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On the supply of China's healthcare resources in a decentralized healthcare system

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ABSTRACT

The structure of China's current governance bears prominent features of fiscal decentralization. The supply of healthcare resources in China has clearly witnessed slower growth in the last two decades during which the fiscal decentralization process has taken place. Using China's provincial panel data, we examine the determinants of healthcare resource supply while paying particular attention to the role of fiscal decentralization. We find that the supply of healthcare resources is inversely related to the degree of decentralization, which, using spatial econometrics, is attributed to the presence of strategic substitutes in healthcare spending across city governments. These findings have important implications for policy makers in making fiscal arrangements among different government tiers.

1. Introduction

The Chinese economy's rapid growth has improved people's living standards dramatically; however, increasing numbers of residents are in poor health due to various internal and external causes, such as work-related stress, environmental pollution, and food safety. A national health and nutrition report revealed that one out of two people on average who received physical examination are confronted with the threat of poor health (Guangdong Society for Nutrition, 2011).[1] The "Triple *H*" (hypertension, hyperglycemia, and hyperlipidemia) phenomenon is becoming increasingly common across almost all levels of ages from the young to the old.[2] Numerous people suffer from obesity, osteoporosis, angiosclerosis, and other angiocardiopathy problems. According to the *National Nutrition and Health Condition Investigation Report* issued by the Ministry of Health of China in 2004, the overweight and obesity

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[1] Under the direction of the Public Nutrition and Development Center of National Development and Reform Commission, By-HEALTH, a leader and benchmark enterprise in the Chinese dietary supplement market and the first in the Chinese healthcare industry to earn an AAA credit rating, and the Guangdong Society for Nutrition, the BY-HEALTH National Health Report was jointly issued in 2011. For more information on BY-HEALTH, please refer to http://www.by-health.com.cn/en/about.aspx and http://health.people.com.cn/mediafile/201112/14/P201112141332141781023641.pdf.

[2] Existing literature uses other indexes to reflect pollution level. For instance, Karatzas (2000) uses per capita emissions of industrial waste gas, whereas Or (2000) uses per capita NO_x emissions as a proxy for pollution severity.

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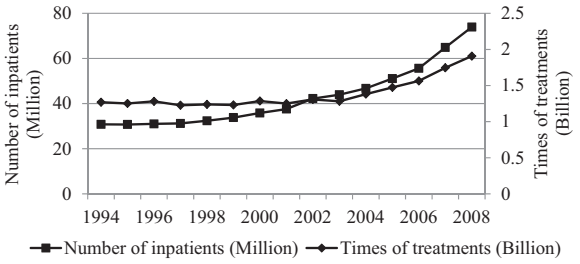

Fig. 1. Healthcare demand trend in China during 1994–2008. *Source*: China Health Statistical Yearbook (various years).

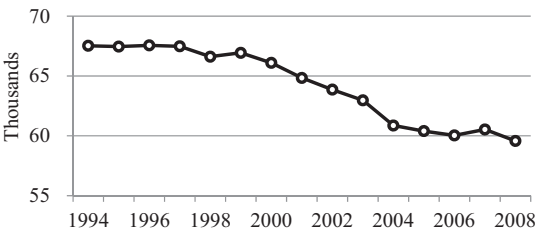

Fig. 2. Number of medical institutions in China during 1994–2008. Source: China Health Statistical Yearbook (various years).

