



Evaluating the institutional performance of the Pearl River Delta integration policy through intercity cooperation network analysis

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ABSTRACT

Adopting a macroscopic perspective, this study employs intercity cooperation network analysis to assess the institutional performance of the Pearl River Delta's (PRD) integration policy. To assess whether the existing PRD intercity cooperation network is advancing the three objectives of the PRD integration policy in terms of co-operation patterns, actors' involvement, and cooperation fields, this study analyzed news published on the Internet and official government websites. The study concludes that: (1) the Shenzhen-Dongguan-Huizhou sub-region (SDH) and the Zhuhai-Zhongshan-Jiangmen sub-region (ZZJ) are entirely integrated as institutional entities, while Zhaoqing and Yunfu have not been integrated into the Guangzhou-Foshan-Zhaoqing sub-region (GFZ); (2) the PRD integration process remains a government-led administrative process, with market and civil society actors having had little influence on the governance structure; and (3) the primary areas of cooperation involve institutional design and economic development, and secondary functions, such as entertainment, education, and environmental protection, have not been fully undertaken. We also consider that the PRD's institutional spatial structure is a monocentric structure centered on Shenzhen, which is inconsistent with previous studies indicating a functional spatial structure known as a "Polynuclear Urban Region."

1. Introduction

China's marketization and political decentralization have triggered city-regionalism within the Pearl River Delta (PRD), a region that has been significantly affected by PRD integration policy (hereafter PRDIP). Over the past three decades, PRD integration has been guided by a host of integration policies (e.g., regional plans, industrial policies, and regional agendas) and attempts to reshuffle intercity linkages economically, socially, and institutionally. In particular, the promulgation of the "Outline of the Plan for the Reform and Development of the PRD (2008–2020)" (OPRDPRD) indicated that PRD integration had been privileged as the principal national development strategy. The PRDIP is intended to foster coordinated regional development using multiple approaches that include the (re)distribution of urban industry, building large-scale infrastructure projects, and establishing intercity cooperation (Li, Xu, & Yeh, 2014; Xu & Yeh, 2013; Yeh & Xu, 2010). Guided by the PRD Urban System Plan (1991–2010) (*Zhujiang sanjiaozhou chengzhen tixi guihua*), Guangdong's multi-level government has been tasked with shifting the predominantly city-based accumulation regime

to a city-regional scale (Sun & Chan, 2016; Wu & Zhang, 2010; Zhang & Wu, 2004). Consequently, numerous scholars have studied the PRD's performance from both economic and social perspectives (Cai, Ma, Chen, Luan, & Li, 2013; Yeh, Yang, & Wang, 2015; Zhang & Kloosterman, 2016; Zhao, Derudder, & Huang, 2017).

To date, most studies have focused on the socioeconomic landscape of the PRD from a macro perspective. Its polycentric spatial structure in relation to socioeconomic space has been acknowledged, based on the city's connectivity in terms of intra- and inter-firm producer service linkages, as well as the geographic network of firms and passenger traffic flows (Cai et al., 2013; Yeh et al., 2015; Zhang & Kloosterman, 2016; Zhao et al., 2017). The PRD is considered by scholars to be a "Polynuclear Urban Region" in terms of its socioeconomic spatial structure (Zhao et al., 2017).

Extensive case-study research has predominantly analyzed how well the PRDIP has performed. These studies found that, when institutional performance was analyzed according to specific regional (territories-based) cases, which would be expected to accommodate divergent urban politics, the actual performance of PRD institutional

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configurations remained debatable (Li et al., 2014; Xu & Yeh, 2013; Yeh & Xu, 2008). The case-specific approach sheds light on the restructuring of state space under the PRD and contributes to the transfer of state-of-the-art governance models into other local socio-economic environments. However, conventional researchers have not reviewed the actual institutional performance of the PRDIP across the overall city-region from a quantitative perspective. Additionally, the existing literature fails to depict the PRD's institutional spatial structure or to establish a conceptual framework with which to study and interpret the socio-economic and institutional interplays that are needed to illuminate city-regionalism in China.

This study attempts to address this research gap, using network analysis techniques as a new avenue of enquiry, to assess the PRDIP's institutional performance. By investigating cooperation patterns, actors' involvement, and cooperation fields, this article evaluates the degree to which the intercity cooperation network has developed across 14 cities, using a database constructed from news items concerning intercity cooperation. We attempt to characterize the intercity cooperation from a macroscopic perspective, utilizing the PRDIP as an empirical case, and conceptualize the relevant features of China's intercity cooperation to complement theoretical deliberations occurring in developed Western countries. This study contends that a monocentric spatial structure centered on Shenzhen has emerged as the primary feature of PRD institutional integration. This finding is inconsistent with other studies on the functional spatial structure of the PRD, which consider it to be a "Polynuclear Urban Region." Furthermore, this study reveals that investigating solely using a case-specific approach is unlikely to unravel fully the institutional performance of the PRDIP and completely identify key features of intercity cooperation in China. This study is structured as follows. It begins with an overview of the theoretical contours of the city-region's economic, social, and institutional integration. A conceptual framework is then developed that focuses on the intercity cooperation network and is consistent with the background analysis for the three objectives of the PRDIP. Next, the study describes the study area, the data collection processes, and the methods used, and then summarizes the study's results. The concluding section discusses the study's findings, draws conclusions, and reviews policy implications that would facilitate city-regionalism in China.

