A Study on Spatial Spillover Effect of Regional Integration on Information Disclosure of Charitable Organizations: An Analysis Based on Logistic Model

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Abstract: The paper uses the disclosed receiving and dispatching information of Red Cross Societies of various cities during the fight against COVID-19 as a research sample to empirically test the spatial spillover effects of urban agglomeration construction. We find that the higher timeliness and relevance of information disclosure in the Red Cross in urban agglomerations central cities, the higher timeliness and relevance of those in the Red Cross in non-central cities. In addition, the spatial spillover effect of counterpart support can be enhanced by intergovernmental cooperation.

1 INTRODUCTION

During the fight against COVID-19, the Red Cross Societies in various places, as the official donation channel, built a bridge of mutual assistance between donors and recipients, and assumed the major responsibility as an intermediary. However, in fact, due to the lack of information disclosure mechanism and the low level of attention, information problems related to the receipt and use of anti-epidemic funds and materials appeared, posing challenges to the credibility of the Red Cross. In recent years, with the development of the internet and the enhancement of public awareness, the information disclosure of Red Cross Societies has received increasing attention. The government's gradual improvement of the disclosure system has also normalized the information disclosure of the Red Cross.

As the highest spatial organization form of urban development, an urban agglomeration is a combination of several cities that are centrally distributed in regions. Since the early 21st century, urban agglomerations have become a new regional unit for the country to participate in global competition and international division of labor. For 10 consecutive years, China has promoted urban agglomerations to be the main space for promoting the country's new urbanization. By February 18, 2019, the State Council has successively approved 10 major national-level urban agglomerations. The construction of urban agglomerations is centered on central cities, driving non-central cities to carry out regional integrated construction and integrated development under a collaborative mechanism.

This paper manually collects the publicity information of the Red Cross for anti-epidemic funds and materials during the epidemic period (January 26, 2020 - March 31, 2020) in cities and municipalities, and applies text analysis technology to the information disclosed by Red Cross in various places and objectively measures the information quality.

2 THEORETICAL ANALYSIS AND RESEARCH HYPOTHESES

The quality of information disclosure of charitable organizations has received extensive attention. Scholars at home and abroad have conducted extensive research on its influencing factors, but most of them only focus on the inherent characteristics of charitable

organizations (Liu, Wang, 2013; Liu, Zhang, 2013) and have not investigated the cross-regional network relationships of charitable organizations. Through the construction of urban agglomerations based on economies of scale, it can both break through the administrative boundaries of a single city and improve the comprehensive carrying capacity of the urban agglomeration to realize the integrated development of the regional economy (Yan, 2021).

With the progress of transportation facilities, the time distance between cities is greatly reduced, so that the elements between cities can flow freely, and then the optimal state of resource allocation can be achieved (Li, 2018). The rise of urban agglomeration further promotes the rapid improvement of enterprise competitiveness and even the regional economic level through various spillover effects such as agglomeration (Liu, 2021). It can be seen that the spatial correlation effect plays an important role in understanding the geographic distance between different cities in the process of contemporary globalization (Ke, 2010).

The characteristics above require researchers to fully consider the spatial effects of urban agglomeration construction when examining the factors that affect the quality of information disclosure by charitable organizations and adhere to the research idea of combining territorial characteristics and regional linkages in the process of researching information disclosure by charitable organizations, thereby enhancing the robustness of the analysis results. Neoclassical growth theory emphasizes the impact of factor input on economic growth (Solow, 1957). However, based on the defects of the factor input-driven growth model, new growth theory and new economic geography theory began to pay more attention to the impact of industrial agglomeration and its externalities and knowledge spillovers on enterprise growth (Krugman, 1991). Therefore, this paper proposes the following hypothesis:

Hypothesis 1: The higher the information disclosure quality of the Red Cross in the central city, the higher the information disclosure quality of the Red Cross in non-central city charitable organizations in the same urban agglomeration.

At present, urban agglomerations in China have become an extension of local public affairs management (Suo, 2021), and intergovernmental collaboration has expanded the function of urban agglomeration construction. Mumford pointed out that, if economic development wants to do better, it is necessary to establish a regional authority with legal qualifications, planning, and investment power. The local governments in the city group that maintain good communication and coordination actually act as the regional coordinating authority mentioned above. From the perspective of public management, the more cooperation among local governments in urban agglomerations, the more they can learn and exchange public affairs management experience and learn from each other's strengths. Therefore, this paper proposes the following hypothesis:

Hypothesis 2: The more inter-governmental collaboration and interaction, the more significant the spatial spillover effect of the quality of information disclosure of the Red Cross in central cities.

