of economic growth and is not excluded because of their circumstances. The four ultimate outcomes achieved by inclusive growth are: (i) sustainable and equitable growth, (ii) social inclusion, (iii) empowerment, and (iv) security. Achieving inclusive growth involves three key success factors including: (1) Employment and productivity; (2) Development of personal capabilities; (3) Life safety and precise intervention. Biswas[12] believes that the definition of the theory in economics is not completely accurate. In addition to economics, it should also include non-economic outcomes. For example, poverty reduction is a multi-sector. It is necessary to enhance poor people's economic activities. Huang Junjie[13] defines inclusive growth as growth that attaches equal importance to quantity and quality, is sustainable, and has potential. Klasen[14] incorporated inclusive growth and environmentally sustainable development into ADB's “Strategy for 2020” and emphasized that stable economic growth will enable more people to participate in the economic process. Zhao Xuegang[15] summarized the definition of inclusive growth with the method of literature review and summarized it into four aspects,

namely economic development, equal opportunity, fair efficiency, participation, and sharing. Du Zhixiong[16] believes that the concept of inclusive development is based on the evolution of the understanding of poverty, inequality, and growth. Through literature review, he interpreted inclusive growth from three aspects and summarized its core principles: equal opportunity, sharing of the results, realizing coordinated economic and social development in sustainable development. Ultimately, it is to achieve coordinated economic and social development in sustainable development. It is a coordinated economic and social development model that organically unifies the process of economic growth and the results of economic growth. Li Gang[17] put forward a detailed exposition on the foundation of inclusiveness to the theoretical framework and put forward the practical significance of inclusiveness in China. It is thought that the widening income gap and the constraints of the ecological environment are obstacles to China's economic development. The widening of the income gap will indirectly affect economic growth through asset inefficiency and weakening of social stability. The main characteristics of China's economic growth are high investment, scale expansion, high energy consumption and high pollution. Natural resources, production factors and ecological environment also have constraints on economic growth. Therefore, on this basis, the definition of inclusiveness should include participation in sharing and sustainable development. Gao Chuansheng[18] believes that in some occasions, two terms “inclusive growth & inclusive development” are often used interchangeably. Inclusive development, emphasizing development is everyone's responsibility, equal opportunities, and focusing on the overall coordination of development content and benefit sharing of development results. It is a new development concept and a model that is more comprehensive and equal. Promoting inclusive development will help ease international conflicts, narrow development gaps, and solve social problems, thereby promoting comprehensive and coordinated social and economic development and enhancing the sustainability of development. People are not only the key element of economic development, but also the fundamental purpose of economic development. Therefore, development in the modern sense is not only limited to economic aspects but extends to a wider range of social and political content. Through a review of the development of poverty theory, Cai Xinrong[19] defined inclusive growth as the

recognition that the cause of poverty is poverty of opportunity, not poverty of result.

Table 1. The definition of inclusive growth in the main literature

Organizations/ scholar	Dimension				
	Equity	Reduce poverty	Participation	Sustainability	Economic Growth
ADB	√	√			√
OECD	√		√	√	√
WB	√				√
WEF	√		√		√
Ali	√		√	√	√
Biswas	√	√		√	√
Mickeny	√		√	√	√
Cai Xinrong	√	√	√		
Li Gang	√			√	√
Zhao Xuegang	√	√	√	√	√
Huang Junjie	√		√	√	√
Gao Chuansheng	√	√	√	√	√
Total	12	5	8	8	11

To sum up, although there is no clear definition of inclusive growth, the existing literature (Table 1.) defines it as “growth that ensuring that the economic opportunities created by growth are available to all-particularly the poor-to the maximum possible extent” is universally accepted. Based on the above literature analysis, this article defines inclusive growth in three aspects: society equity, economics, and environmental sustainability (Figure 2.).

Figure 2. The dimensions of inclusive growth

3 Definition of Inclusive Rural Infrastructure

It can be observed in the foregoing that many countries in the world have conducted a lot of research and exploration of the related theories, methods, and application practices of inclusive growth. However, most of these studies focus on the inclusive growth of countries, regions, and cities.

