


RESEARCH ARTICLE

Instrumental *Guanxi* Culture and Inbound Urban Migration in China: A Prefecture-level Analysis Using Online Search Data

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Abstract

The socioeconomic role of *guanxi* networks among individuals has been widely recorded, yet macro-level analysis has been sparse in empirical research. This research fills that gap by presenting the first nationally representative evidence illustrating the connection between regional *guanxi* culture and population mobility among cities in China, with a particular focus on instrumental *guanxi* culture. To quantify *guanxi* culture, we employ online search indices related to gift giving, a measure which is challenging to capture through traditional survey data. Applying matched prefecture-level data spanning from 2011 to 2019, the panel model reveals a strong negative correlation between a city's instrumental *guanxi* culture and inbound migration, while sentimental *guanxi* culture exhibits a positive correlation with inbound mobility. This research not only adds to the existing theories by exploring the macro-level effects of both instrumental and sentimental *guanxi* practices but also introduces an innovative method for quantifying *guanxi* culture through big data analysis.

摘要

个体层面关系网络的社会经济作用已经被广泛研究，但其宏观层面的实证分析仍然较少。本研究首次通过具有代表性的研究证据，阐明了中国各城市的地区性关系文化与人口流动之间的联系，特别关注工具性关系文化。我们采用与赠送礼物相关的在线搜索指数量化难以通过传统调查数据捕捉的关系文化，并运用 2011 年至 2019 年的市级社会经济数据与关系文化指数构成面板模型，揭示了工具性关系文化与国内人口流动之间显著的负相关关系，而情感性关系文化则与国内人口流动呈显著的正相关关系。本研究探讨工具性和情感性关系实践的宏观效应，在做出理论贡献的同时，引入了一种基于大数据的新型关系文化测量方法。

Keywords: *guanxi* culture; instrumental *guanxi* practices; social capital; gift giving; inbound mobility; big data

关键词: 关系文化; 工具性关系实践; 社会资本; 送礼; 国内人口流动; 大数据

Guanxi 关系, defined as a dyadic and particular social tie, develops through repeated favour exchange between the actors in relationships.¹ Rooted in reciprocal obligations, it legitimizes the expectations of people who give favours based on mutual interests and benefits.² While inherently a social fact of life in China, *guanxi* functionally resembles the concept of social capital.³ For instance, it facilitates personal advancement by bridging the social resources embedded in both strong and weak ties.⁴ *Guanxi*'s enduring and profound influence on Chinese social behaviour

1 Bian et al. 2005; Lin 2001.

2 Yang 1994.

3 King 1991; Molm, Takahashi and Peterson 2000.

4 Granovetter 1973; Bian 1997.

endows it with a distinctive cultural identity. Its cultural significance manifests in various customs, including gift giving, social eating and festival rituals, which serve both sentimental and instrumental purposes.⁵ This culture has maintained its pivotal role during China's ongoing transitional period.⁶

Among the social changes wrought by China's economic and institutional transition, migration from rural and underdeveloped areas to developed destinations stands out as one of the most impactful phenomena reshaping the nation. According to Chinese National Population Censuses, the "floating population" increased from 6.5 million in 1982, when the reform began, to 375.82 million in 2020.⁷ When delving into inner mobility in contemporary China, *guanxi* networks matter because scholars have widely established that social ties affect migrants' migration decisions and their eventual socioeconomic outcomes. However, most studies have primarily focused on the individual-level establishment and exploitation of social networks in destination areas, which can help migrants to acquire resources and find jobs.⁸ While these studies have laid a sound foundation for understanding networks in the context of migration, the significance of *guanxi* networks at the collective/macro level has largely been overlooked to date.

Taking a macro perspective in *guanxi* studies is especially important in the context of China's inner migration for three reasons. The first stems from the nature of *guanxi* cultural practices. Although *guanxi* is often perceived as a highly personalized particularism, when it permeates the broader cultural milieu of a country or region, it evolves from intimate conduct to a pervasive code of social interaction.⁹ Particularly for newcomers, engaging in *guanxi* cultural practices during the initial phases of building interpersonal ties is crucial for building up social resources, resulting in the emergence of more generalized traits within the original particularism and enabling the measurement of macro-level *guanxi* culture.

The second reason is the possible opposite effects of *guanxi* culture at the individual and collective levels.¹⁰ *Guanxi* networks might help individual migrants to get ahead, but a *guanxi* culture (especially instrumental *guanxi*) can more broadly negatively affect the socioeconomic development of a region. Across a region or society, *guanxi* culture with more instrumentalism (*la guanxi* 拉关系) can expose the inequalities in the distribution of a region's resources and even the inadequacies of a formal system of laws and regulations;¹¹ while *guanxi* culture with more sentimental and moral orientations such as the Confucian principle of *ren* 仁 (benevolence or virtue) carries a positive implication, maintaining the ethics and orders of Chinese society over time.¹² Hence, it is imperative to investigate the distinct macro-level effects of instrumental and sentimental *guanxi* culture separately.

Third, China is vast – a country of 1.4 billion people covering an area of approximately 9.6 million square kilometres. Coupled with its intricate historical background, local *guanxi* conditions and atmospheres vary widely across the nation's counties, prefectures and provinces. However, existing empirical studies have largely overlooked the mechanisms and outcomes related to regional *guanxi* culture to date.