3 EMPIRICAL MODELS AND VARIABLE DEFINITIONS

3.1 Sample Data Sources and Variable Definitions

3.1.1 Explained Variable: The Quality of Information Disclosure by The Red Cross of The Non-Central Cities

We use four measurement methods to evaluate the quality characteristics of information disclosure of anti-epidemic funds and materials by the Red Cross of non-central cities. (1) Timeliness of daily disclosure (Daily_Disclosure_Non-central), it takes 1 for daily disclosure, otherwise 0. (2) Relevance of received donation information (Detailed_Receive_Non-central), it takes 1 if receiving information of donated materials is specific to the date, the names of the donors and the amount of donations, otherwise 0. (3) Relevance of the use of donations (Detailed_Dispatch_Non-central), it takes 1 if usage information of donated materials is specific to the date, the names of the donees and the amount of donations, otherwise 0. (4) Intelligibility of the information (Literal_Interpretation_Non-central), it takes 1 if the title of the disclosure clearly indicates "Fund Raising for Fighting COVID-19 Epidemic Prevention and Control", otherwise 0.

3.1.2 Explanatory Variables: The Quality of Information Disclosure by The Red Cross in The Central Cities.

We use four similar measurement methods to evaluate the quality characteristics of information disclosure of anti-epidemic funds and materials by the Red Cross of the central cities. Refer to the above.

3.1.3 Moderating Variables

The moderating variable is the degree of completeness of urban agglomeration construction. We use the frequency of mentioning urban agglomerations (or central cities) in the government work report of non-central cities to reflect the completeness of urban agglomeration construction. The higher the frequency of mentioning, the higher the local government attaches importance to the construction of urban agglomerations, and the more complete the construction of urban agglomerations.

3.1.4 Control Variables

According to the selection principle of control variables (Bernerth, 2016), combined with the data availability of this project, the control variables in the model include the following three categories. (1) To control the supervision of the competent department, we controlled the experience of the mayor in charge of charity work and government's attention to public welfare information disclosure. (2) To control the inertia of historical information disclosure, we controlled whether charitable organizations released information on the receipt and delivery of donated materials in the previous year and whether charitable organizations published relevant regulations. (3) To control the characteristics of charitable organizations, we controlled the average duration of charitable organizations in central cities of the urban agglomeration at the beginning of the year, the duration of the organization at the beginning of the year, and the number of non-governmental charitable organizations in central and non-central cities of the urban agglomeration at the beginning of the year. (4) We also controlled the city fixed effect and the date fixed effect.

3.2 Model Settings

First, this paper uses model (1) to test whether the construction of urban agglomerations affects the quality of information disclosure by charitable organizations. The explained variable Disclosure_Quality_Non-central and the main explanatory variable Disclosure_Quality_Centralis are determined by four aspects. Controls is a group of control variables. The coefficient α_1 of Disclosure_Quality_Central is supposed to be significantly positive if Hypothesis 1 holds.

$$Disclosure\_Quality\_Non\text{-}central = \alpha_0 + \alpha_1 \times Disclosure\_Quality\_Central \quad (1)$$
$$+ \phi \times Controls + \varepsilon$$

Second, this paper uses model (2) to test whether the completeness of urban agglomeration construction affects the spatial spillover effect. We focus on the regression coefficient β_2 of the cross-term Disclosure_Quality_Central×Intergovernmental_Collaboration. The coefficient β_2 is supposed to be significantly positive if Hypothesis 2 holds.

$$Disclosure\_Quality\_Non\text{-}central = \beta_0 + \beta_1 \times Disclosure\_Quality\_Central$$
$$+ \beta_2 \times Disclosure\_Quality\_Central \times Intergovernmental\_Collaboration$$
$$+ \beta_3 \times Intergovernmental\_Collaboration + \phi \times Controls + \varepsilon$$

$$(2)$$

4 EMPIRICAL RESULTS

4.1 Spatial Spillover Effects of Urban Agglomeration Construction on Information Disclosure by Charitable Organizations

The main regression of this paper takes 10 national-level urban agglomerations as the research objects and examines the impact of the spillover effect of urban agglomeration construction on the quality of information disclosure by charitable organizations. Table 1 shows the impact of the information disclosure of charitable organizations in central cities of the urban agglomeration on the information disclosure of charitable organizations in non-central cities during the anti-epidemic period. On the one hand, it can be seen from the regression results in column (1) that the higher the timeliness of information disclosure of charitable organizations in central cities of the urban agglomeration, the shorter the information disclosure time lag of charitable organizations in non-central cities. On the other hand, from the regression results in columns (2)-(4), it can be seen that the more detailed the disclosure of information on donations received and dispatched by charitable organizations in central cities of the urban agglomeration, the more granular the information disclosed by charitable organizations in non-central cities will be.

Table 1: The impact of information disclosure of charities in central cities on information disclosure of charities in non-central cities (self-drawn).

Dep. Var=	(1) Daily_Disclosure _Non-central	(2) Detailed_Receive _Non-central	(3) Detailed_Dispatch _Non-central	(4) Literal_Interpretation _Non-central
Daily_Disclosure_Central	0.040*			
	(1.902)			
Detailed_Receive_Central		0.005***		
		(3.190)		
Detailed_Dispatch_Central			0.023***	
			(3.343)	
Literal_Interpretation_Central				1.017**
				(2.173)
Control Variables	Yes	Yes	Yes	Yes
Fixed Effects	City, Year	City, Year	City, Year	City, Year
Pair level Obs	15768	15768	15768	15768
Pseudo R^2	0.04	0.04	0.06	0.11

Table 2: The impact of intergovernmental collaboration on the spatial spillover effect of the main regression (self-drawn).