2. Evaluating city-region integration policy from economic, social, and institutional perspectives

2.1. Economic, social, and institutional integration

The city-region has been described as a core city linked by functional ties to a hinterland that includes economic, housing market, travel-to-work, marketing, and retail catchment factors (Bennett, 1985; Davoudi, 2003; Rodríguez-Pose, 2008; Scott, 2001). Integration policies foreground economic, social, cultural, political, environmental, and technological activities based on the economic, social, and political interplays that occur between the urban core, semi-urban areas, and rural hinterlands (Hall, 2009; Harrison, 2012). Consequently, evaluating city-region integration policy performance has been conducted over multiple dimensions that consider economic, social, and institutional integration (Shen, 2014). Economists demonstrate market relationships between regional goods and production factors (Mattli, 1999) and have developed market integration theory (Robson, 1998), foreign direct investment (FDI) theory, and international trade theory (Bryant & Javalgi, 2016). Political scientists emphasize the political context of integration, interrogating the institutional and political forces through the analytical frameworks of functionalism, neo-functionalism, and intergovernmentalism (Mattli, 1999). In regional studies, the prevailing approach has been termed the "space of flows," which operates as a dominant logic for understanding social organization and institutions (Castells, 1996, cited in Blatter, 2004). Considering that "material arrangements allow for simultaneity of social practices

without territorial contiguity," space of flows includes the flow of people, information, and goods, and focuses on network interactions that include "financial flows, management of major corporations in service and manufacturing, ancillary networks of firms for major corporations, media, entertainment, science and technology" (Castells, 1999, p.365). Thus, spaces of flows have also been referred to as Functional Urban Regions (Castells, 1989; Hall, 2009), highlighting political decentralization and geographic regionalization while also triggering the transition of political systems from territorial governance to functional governance (Blatter, 2004). This theorizing has laid a solid foundation for evaluations of socioeconomic integration that notably depict socioeconomic spatial structures.

Many researchers who study economic and social integration have used network analysis to measure a variety of formal properties of structures and relationships (Smith & Timberlake, 2001). Regarding intercity linkages for network analysis, considerable effort has been spent both upon obtaining data on intercity flows of people, materials, and information, and upon the measurement of most of these flows. In general, four major measures of intercity flows are principally employed by scholars in the study of intercity networks: a classic gravity model based on the product of pairwise cities' populations and squared geographic proximity, Internet connectivity between cities, business air-travel flows among cities, and intercity connectivity based on advanced producer service firms (Liu, Neal, & Derudder, 2012). Regarding economic integration, the literature has focused on market integration, and primarily on barriers to the trade of goods, production factors, and FDI (Li & Yin, 2012; Robson, 1998). Data on FDI and international trade are applied in Shen's (2014) work on the economic integration of the global borderland area between Hong Kong and Shenzhen. In addition, a substantial number of empirical studies assess the real effects of intercity economic linkages. Premised on data in relation to advanced producer services, Taylor (2001) deployed four types of intercity relational matrices to describe the economic spatial structures of world cities. Using intra- and inter-firm data of producer services, a group of studies measured the socioeconomic spatial structures of city-regions through connectivity, adopting the gravity model (Hall & Pain, 2006; Lüthi, Thierstein, & Goebel, 2010; Van Oort, Burger, & Raspe, 2010; Yeh et al., 2015). Data from corporate organizations, such as the branch locations of multinational corporations, have been analyzed through calculating centrality, outdegree, closeness, and betweenness, to quantify the power and prestige of a world city (Alderson & Beckfield, 2004; Neal, 2011).

There have been growing efforts among scholars of social integration to measure social spatial structure through the relations between people, localities, institutions, nations, and other related factors (Smith & Timberlake, 2001). Commuting flow, particularly regarding different forms of transport, is an essential measure of an integrative social entity (Hall, 2009). Information on air travel is believed to be an excellent source of data to understand social phenomena in terms of intercity networks (Keeling, 1995; Smith & Timberlake, 2001). Many scholars use air passenger travel data to analyze the linkages among global cities through the connectivity of the world city networks, indicating that air-travel flows are reliable in measuring intercity networks (Derudder, Witlox, Faulconbridge, & Beaverstock, 2008; Smith & Timberlake, 2001, 2002). In addition, some studies have sought to provide context for and to elucidate intercity commuting trends by emphasizing the effects of regional infrastructure, such as transport facilities, the socioeconomic background of the commuters, and institutional factors (Buch, Schmidt, & Niebuhr, 2009; Xie & Zhou, 2010).

Regarding institutional integration, however, most studies focus on city-regional governance, including interstate relations in hierarchical systems, intercity relations, and state-market-society relations. This approach is also generally considered an essential aspect of decoding the institutional integrative process. For example, barriers to associative governance in a Canadian city-region have been used to evaluate the institutional impact on economic competitiveness (Leibovitz, 2003).

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