This research aims to address the critical gap in the literature by adopting a macro perspective to examine the influence of *guanxi*, particularly instrumental *guanxi*, on China's inner migration. We suspect that although individual *guanxi* networks assist migrants in settling in new places, instrumental *guanxi* culture in host areas could diminish the appeal of these locations as migration

5 Bian 2017; 2018.

6 Yang 2002; Bian 2018; Chen, Yunsong 2022.

7 PCO 1985; 2021.

8 Zhao, Yaohui 2003; Chen, Yunsong 2012.

9 Walder 1986; Lin 2001; Burt, Bian and Oppen 2018.

10 Chen, Ying, et al. 2011.

11 Gold 1985.

12 King 1991; Fei 1992.

destinations. To tackle the challenging issue of measuring *guanxi* culture, this research employs the innovative indicator of extensive data about gift giving to higher-ups from online search engines on regional searches, which is often associated with more instrumentalism rather than with sentimental particularism,¹³ and applies public relations expenses of private enterprises as another proxy of macro-level instrumental *guanxi* culture to enhance the robustness of search data. The results obtained from prefecture-level panel models robustly indicate a negative correlation between the strength of instrumental *guanxi* culture and inbound mobility, suggesting that regional *guanxi* culture hampers regional growth. Furthermore, this research measures the sentimental *guanxi* culture through search data related to gift giving to elders. Intriguingly, these results diverge from those associated with instrumental *guanxi* culture, highlighting that a city's sentimental *guanxi* culture can enhance its appeal to potential inbound migrants.

The paper is organized as follows. Next, it comprehensively reviews the literature of *guanxi* culture as the independent variable and the population mobility in China as the dependent variable. It then introduces the data and the models employed to analyse the influence of instrumental *guanxi* culture on mobility. It continues by presenting the regression outcomes and a tentative mediating analysis of the effects of instrumental *guanxi* culture, along with data and regression results pertaining to sentimental *guanxi* culture, before outlining the robustness test conducted to validate the effects of instrumental *guanxi* culture. It concludes with a summary of the findings and discusses the contribution and limitations of this study.

Background

Guanxi culture as a research agenda

In the framework of the contemporary Chinese institutional system, the concept of *guanxi* culture is commonly associated with “instrumental particularism,”¹⁴ a term that delineates its dual aspects of instrumental and sentimental dimensions, both of which find their roots in ancient Chinese culture: Confucian *renqing* 人情 (meaning favour and mostly used a synonym for *guanxi*) embodies moral obligations and particular sentimental bonds,¹⁵ while exclusive favouritism through sentimental *guanxi* arouses feelings of envy and distrust, deviating from Confucian ideals and resulting in adverse consequences for Chinese society.¹⁶ Notably, the instrumentalism of *guanxi* enables it to function both as a network for individuals to access resources and as a substitute for formal institutional support in business practice. For instance, private and foreign enterprises in China rely on *guanxi* to engage in competition.¹⁷ Table 1 presents the positive and negative effects of instrumental and sentimental *guanxi* culture, primarily derived from individual-level empirical studies.

Although this research distinguishes between instrumental and sentimental *guanxi* cultures for operationalization and macro-level verification, the two forms both exhibit elements of instrumentalism and particularism and coexist in a binary manner. Instrumental *guanxi* culture leans more towards instrumental purposes while aiming to foster particular trust. Rewards are anticipated following practices like gift giving but are not always immediate and may come after the establishment of closer sentimental bonds.¹⁸ When such practice becomes part of local *guanxi* culture, the initially personalized ties transform into generalized and diffused practices, connecting even those who were once distant, such as migrants and locals. Similar to Fei Xiaotong's concept of *chaxugeju* 差序格局

13 Yang 1994; Lin 2004.

14 Barbalet 2021a, 89.

15 Yang 1994; Barbalet 2021b.

16 Weber 1964; Chen, Chao C., and Chen 2009; Barbalet 2021a.

17 Barbalet 2017; Nolan 2018.

18 Yang 1989; Smart 1993.

Table 1. The Effects of Instrumental and Sentimental *Guanxi*

	Instrumental <i>guanxi</i> culture	Sentimental <i>guanxi</i> culture
Positive effects	1. Acquiring personal benefits. 2. Improve economic efficiency.	1. Encouraging benevolence and affection. 2. Constructing ethics and order.
Negative effects	1. Harming others' benefits. 2. Fostering corruption and inequalities.	1. Causing <i>renqing</i> burdens or debts. 2. Breeding envy and distrust because of exclusive favouritism.

(differential modes of association), varying distances exist between the central individual and other members.¹⁹ Nevertheless, the particularism of *guanxi* is inherent from the outset, making it distinctly emblematic of Chinese culture.

This study defines regional *guanxi* culture as a group-level social atmosphere shaped by local *guanxi*-related unwritten institutions – for instance, as the local manifestation of *guanxi*-related customs, social institutions and psychological patterns or as the summation of *guanxi*-related social behaviour in a regional society. The concepts of “local” matter here because both local differences and cultural and social features mean that *guanxi* culture patterns display extensive variation across the regions of China. For example, people from Heilongjiang, a northern province, build conservative but deep ties and limit their business to fellow villagers and friends, both lending money and sharing clients with each other.²⁰ On the other hand, businesspeople in economically developed southern regions, such as Guangzhou and Hong Kong, tend to establish new ties with those in other parts of the world and push the envelope of acceptable practice.²¹

Despite the above, most empirical research treats *guanxi* culture as an ambiguous and homogenized background that defines social behaviour in China as a whole. As a result, little is known about the socioeconomic mechanisms and effects of regional *guanxi* culture. For example, quantitative researchers exploring the role of *guanxi* networks among the Chinese imagine a unified nationwide *guanxi* atmosphere,²² or they simply use fixed regional effects in their regression models to absorb and control for cultural differences across regions.²³ Although there is a body of qualitative literature focusing on the temporal trends of *guanxi* culture, such as the famous Douglas Guthrie–Mayfair Yang debate on whether *guanxi* has held or weakened during China’s marketization, there have been few scholarly examinations of the regional differences, spatial patterns and local mechanisms of the *guanxi* culture as it exists across China.²⁴

One major obstacle to *guanxi* culture studies is that the regional culture is elusive. The quantitative studies of *guanxi* in China are primarily micro-based, applying questionnaires to measure individual social networks and to characterize the interaction outcomes between ties and the labour market.²⁵ However, generating macro variables through big data provides a novel way to measure *guanxi*. Researchers have used big data from *Google Trends*, *Baidu* and other search engines to construct social variables that are difficult to quantify using traditional survey methods.²⁶ The above discussion also shows that it is feasible to use a diffused *guanxi* practice to proxy regional *guanxi* culture; this generalized purpose of establishing *guanxi* is the main source of search data.