Dep. Var=	(1) Daily_Disclosure _Non-central	(2) Detailed_Receive _Non-central	(3) Detailed_Dispatch _Non-central	(4) Literal_Interpretation _Non-central
Disclosure_Quality_Central	0.038	0.005**	0.027***	1.012*
	(1.593)	(2.062)	(3.243)	(1.864)
Disclosure_Quality_Central *Intergovernmental_ Collaboration	0.093***	0.080***	0.033**	-0.006
	(3.985)	(2.864)	(2.355)	(-0.916)
Intergovernmental_Collaboration	0.002*	0.003**	0.017***	0.005**
	(1.916)	(2.345)	(3.376)	(2.427)
Control Variables	Yes	Yes	Yes	Yes
Fixed Effects	City, Year	City, Year	City, Year	City, Year
Pair level Obs	15768	15768	15768	15768
Pseudo R^2	0.04	0.05	0.06	0.11

4.2 The Impact of Intergovernmental Collaboration on Information Disclosure by Charities

To test Hypothesis 2, this paper examines whether intergovernmental collaboration can strengthen the spatial spillover effects reflected in the main regression. Intergovernmental collaboration is measured by the number of mentions of urban agglomeration (or central city) in non-central city government work reports. From the regression results in Table 2, it can be seen that the intersection of intergovernmental collaboration (Intergovernmental_Collaboration) and information disclosure quality of central cities (Disclosure_Quality_Central) are significant in columns (1)-

(3), indicating that the more frequent intergovernmental collaboration, the information disclosure level of charitable organizations in central cities of urban agglomeration is more likely to affect charitable organizations in non-central cities. However, from the cross item in column (4), it can be seen that the moderating effect of intergovernmental collaboration on "whether there is a text introduction" is not significant. The above empirical findings have played a certain role in supporting Hypothesis 2, which is basically consistent with the conclusions of the existing research (Wen, 2020).

5 CONCLUSION

The empirical conclusions help to strengthen the understanding of the information disclosure patterns of charitable organizations in special periods and further confirm the spatial spillover effect of urban agglomeration construction. From the perspective of charitable organizations, the Red Cross needs to strengthen the awareness of information disclosure and disclose the donation information in detail, so that charities are truly transparent and open to the public, and a positive information disclosure environment is constructed. From the perspective of regional construction, local governments should recognize the importance of cooperation between cities. From the perspective of the public, attention should be paid to the information disclosure of charitable organizations, and public supervision and public evaluation can improve the quality of information disclosure of charitable organizations.

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REFERENCES

Bernerth J B, Aguinis H. A Critical Review and Best-Practice Recommendations for Control Variable Usage[J]. Personnel Psychology, 2016, 69(1):229-283.

Ke S, Feser E. Count on the Growth Pole Strategy for Regional Economic Growth? Spread–Backwash Effects in Greater Central China[J]. Regional Studies, 2010, 44(9): 1131-1147.

Krugman P. Increasing Returns and Economic Geography[J]. Journal of Political Economy，1991, 99(3): 483-499.

Liu Y L, Wang X, Wei Q. The Causes and Consequences of Financial Information Disclosure Quality of Charity Organizations [J]. Accounting Research, 2013(1): 76-83.

Liu Z M, Zhang X J, You Y L. Determining Factors in Online Information Disclosure of NGOs: A Chinese Foundation Case Study on Chinese Public Administration. [J]. China Administration, 2013(11): 46-51.

Li L, Xian G M, Bao Q. Does "bringing in" promote Chinese domestic enterprises "going global"? [J]. Economic Research Journal, 2018, 53(3):142-156.

Liu J, Yao B, Wei W. Rise of Urban Agglomeration and Promotion of Enterprises Competitiveness: Analysis of Transaction Cost [J]. Journal of Business Economics, 2021(7): 67-86.

Solow R M. Technical Change and the Aggregate Production Function[J]. The Review of Economics & Statistics, 1957, 39(3): 554-562.

Suo L M, Li X. Regional Governance: Beyond the Limits of Single Administrative Boundary——A Case Study on Interlocal Collaboration in Air Pollution Control in the Yangtze River Delta [J]. Chinese Public Administration, 2021(2): 92-100.

Wen X M. Institutional Environment and Relationship Network: An Analytical Framework for Understanding Regional Environmental Collaborative Governance [J]. Public Administration and Policy Review, 2020, 9(4): 40-51.

Yan C C, Zhang J J. Measuring the Coordinated Development Level of Cross-regional Urban Agglomerations from the Perspective of Industrial Transformation and Upgrading [J]. Statistics & Decision, 2021(19): 106-110.