Research on inclusive growth in rural areas appears to be relatively lacking. At the same time, infrastructure is an important means of achieving inclusive growth in rural areas, but no scholars have studied in the microscopic field. The relationship between infrastructure and inclusiveness, how does infrastructure promote inclusiveness and the inclusive nature of infrastructure project construction and operation. Therefore, the inclusive theoretical framework of infrastructure is an existing theoretical gap, and further research is needed. Inclusive growth belongs to the macro domain, and the inclusiveness of infrastructure construction belongs to the micro domain. The two are both different and connected[20]. Rjbhandari[21] believes that the realization of a goal must establish a multi-level goal, and must link the local level with the high-level design and policy implementation process, and establish the link between the micro and the macro. Because the high-level implementation process may impact resources. Therefore, research on the inclusiveness of infrastructure and its evaluation can not only achieve its own comprehensive benefits but also have important significance for social inclusive development and sustainable development. Infrastructure construction is the use and integration of certain environmental resources form a system that provides production or life service functions to human society and activities A complete life cycle of infrastructure links includes investment decision-making, construction implementation, operation, maintenance and many other links. In the process of infrastructure implementation, almost all fields of human activities such as society, economy, culture and environment are involved. Whether infrastructure adopts inclusive principles and theories during the entire life cycle, and how to use inclusive principles and theories, has not been systematically studied in previous studies, so

the foundation should be examined from the perspective of the entire life cycle, therefore ,the inclusiveness of facilities is very necessary.

The positive effect of infrastructure on economic growth has been generally confirmed in the academic range[22][23][24]. Agricultural infrastructure is an important factor in eliminating poverty, narrowing the gap between urban and rural areas, promoting economic development, and improving equity[25]. The inclusive rural infrastructure means that a certain rural infrastructure in the whole life cycle process makes each individual, social organization or group equity and share the benefits brought by the development of the infrastructure. It is reflected in the positive economic promotion of infrastructure at the macro-level, the positive promotion of social equity, the impact on the environment, and the inclusiveness of the organization itself at the micro level of construction (Figure 3.).

Figure3. Conceptual map of inclusive rural infrastructure

4 Research methods

The literature review is a commonly used research method. Usually, this method will be used to understand the existing research system of the theory of a particular research topic. A systematic literature research process is

used here to identify the influencing factors of infrastructure inclusiveness. A comprehensive search is carried out by “topic/abstract/keyword”. Databases searched include Scopus, Web of Science, and CNKI. Considering that the term inclusiveness was first proposed by ADB, and in WB, OECD to use, this research also conducts supplementary searches on the databases and official websites of the above institutions. Through this method, 1680 documents according to the search results, the scope was narrowed down to infrastructure, and finally more than 44 documents were obtained for further analysis.

Figure 4. Diagram Detailing the Evidence Gathering Approach

5 Data results

After reviewing the relevant literature, the following table lists a series of determinants affecting the inclusiveness of rural infrastructure in the literature (Table 2.).

Table 2. Determinants in the literature

No.	dimension	Factor	Resources
1	Environmental sustainability	Project environmental management measures	[26][32][31]
2		Resource utilization efficiency	[26]
3		Natural landscape impact	[26][33]
4		Ecological balance	[26][32]
5		Climate changes sensitivity	[26]
6		Conservation and utilization of natural resources	[26][32][34][33]
7		Biodiversity	[29][26]
8		Resist natural disasters	[35][30]
9		Employment effect	[29][30][32]
10		Improving local knowledge and education	[29][26]
11	social equity	Improving living standard and quality	[36][32][46]
12		Promote gender equity	[29]
13		Benefit the disadvantaged	[38]
14		Accessibility	[36]
15		Affordability	[30][32][31][39]
16	Economics	Public participation	[40][41]
17		Convenience of facilities	[30]
18		Project economic benefits	[42]
19		Project cost management	[33]
20		Promote regional economic development	[30][32][31]
21		Regional integration	[31]

22	Coordination with superior planning	[44]
23	Stakeholder satisfaction	[31]
24	Project communication and coordination ability	[44]
25	Completeness and enforcement of the construction	[45]
26	Organizational inclusiveness	system behavior
27		Fair decision
28		Fair distribution
29		Focus on gender equity
	Technical literacy and knowledge sharing	[46]

6 Conclusion

Looking at the content of the literature review, the inclusive infrastructure involves four aspects, namely, economics, social equity, environmental sustainability, and organizational inclusiveness.