19 Fei 1992.

20 Hsu 2005.

21 Leung, Wong and Wong 1996.

22 Guo and Chen 2022.

23 Burt, Bian and Opper 2018; Chen, Yunsong, He and Li 2020.

24 Guthrie 1998; 2002; Yang 2002.

25 Peng 2004.

26 Li and Yan 2019; Chen, Buwei, et al. 2021; Chen, Yunsong, He and Yan 2021.

Gift giving as a proxy for guanxi culture

In the realm of social interactions, the practice of gift giving expresses *renqing* and forms the foundation for reciprocity.²⁷ Within China's cultural context, where reciprocity is both a cultural norm and a fundamental aspect of social interactions, gift giving has emerged as the most prevalent *guanxi* practice with the most likely payoff.²⁸ Pierre Bourdieu's perspective highlights how gift giving symbolically transforms the interest exchange into "a relationship set up in due form for form's sake,"²⁹ and in *guanxi* culture, this form underscores the importance of fostering enduring sentimental bonds, even when there are underlying instrumental motives.³⁰ The tradition of gift giving in China traces its roots back to the Confucian discourse. Confucianism imposes a duty of moral and ethical reciprocity and ritualizes gift giving, which contributes to upholding social harmony.³¹

In contrast, the gift giving practice takes on a bribery-like connotation when it is reduced to a direct and immediate exchange of material interests.³² Thus, most literature on instrumental gift giving argues that while it fosters sentimental bonds and advances personal interests, it can also facilitate illegal transactions and hurt the market order.³³ In the hierarchical labour market and state-led market economy, giving gifts to *lindao* 领导 (higher-ups – i.e. government officials or superiors within organizations) for preferential working conditions, promotion or a salary increase is the most typical instrumental *guanxi* practice.³⁴ This practice is also evident in commercial activities. During the early stages of China's economic reforms, entrepreneurs used scarce premium commodities such as cigarettes to establish close collaborations with officials, balancing the need to reinforce sentimental bonds and forge enduring governmental partnerships.³⁵ Presently, this form of gift giving is incorporated into the public relations expenses of businesses, particularly private enterprises, aiming to establish and maintain *guanxi* with governmental bodies and other businesses.³⁶ This form is employed as a robustness test in this study.

In evaluating regional *guanxi* culture, the prevalent practice of gift giving serves as a key metric for establishing and nurturing *guanxi*. One approach to measuring local *guanxi* culture involves quantifying the instances of gift giving within a specific unit, such as a province or a county. These activities are, nevertheless, sometimes prohibited and regarded as immoral. Regular social surveys might yield biased responses owing to social desirability bias or concerns about potential repercussions, making them less reliable. Therefore, this study assesses the frequency of online searches about gift giving to higher-ups, providing insights into the prevalent instrumental *guanxi* culture in a given region. Additionally, search data on gift giving to *zhangbei* 长辈 (elders – i.e. respectable seniors with a blood bond or friendship) can be used as a proxy for sentimental *guanxi* culture. Elders, akin to higher-ups, serve as valuable mentors, offering guidance and support. However, interactions with elders tend to be rooted more in sentimental connections rather than instrumental motives, differentiating them from *guanxi* with higher-ups.

Population mobility in China

According to the Chinese Population Census, the floating population (*liudong renkou* 流动人口) is defined as those who have left their permanent registered residence and who are living in the survey location for more than half a year at the time of the survey; for host cities, they represent what

27 Chan, Allan K.K., Denton and Tsang 2003.

28 Zhou and Guang 2007.

29 Bourdieu 1977, 194.

30 Smart 1993; Millington, Eberhardt and Wilkinson 2005.

31 Ulusemre 2022.

32 Yang 1989.

33 Millington, Eberhardt and Wilkinson 2005.

34 Lin 2004; Yang 1989.

35 Croll 2000.

36 Tsetsura 2015.

researchers call inbound mobility.³⁷ Since the 1950s, when China introduced the household registration system (*hukou* 户口), people have been considered to be permanent residents only if their household registration is formally transferred to the new location; those who do not change their registration are called migrants – or the floating population.³⁸ It was not until the late 1970s, with the onset of market reforms, that the government’s control over geographical mobility weakened and migration commenced.³⁹ Chinese rural–urban migration garners significant scholarly attention owing to the vast inequalities in socioeconomic development between urban and rural areas in China.⁴⁰ In comparison, urban–urban migrants frequently move across provinces, benefiting from better access to social insurance and jobs offering labour contracts.⁴¹

The existing literature often categorizes the influencing factors of migration decisions into push versus pull, where push factors in a migrant’s home region, such as low literacy and poor health, can motivate migration to a different location.⁴² Especially in China, the surplus of rural labour is the main push factor.⁴³ In terms of pull factors, the primary one for decades now has been the relaxation of *hukou* restrictions which has allowed for greater mobility across the country.⁴⁴ The demands of the industrial sector have also served as a major pull factor. Migration tends to be motivated by a desire to maximize economic opportunities and an area’s higher wages will “pull” workers from lower-paying areas.⁴⁵ The subsequent section delves into the effects of *guanxi* networks in the migration process and presents the primary hypothesis.

Guanxi networks and mobility

Up until now, an extensive literature has identified that individuals base their migration decisions partially according to their *guanxi* networks or social capital. Chinese migrants leverage their social capital during the migration process, often associating and seeking assistance from individuals hailing from the same province and ethnic background.⁴⁶ Social capital and *guanxi* networks can help migrants to secure lucrative employment and achieve a higher status in their new environment;⁴⁷ however, migrants possess limited social capital compared to local residents. Establishing fresh social capital and building new *guanxi* networks incurs substantial costs,⁴⁸ as shown by the negative effects of instrumental *guanxi* culture delineated in Table 1. At the macro level, the strong instrumental *guanxi* culture of a particular region can hinder migrants by escalating the expenses of forming the new *guanxi* networks needed to work and live in that region and can in turn negatively affect migrants’ fairness perception.⁴⁹ Hence, we present the core hypothesis as follows:

Hypothesis: The level of instrumental *guanxi* culture in a city is negatively associated with its inbound population mobility.