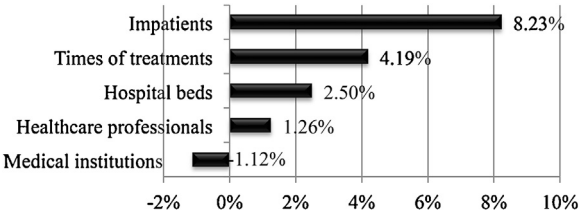

Fig. 3. Growth rate of healthcare demand and supply from 1998 to 2008. *Note*: Authors' calculation based on *China Statistical Yearbook*.

rates of Chinese adults are 22.8% and 7.1%, respectively. These two rates increased by 39% and 97%, respectively, in 10 years. In addition, approximately 160 million people suffer from dyslipidemia, and more than 160 million people suffer from hypertension. Health conditions are not only important for the human beings themselves but also for economic factors such as economic output, growth, productivity, and FDI (Foreign Direct Investment) at the national or regional level. The importance of health conditions is widely examined in the academic literature (Acemoglu & Johnson, 2007; Alsan, Bloom, & Canning, 2006; Arora, 2001; Bloom, Canning, & Sevilla, 2004; Cole & Neumayer, 2006; Liu, Dow, Fu, Akin, & Lance, 2008; Mayer, 2001; Weil, 2007).

Along with health problems, the demand for healthcare services is increasing. Taking two indicators as examples, number of inpatients and times of treatments, Fig. 1 shows that between 1994 and 2008, both indicators greatly increased in China. Specifically, the number of inpatients trends upward from 1994 and increases rapidly from 2000. In addition, the number of inpatients doubled during the 2000–2008 period, with a growth rate of 75%. Turing to another index, the times of treatments in general are relatively stable during 1994–2003 and increase sharply afterward. Since 2003, the treatment times have increased from 1.28 billion to 1.9 billion with a growth rate of approximately 50%.

Despite the obviously increasing demand for healthcare services in the last few decades, the supply of healthcare services has lagged behind. The relative shortage of healthcare supply has caused several problems. There is anecdotal evidence indicating that "seeing a doctor is like fighting a battle, and making an appointment is like going through Spring Festival, China's most important holiday for family reunion, travel season." The number of medical institutions, such as hospitals and clinics, decreased from 67,524 to 59,572 with a decreasing rate of 11% from 1994 to 2008 (Fig. 2).

The imbalance between demand and healthcare service supply is apparent in Fig. 3, which represents the average growth rates of five indices during 1998–2008. They are the number of inpatients, times of treatments, hospital beds, healthcare professionals, and medical institutions. The first two indices reflect the demand status, whereas the following three indices indicate the supply status of healthcare services. On the demand side, the number of inpatients grows the fastest at the rate of 8.23%; times of treatments grow at 4.19%. On the supply-side, both the number of medical professionals and hospital beds increase at the rates of 1% and 2%, respectively, and the number of medical institutions decreases at a rate of 1.12%. The demand for healthcare services grows much faster than the supply.

During this decade, 1998–2008, China's intergovernmental fiscal relationship is highly decentralized. Since the 1990s, local governments have financed approximately 70% of total fiscal expenditures, an exceptionally high proportion even compared to other countries (OECD, 2006). These basic facts pose an interesting question concerning the role of fiscal decentralization in the context of China, where the provision of healthcare services is mainly shouldered by local governments.

Research provides inconsistent answers. Collins and Green (1994) and Robalina, Picazo, and Voetberg (2001) posit that decentralization can improve access to healthcare and other social services by enhancing the participation of the community in decision-making and implementation processes and strengthening local authorities who can better tailor staff, resources, and procedures to local circumstances compared to the central government. Frank and Gaynor (1994) use data from the states of Ohio and Texas to examine the impacts of fiscal decentralization on public mental healthcare. They find that fiscal decentralization leads to increased expenditures on healthcare services by local governments. However, some studies find that fiscal decentralization is negatively related to the provision of public goods and services. Singh (2008) examines delivery of public healthcare services in India in the context of decentralization and finds that decentralization aggravated public sector delivery of healthcare. Pan (2010) finds that China's fiscally decentralized system enables local governments to under-provide public healthcare services. Similar results are presented by UNDP (2000), Ping and Bai (2006), and Shen and Fu (2006).

However, the existing literature ignores the possible presence of spatial interactions across local jurisdictions due to fiscal decentralization. It is necessary to take the