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Regional patterns of food safety in China: What can we learn from media data?

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ABSTRACT

China's food safety system is characterized by widespread under-enforcement of regulations punctuated by high-profile food safety scandals. While there has been a wave of public and scholarly interest, official data on food safety are scarce, and some fundamental questions remain unanswered. We evaluate the strengths and weaknesses of media-based event data as a source for scholars and policy makers interested in understanding more about China's food safety crisis. While some biases are likely present, we find that the data produce a reasonable set of results: food safety problems are most acute in poor provinces, and where government expenditures are low. Reported food safety incidents also increase with the rate of urbanization, which may reflect the increased complexity of urban food systems or an urban bias in Chinese media. Importantly, our results indicate that media data can be a valid source for scholars interested in studying food safety or other controversial topics in China.

1. Introduction

China's food safety system faces a unique set of challenges due to the country's size, resource constraints, and the institutional legacies of its socialist past. The result is widespread under-enforcement of regulations punctuated by high-profile food safety scandals. Such was the case in 2008, when high levels of melamine in milk products poisoned around 300,000 consumers in China, killing six infants (Pei et al., 2011). This incident sparked a wave of popular and academic interest in China's food safety system, as well as policy reform.

Recent scholarship has identified poor institutional design and local fiscal resource constraints as major obstacles to effective food safety enforcement in China. These problems create opportunities for regulatory capture and reduce the incentives for local regulators to enforce national standards (Li, Qi, & Liu, 2010; Ni & Zeng, 2009). These issues persist despite evidence that Chinese consumers would be willing to pay more for safer food. Ortega, Wang, Olynk, Wu, and Bai (2012) found that pork consumers were willing to pay an additional 3.5 RMB for 250 mL of milk if it were certified "safe" by the government. Similarly, Zhang, Bai, and Wahl (2012) found positive willingness to pay for government certification in China for pork, milk and cooking oil. Wang, Mao, and Gale (2008) found that Chinese consumers were also willing to pay a 5% premium for dairy products certified under the voluntary Hazard Analysis Critical Control Point (HACCP) management system. This suggests that Chinese consumers doubt that the current regulatory framework is capable of keeping tainted food products off the market.

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Despite this scholarly interest in China's food safety, much of the existing literature has been qualitative and case-study based. This is largely due to the difficulty of accessing official statistics on food safety incidents. One alternative is the use of "media-based event counts," which have been used extensively by scholars in political science and sociology. In its simplest form, this involves counting the frequency of media reports on certain events to measure the frequency of those events in reality. These types of data have been used extensively outside of China to study controversial topics like corruption and social unrest, but very few scholars have used media data to study these topics in China.[1] In this study, we employ the media data described in Wu (2011), which count the number of food safety incidents across all Chinese provinces between 2004 and 2011. While the data present some methodological challenges, we are able to reproduce several results from the existing qualitative and case-study literature on food safety in China. This suggests that media data can be an important resource for scholars studying China's food safety problems.

2. A brief background on food safety in China

Liu (2010) describes the evolution of the food safety system in China, beginning with the foundations laid following the formation of the People's Republic of China in 1949. At this time, China's food safety system borrowed heavily from the Soviet model. Food safety fell within the purview of *weisheng fangyi zhan* (WFZs), or sanitation and anti-epidemic stations. These agencies emphasized disease control rather than food inspection, but their efforts were complemented by the close ties between industry and government during China's socialist period. The control that various government ministries had over industrial production allowed the government to maintain some control over food production standards.

Reforms in the late 1970s and early 1980s led to the rapid growth of food processing and manufacturing plants outside the control of the state. This period also demonstrated the inadequacy of China's socialist institutions for monitoring food safety in the face of a rapidly-growing private food sector. Passage of the Food Hygiene Act in 1983 empowered the Ministry of Health to oversee food hygiene nationwide, but the efficiency of the food hygiene system was undercut by ambiguities in the law. For instance, WFZs were put in charge of food safety inspection, but were not empowered to take administrative action against violators. There was also significant fragmentation of control over the food system as industrial ministries sought to retain control over key areas of food production.

After 1993, the state effectively withdrew from the food production sector and solidified control over food safety through third-party regulatory agencies. Until recently, food safety efforts were coordinated by the State Council Food Safety Commission (SCFSC), established in 2009. This agency worked with other government bodies to oversee every aspect of the food system from agricultural production to food catering and restaurants. In addition to economic and judicial sanctions, regulators in China have increasingly leveraged technical standards, public disclosure, and risk evaluation techniques to raise food production and handling standards. In March of 2013, the central government announced a reorganization of China's food safety regulatory agencies, consolidating the regulation of food consumption, production and distribution within the newly-formed China Food and Drug Administration.

However, many scholars argue that China's reforms have not gone far enough. Li, Qi, and Liu (2010) argued that the SCFSC was ineffective because it lacked sufficient control over the various food agencies in China. While the SCFSC did oversee the food safety system, actual enforcement was divided among five different agencies: the Ministry of Agriculture (primary food production), the General Administration of Quality Supervision, Inspection and Quarantine (food processing and production), the State Administration of Industry and Commerce (food distribution), the State Food and Drug Administration (retail food consumption), and the Ministry of Health (overall coordination and assessment). Significant overlap existed in these agencies' mandates, and enforcement efforts were often complicated by competing claims of jurisdiction. The authors also argue that the close ties between business interests and these agencies could lead to regulatory capture, undercutting the credibility and effectiveness of the entire food safety system. Bai, Ma, Gong, and Yang (2007) point out that, despite the large number of agencies involved in food safety, the system still lacks the necessary resources to enforce national standards. Inspectors are forced to allocate relatively small budgets to focus on large and medium-size firms, ignoring the nearly 70% of China's food enterprises that employ 10 workers or less.

The 2013 reforms should help solve some of the coordination problems that plagued the previous system, but the effects remain to be seen. The system may still be undermined by the disconnect between central and local agencies, as evidenced by the substantial regional variation observed in the enforcement of food safety standards. As detailed in Liu and McGuire (2014), the greatest difference can be seen by comparing China's rural and urban food safety systems. Institutional differences between rural and urban areas have been a hallmark of China's "dual track" development approach since 1949. Using the rapidly urbanizing Changping district of Beijing as an example, Liu and McGuire (2014) explain that rural food safety bodies are often merely "guided" by their district level counterparts, unlike urban areas where district-level administrators exercise strict control. This generally leads to less reliable enforcement of food safety standards in rural areas.

Rural areas are also put at a disadvantage due to their lower level of economic development. Generally speaking, rural food safety agencies lack the highly trained and educated personnel employed in urban areas. They also have very little financial support from fiscal budgets. Rural food safety agencies largely cover expenditures with "extra-budgetary" fees, opening the door to corruption and bribery. Liu and McGuire (2014) also argue that this rural–urban divide may reflect the different communities that rural and urban food safety agencies serve. Despite its reputation as an authoritarian state, Chinese policymakers must be responsive to public pressure, especially in an area as sensitive as food safety. Rural residents may consider food safety a lower priority due to their low incomes. This would be consistent with the observed positive correlation between income and willingness to pay for food safety in the empirical literature (Ortega et al., 2012; Zhang et al., 2012).

[1] Studies using media data in China have mostly focused their attention on the content of media itself, rather than using those data to identify the frequency of events. For examples, see Stockman and Gallagher (2011) and Zhang and Flemming (2006).