In addition to the primary assumptions about instrumental *guanxi* culture, this research also conducts a comparative analysis of sentimental *guanxi* culture. According to the existing findings

37 PCO 2021.

38 Goodkind and West 2002.

39 Liang and Ma 2004.

40 Chan, Kam Wing, and Zhang 1999; Du, Park and Wang 2005.

41 Cheng, Nielsen and Smyth 2014; Ming, Liu and Wang 2020.

42 Ackah and Medvedev 2012.

43 Zhao, Yaohui 2003; Yue et al. 2013.

44 Fan, Hall and Wall 2009.

45 Démurger and Li 2013.

46 Song and Appleton 2008; Yue et al. 2013.

47 Chen, Yunsong 2012; Lu, Ruan and Lai 2013.

48 LeSage and Ha 2012; Almohamed, Vyas and Zhang 2017.

49 Shen 1996; Chen, Ying, et al. 2011.

presented in Table 1, sentimental *guanxi* culture plays a more ethical and orderly role in enhancing social cohesion at the regional level.⁵⁰ Consequently, it can be deduced that sentimental *guanxi* culture, exhibiting opposite characteristics to the instrumental form, attracts more migrants.

Moreover, this research undertakes a tentative mediating analysis of how instrumental *guanxi* culture influences mobility. Although domestic investments, foreign investments and expected income could potentially serve as mediating factors, there is limited direct evidence from existing literature to support this claim.⁵¹ Thus, this study examines potential factors impacting income. Considering that net income equals wages minus the cost of living, income can actually act against migration.⁵² Although this hypothesis lacks robust support from existing research, this paper presents the mediating analysis findings at the end of the results section, with detailed information available in the Supplementary Material (Appendix Part B).

Data, Measures and Methods

Instrumental guanxi culture as the independent variable

Instrumental *guanxi* culture, a factor that affects the migrant population, serves as the main explanatory variable in this study. Given that the data from questionnaires cannot capture macro *guanxi* culture, we use local online searches related to *guanxi* as a proxy to quantify it. According to the China Internet Network Information Centre (CNNIC), 829 million Chinese people had used search engines by December 2021, and the user scale of *Baidu* reached 632 million in March 2022.⁵³ As the most popular search engine in China, *Baidu* offers instant access to a gigantic ranking database of online search volumes of the most-searched for words and phrases. The data are available for different levels, including city, provincial and national levels, with different time units including daily, weekly, monthly or yearly data.⁵⁴ Covering both PC and mobile search information, we extract the yearly *Baidu* indices of *guanxi*-related terms for all cities, prefecture-level and higher, between 2011 and 2019, to calculate a proxy for prefecture-level *guanxi* culture. The temporal frame of our research ends in 2019 so as to exclude the potential impact of the Covid-19 lockdown.

To choose our *Baidu* search terms for describing instrumental *guanxi* culture, we first set up a list of terms that would clearly indicate that online searchers were searching for information on how to perform instrumental *guanxi* practices. It is known that *guanxi* can be described by many other terms, including social capital, instrumental particularism, clientelism, informal ties, *renqing*, etc. However, formal academic and literary terminology is unlikely to reflect the language of ordinary people. Therefore, we choose to focus our search on gift giving to higher-ups (*lingdao*), the most common instrumental *guanxi* practice for building personal connections with those who have authority or access to rich resources. Specifically, we search the *Baidu* index for the four most-searched gift giving inquiries: *gei lingdao songli song shenme* 给领导送礼送什么 (what to give higher-ups as gifts); *gei lingdao songli* 给领导送礼 (giving gifts to higher-ups); *songli gei lingdao* 送礼给领导 (giving gifts to higher-ups); and *lingdao songli* 领导送礼 (higher-ups and gift giving).⁵⁵

For each city, we extract the annual search volumes for each phrase and then divide them using the number of netizens (subscribers of internet services), which we accessed from *The China Urban*

50 Fei 1992; Barbalet 2021b.

51 Shen 1996.

52 Zhao, Ze, et al. 2012.

53 For “The 49th statistical report on China’s internet development” by CNNIC, see <http://www.cnnic.com.cn/IDR/ReportDownloads/202204/P020220424336135612575.pdf>; for “Baidu announces first quarter 2022 results,” see <https://ir.baidu.com/static-files/8fae9287-923a-41b5-b741-b79d0091a602>.

54 For the *Baidu* search index, see <https://index.baidu.com>.

55 There are obviously numerous phrases and expressions related to *guanxi* inquiry; *Baidu* only provides search data for the most-searched phrases.

Statistical Yearbook (CUSY). Finally, to eliminate the scale bias caused by the differences in the number of keyword searches, we standardize and sum up the search volumes for all phrases. Finally, we calculate the index of instrumental *guanxi* culture (IGC) for each city over the calendar year as follows:

$$IGC_{it} = \sum_{n=1}^4 \frac{BSI_{nit} - \mu_n}{\sigma_n} \quad (1)$$

In Equation (1), IGC_{it} refers to the IGC index of city i in year t . BSI_{nit} is the *Baidu* search index of keyword n in i in year t divided by the number of subscribers of internet services in i . μ_n is the mean of n . σ_n denotes the standard deviation.

Considering the robustness of the measure, we also try three alternative methods of constructing an IGC measure. First, we use principal component analysis on the search data of the four phrases to the principal component with the maximum eigenvalue (=2.415, explaining 60.39 per cent of the variance) to predict and calculate the index of *guanxi* culture (IGC_1). Second, we choose six terms that are very closely related to instrumental *guanxi* in Mandarin (unspoken rules, contacts, circles, *mianzi* 面子 (face), back door and gift giving) and repeat the aforementioned procedure to obtain the IGC index (IGC_2) for each city. Third, we replace the count of internet service subscribers in BSI_{nit} when calculating IGC_1 and IGC_2 with the data of the three most searched terms (weather, QQ and *Taobao* 淘宝) on *Baidu*, which controls the usage of *Baidu* in each city, adding another variable to depict the level of internet development.⁵⁶ Consequently, we derive IGC_3, IGC_4 and IGC_5. We fit models using all of those different variables for IGC. As we show below, the results from models using different measures of *guanxi* culture are very similar.