In the field of economic development, the development of infrastructure can produce favorable medium and long-term economic results. The main results include (1) private sector financing and stronger public-private investment leverage ratio; (2) deepening the national capital market; (3) strengthening multi-stakeholder participation and multi-sector agenda; (4) expandable and improvement high return on investment. In a favorable governance environment, these favorable economic results will also help promote more inclusive growth.

In terms of social equity, the focus of infrastructure spending (regardless of source) has always been to improve broad national economic outcomes. The purpose of this is to give the country a comparative advantage, promote regional and global specialization, and improve the country's bargaining power to obtain favorable terms of trade. Although the development of infrastructure must be linked to favorable macroeconomic outcomes (competitiveness, expandable, profit). The contribution of these developments to improve social inclusion has become increasingly important. These results are based on incremental changes in the social (society-related) and demographic (population-related) characteristics of the affected population, which are strongly influenced by and related to the development of infrastructure. Rural infrastructure investment can not only promote the development of rural economy but also promote the progress of rural social civilization. For example, the investment and construction of infrastructure projects such as rural education, culture, health care, etc., can fundamentally improve the overall quality of rural laborers, increase labor productivity, and achieve sustainable development in rural areas. The development of infrastructure projects such as road transportation, post and telecommunications is benefits the connection and exchanges between the countryside and the outside society, introduce modern civilization, and promote the transformation of traditional rural concepts. Investment and construction of engineering projects such as energy ecology and resource protection can improve the living standards and living environment of rural residents, improve the lifestyle of farmers, and promote the countryside The construction of social civilization in the region.

In terms of environmental sustainability, vulnerable groups are particularly vulnerable to risks such as climate change, income inequality, unemployment, lack of basic services, or access to health and education opportunities. The development of the project must consider environmental sustainability and resilience. The environmental impacts that infrastructure projects can bring include: (1) climate change sensitivity; (2) Disaster risk reduction; (3) fair use of resources; (4) biodiversity protection and others. Countries with fragile society and high natural disaster risk have the highest disaster risk. Poverty and income are significantly related to the degree of vulnerability to disaster risk, which indicates that the poorest social classes are also the most vulnerable to the consequences of climate change. This shows that they are most able to benefit from the positive results of inclusive infrastructure development. If the development of infrastructure does not consider the factors of climate sustainability, its direct short-term impact may be economically beneficial, but in the medium and long term, indirect and cumulative impacts may damage natural habitats and affect the quality of life and future growth opportunities. Create adverse effects. This includes the development of infrastructure in disaster-prone areas, or the inability of infrastructure development to respond to the following situations. The United Nations Office for Disaster Risk Reduction (Office of Disaster Risk Reduction) estimates that the economic losses caused by disasters such as earthquakes, tsunamis, cyclones, and floods amount to an average of 250 to 300 billion US dollars per year. It was estimated that in the future, losses caused by earthquakes, tsunamis, cyclones and floods in the built environment may reach 314 billion US dollars. Disaster risk management is closely related to climate change sensitivity and requires a series of measures across all fields, from reducing physical infrastructure risks to build individual and institutional capacity. When evaluating the sustainability of infrastructure projects from an environmental perspective, resource intensity, and impact on biodiversity are also key factors that need to be considered. Transparent and fair use of resources can help diverse communities.

In terms of organizational inclusiveness, inclusiveness at the organizational level is reflected in project management capabilities and stakeholder-related activities. Project management needs to achieve the ultimate goals and objectives of the project. Good project management can make this process more economical. The participation of project stakeholders will make the ultimate goal of the project benefit everyone as much as possible.

In summary, the inclusiveness of rural infrastructure is ultimately reflected in the four levels of economy, social equity, environmental sustainability, and organizational inclusiveness. The inclusiveness of rural infrastructure is the manifestation of the inclusive growth theory at the micro-level. In the path of achieving inclusive growth in rural areas, the inclusiveness of rural infrastructure and its influencing factors should be fully examined, which has important practical significance for the realization of inclusive growth

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