In the administrative ranking of China's cities, aside from the four municipalities directly under the central government (Beijing, Shanghai, Tianjin and Chongqing) and the special administrative regions (for example, Hong Kong and Macau), there are 333 prefecture-level administrative units, including 293 cities, 30 *zhou* 州 (ethnic minority autonomous prefectures such as Yanbian 延边朝鲜族自治州 in Jilin), 7 *qu* 区 (ethnic minority prefecture-level regions such as Ali 阿里地区 in Tibet) and 3 *meng* 盟 (ethnic minority prefecture-level leagues such as Alxa 阿拉善盟 in Xinjiang). Because the CUSY only includes annual statistics on netizens in 293 cities and 4 municipalities, we construct the IGC index for 297 cities altogether in mainland China, which when combined account for nearly 96 per cent of the overall population on the mainland.

Figure 1 presents the geographic distribution of the regional *guanxi* culture of 297 cities in China (annual average from 2011 to 2019) according to the IGC index, showing that the cities with stronger local *guanxi* culture are concentrated mainly in northern China. Specifically, Hohhot, Changchun, Wuwei 武威市, Ordos 鄂尔多斯市, Zhengzhou, Beijing, Daqing 大庆市, Shenyang, Jinan and Taiyuan rank in the top ten in terms of IGC. Notably, Hohhot, the capital of Inner Mongolia province, surpassed Changchun by 109.8 per cent and ranked first in the *guanxi* culture index. Comparatively, cities in southern China score lower in the *guanxi* culture. Among them, Hefei, Changsha, Nanchang, Haikou and Hangzhou recorded relatively high scores for *guanxi*, but they are incomparable with some of the indices in the north. Overall, our map shows that cities in northern China generally have a stronger *guanxi* culture than southern cities, and this trend is in line with results from extant studies.⁵⁷

Figure 2 illustrates the longitudinal changes in regional *guanxi* culture in 297 cities from 2011 to 2019. The overall trend declines over time irrespective of municipalities, provincial capitals or ordinary cities, as evidenced by the diminishing trends of the IGC. However, the IGCs of provincial capital cities are generally higher than those of other cities. Interestingly, the temporal declining pattern differs slightly among cities. For instance, several cities in north-west China, such as Wuwei

⁵⁶ Chen, Buwei, et al. 2021.

⁵⁷ Ulusemre 2022.

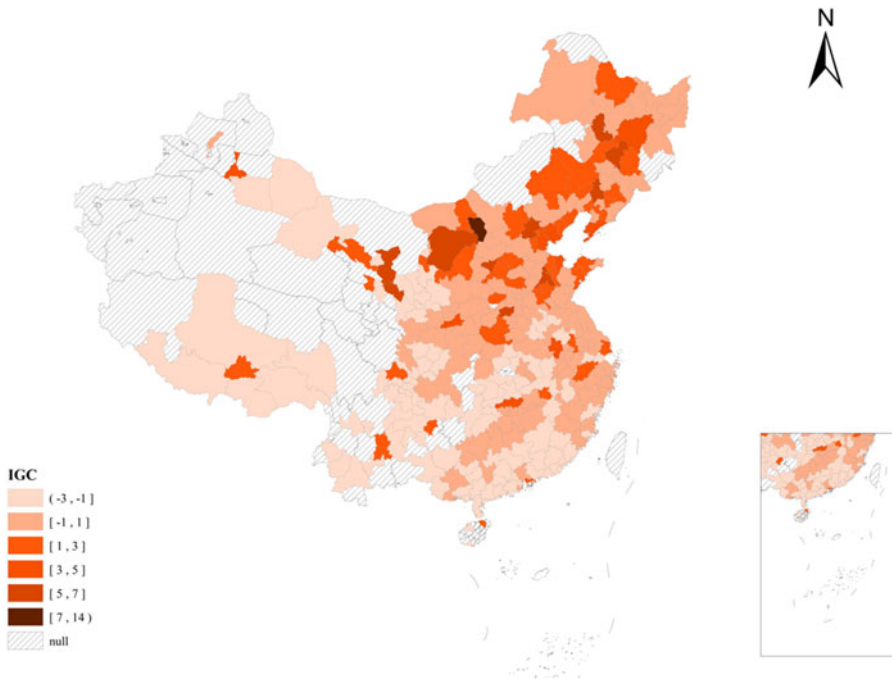


Figure 1. Distribution of Instrumental *Guanxi* Culture in 297 Cities in China, 2011–2019

and Hohhot, saw dramatic declines in *guanxi* culture beginning in 2012 when the central committee of the Communist Party of China launched its famed anticorruption campaign by issuing the “eight-point frugality code.”

Dependent variable and controls

The population of inbound mobility of a city (IM) is the dependent variable. The *China Urban Construction Statistical Yearbook* provides the annual number of migrants who have lived in the host city for more than half a year but still have not transferred their *hukou* to that city, which is a proper measure for the inbound population mobility. To verify the net effect of IGC on population mobility, we need to control for a set of variables that might be related to both mobility and *guanxi* culture in the regression model. Based on the existing literature, we control for the prefecture-level conditions of economic development, average wages, unemployment rate and human capital. We select the gross domestic product (GDP) as a proxy variable for regional economic development because it has been established as a strong predictor of inbound mobility.⁵⁸ The unemployment rate (UEM) and wages (WG) are the primary considerations in choosing the location for inbound mobility,⁵⁹ and they are also the potential confounders because they are both related to migration decisions and *guanxi* culture. The human capital (HC) in cities, with the number of college students per 10,000 in the city as a proxy variable, is an important influence on the external inflow and concentration of labour.⁶⁰

The data on the above variables are obtained from the CUSY. All variables take natural logarithms in the analysis. Owing to missing data on relevant variables, to fit the statistical models,

58 Lee 1966; Chen, Yunsong, He and Li 2020.

59 Liu, Deng and Song 2018.

60 Berry and Farquhar 2006.

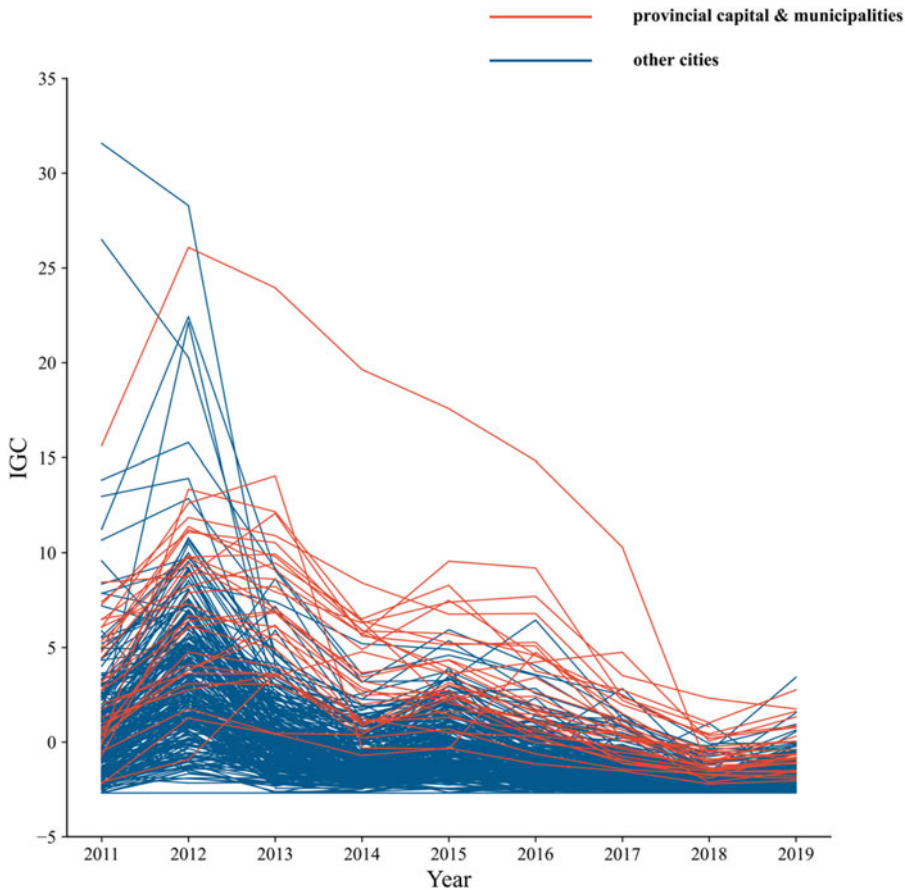


Figure 2. Longitudinal Trends in 297 Cities in China.

we construct representative panel data for 281 cities from 2011 to 2019. Note that the combined population of the 281 cities in our statistical analysis accounts for almost 91 per cent of China's overall population, suggesting that the results from our model regressions are nationally representative. The cities with missing data, marked in grey in Figure 3, have very low populations.

Figure 3 shows the geographical distribution of inbound mobility in China. In contrast to the distribution of *guanxi* culture, the north–south division cannot be found here visually. Cities ranked at the top of the list include Shenzhen, Guangzhou, Dongguan 东莞市, Chongqing and Hangzhou. In fact, the average annual inbound mobility in these cities exceeds 2 million people. Consistent with the literature, in general, cities with the highest level of inbound mobility are often found to be provincial capitals or located in the Changjiang 长江 (Yangtze) and the Zhujiang 珠江 (Pearl River) deltas.⁶¹ Finally, the selected statistics of the relevant variables among 281 cities are shown in Table 2.

Models

We apply fixed-effects models (FE) on panel data to rule out the confounding effects of the time-invariant attributes of cities. Because the data comprise a short panel, we choose the static panel

61 Shi and Liu 2019.

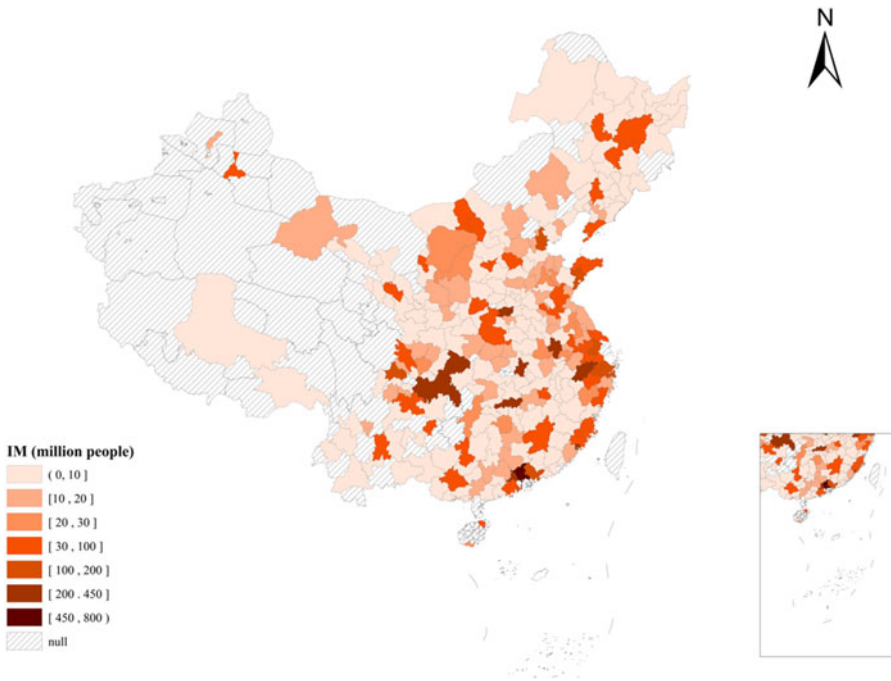


Figure 3. Distribution of Inbound Mobility in 281 Cities in China, 2011–2019

Table 2. Selected Statistics of 281 Chinese Cities, 2011–2019

Variable name	Abbr.	Description	Mean	S.D.
Inbound mobility	IM	Inbound mobility number (million people), taking the logarithm.	2.179	1.441
Instrumental <i>guanxi</i> culture	IGC	Proxied by online inquiries about how to perform instrumental <i>guanxi</i> practice (gift giving to higher-ups).	0.125	3.111
Economic development	GDP	Gross domestic product per capita (yuan), taking the logarithm.	10.682	0.562
Wages	WG	Annual average wage (yuan), taking the logarithm.	10.842	0.306
Unemployment	UEM	Rate of unemployment (%), taking the logarithm.	−3.802	0.598
Human capital	HC	Number of college students enrolled (per 10,000 persons), taking the logarithm.	4.649	1.045

Notes: Dependent and control variables have been transformed by taking natural logarithms.

model to estimate. The FE panel model of cities can then be specified as follows:

$$IM_{it} = \beta_0 + \beta_1 IGC_{it} + \beta_2 GDP_{it} + \beta_3 WG_{it} + \beta_4 UEM_{it} + \beta_5 HC_{it} + c_i + u_{it} \quad (2)$$

In Equation (2), IM_{it} is the dependent variable, representing the total inbound mobility (logarithm) of city i in year t . IGC_{it} is the core explanatory variable, representing the *guanxi* culture level of city i in year t . c_i is the city fixed effect that does not change with time, and u_{it} is the random error term of the equation.

Furthermore, considering possible reverse causality, we also introduce the previous one-year values of the main explanatory variable and all control variables into the model. As is shown in Equation (3), for instance, $IGC_{i(t-1)}$ is the one-year lag of IGC, representing the *guanxi* culture level of city i in year $t-1$.

$$IM_{it} = \beta_0 + \beta_1 IGC_{i(t-1)} + \beta_2 GDP_{i(t-1)} + \beta_3 WG_{i(t-1)} + \beta_4 UEM_{i(t-1)} + \beta_5 HC_{i(t-1)} + c_i + u_{it} \quad (3)$$

Note that we also test a random-effects model and present the results in the Supplementary Material (Appendix Part A), and these are quite similar to the FE model results. However, Hausman's test results indicate that the FE model outperformed the random-effects model.

Results

Table 3 reports the results obtained from the FE models of inbound mobility in 281 cities. More specifically, the results of the FE model (Model 1 and Model 2 using standardized coefficients) of 281 cities demonstrate that the IGC has a significant negative effect ($p < 0.01$) on inbound mobility with a coefficient of -0.019 , indicating that the inbound mobility population decreases by 2 per cent for every one-unit increase in the IGC, which is consistent with the hypothesis that instrumental *guanxi* culture hinders inbound mobility. For instance, one of the most attractive destination cities for inbound mobility, Guangzhou, would lose nearly 21.1 per cent of its annual floating population if its IGC rose to the same level as that of Hohhot; one of the least attractive destination cities, Xi'an, would gain around 9.3 per cent of its annual floating population if its IGC drops to the same level of that of Chongqing, which boasts the lowest IGC among the provincial capitals.

In terms of other control variables, the results of Model 1 reveal that GDP per capita and wages positively predict the inflow of inbound mobility, although the coefficients of other factors, such as UEM and HC, are insignificant. Furthermore, the results of the standardized coefficients in Model 2 show that of the three, wages and GDP have a stronger effect than IGC, consistent with the findings of previous literature.⁶² More importantly, the result also demonstrates that instrumental *guanxi* culture is an unignorable force among the determinants of inbound mobility. The role of *guanxi* culture amounts to one-third of the role played by wages and half of the role played by GDP in inbound mobility. To confirm that our findings are not distorted by megacities such as Tianjin or Chongqing, we also present the Model 3 results without provincial capitals and municipalities, leaving 253 cities. They are fairly similar to those in Model 1 and Model 2.

To further investigate whether there is a similar impact for sentimental *guanxi* culture and instrumental *guanxi* culture, we obtain the *Baidu* index for the two most-searched inquiries relevant to "giving gifts to elders": *gei zhangbei songli song shenme* 给长辈送礼送什么 (what to give elders as gifts) and *gei zhangbei songli* 给长辈送礼 (giving gifts to elders).⁶³ Subsequently, employing the same method as for IGC, we calculate the index of sentimental *guanxi* culture (SGC) and present the findings in Table 3 (Model 4). The results of Model 4 indicate a significant positive influence of SGC on inbound mobility, contrasting with the impact of IGC.

It remains crucial to understand the specific mechanisms through which instrumental *guanxi* effects operate. We conduct a tentative mediating analysis to ascertain the degree of involvement of two potential mediators, average wage and additional living expenses, in reducing migration. Instrumental *guanxi* culture leads to significant public relations expenses for enterprises, which ultimately reduces the overall pool of labour wages.⁶⁴ Regarding living costs, the chosen indicator is the search data for *jiedu* 借读 (transient student). A robust instrumental *guanxi* culture and

62 Flowerdew and Salt 1979; Zhang *et al.* 2020.

63 *Baidu* only provides search data for the two most-searched phrases relevant to "giving gifts to elders."

64 Tsetsura 2015.

Table 3. Panel Regressions Using Fixed Effects of Chinese Cities, 2011–2019

	Model 1	Model 2	Model 3	Model 4
	FE	FE	FE	FE
	Standardized coef.		Megacities excluded	
<i>Guangxi culture (IGC)</i>	−0.019** (0.004)	−0.040** (0.009)	−0.016** (0.004)	−0.020** (0.005)
<i>Guangxi culture (SGC)</i>				0.021* (0.009)
GDP	0.275** (0.076)	0.107** (0.030)	0.263* (0.091)	0.270** (0.071)
Wages	0.566*** (0.084)	0.120*** (0.018)	0.545*** (0.079)	0.539*** (0.074)
Unemployment	−0.015 (0.028)	−0.006 (0.012)	0.004 (0.031)	−0.012 (0.029)
Human capital	−0.036 (0.031)	−0.026 (0.022)	0.012 (0.027)	−0.034 (0.030)
Intercept	−6.776*** (0.767)	−0.000 (0.008)	−6.762*** (0.798)	−6.429*** (0.597)
R-square	0.171	0.171	0.170	0.173
Hausman test p-value	0.000	0.000	0.000	0.000
Number of cities	281	281	253	281
N	2,153	2,153	1,948	2,153

Notes: Adjusted robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

the *hukou* system mean that newcomers often incur extra costs when enrolling their children in schools in host cities, especially public schools with better educational resources.⁶⁵ We find that the indirect effect of reducing population mobility through wage levels accounts for 44.12 per cent of the effects of IGC, and the indirect effect of reducing population mobility through expected extra living costs accounts for 41.18 per cent of the role of IGC. The details of the mediating analysis are presented in the Supplementary Material (Appendix Part B).

Robustness Tests

So far, the results have demonstrated that instrumental *guanxi* culture detracts from the attractiveness of Chinese cities for migrants. To ascertain that the IGC variable we construct from our *Baidu* search index results of four search terms are robust in predicting inbound mobility, we use the indices from different measures to test the consistency of the results. To avoid possible reverse causality, we introduce lagged terms for all explanatory variables to further test the estimation results. We present the results of the robustness tests in Table 4 (owing to space constraints, the control variables are presented in Part C of the Appendix). As the table shows, using different measures for IGC does not change the results.

We also choose alternative measurement approaches to construct the inbound population variable to ascertain the consistency of the results. Specifically, we use the proportion of inbound mobility to the total population of a city (IM_1) to measure inbound mobility (Table 5). The results demonstrate that the impact of IGC and SGC on the IM_1 is consistent with Model 1 and Model 4 in Table 3.

In addition, we adopt the average public relations expenses of private enterprises as another proxy variable for instrumental *guanxi* culture (IGC_6). Given their vulnerable status in transitional institutional environments, private enterprises are more inclined to apply institutional *guanxi* norms to gain a commercial advantage.⁶⁶ Relying on data from the biennial Chinese Private Enterprise Survey (CPES), we select the expenses incurred by each private enterprise at the provincial level for maintaining good public relations in 2012, 2014, 2016, 2018 and 2020. We then divide this expense by the total sales of the enterprise to measure the average public relations expenses of 31 provinces in China. The results of these tests are presented in Table 6. The results indicate that IGC_6 continues to exert a significant negative effect on inbound mobility, even when considering the IGC constructed from the *Baidu* index. This suggests that the practice of instrumental *guanxi* by both individuals and private enterprises diffused at the regional level hinders inbound mobility.

Finally, although the FE model rules out time-invariant confounders and lagged values help to avoid mutual causality, we consider that we might have omitted some variables, which could have resulted in interference terms that correlated with the explanatory variables. For better causal conclusions, we use the Bartik method to establish an instrumental variable (Bartik IV) for the IGC and estimate the regression model using the fixed-effects two-stage least squares (FE-2SLS) method. Details are presented in Part D of the Appendix. After accounting for endogeneity, the IGC is still significantly and negatively correlated with inbound mobility at the 0.05 confidence level.

Conclusion and Discussion

This research focuses on the dynamics of instrumental *guanxi* culture that affect China's inner migration. To quantify the prevalence of instrumental *guanxi* culture in different regions, we constructed an index using the *Baidu* search index of gift giving to higher-ups. This index covers 297 prefecture-level (and higher) cities and so accounts for around 96 per cent of the population in

⁶⁵ Chen, Yuan Yuan, and Feng 2013.

⁶⁶ Wank 1996.

Table 4. Selected Results from Models Using Different IGC Measurements, 2011–2019

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	FE	FE	FE	FE	FE	FE
IGC_1	-0.037**					
	(0.009)					
IGC_2		-0.014**				
		(0.003)				
IGC_3			-0.011**			
			(0.003)			
IGC_4				-0.010*		
				(0.003)		
IGC_5					-0.010***	
					(0.002)	
Lagged IGC						-0.013*
						(0.004)
Controls	YES	YES	YES	YES	YES	YES
Numbers of cities	281	281	281	281	281	280
N	2,153	2,153	2,153	2,153	2,153	1,972

Notes: Adjusted robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5. Selected Results from Models Predicting IM_1, 2011–2019

	Model 1	Model 2
	FE	FE
<i>Guanxi</i> culture (IGC)	-0.019**	-0.020**
	(0.006)	(0.007)
<i>Guanxi</i> culture (SGC)		0.019*
		(0.009)
Controls	YES	YES
Number of cities	277	277
N	2,102	2,102

Notes: Adjusted robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

China. By so doing, we extend the research on *guanxi* networks and social ties beyond individual practices to encompass wider cultural norms. We apply big data to capture the variations in the different structural impacts of *guanxi* culture on labour markets in each region and province. Using a fixed-effects approach with panel data and controlling for a set of economic and social variables, we demonstrate that instrumental *guanxi* culture has a non-negligible role and that potential migrants are less attracted to a city with a strong culture of instrumental *guanxi*. Results from the FE models using different measures for instrumental *guanxi* culture, including the public relations expenses of

Table 6. Selected Province-level Results from Models Using IGC_6, 2011–2019

	Model 1	Model 2	Model 3	Model 4
	FE	FE	FE	FE
	Y=IM	Y=IM_1	Y=IM	Y=IM_1
<i>Guanxi</i> culture (IGC_6)	−0.012**	−0.014**	−0.012*	−0.014*
	(0.004)	(0.004)	(0.004)	(0.003)
<i>Guanxi</i> culture (IGC)			−0.040*	−0.043*
			(0.013)	(0.012)
Controls	YES	YES	YES	YES
Number of provinces	29	29	29	29
N	141	141	141	141

Notes: Adjusted robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

private enterprises and the auxiliary causal test using Bartik IV, reveal that our conclusion is robust. In addition, the comparative analysis of sentimental *guanxi* culture indicates that a region's culture of sentimental *guanxi* plays a role in attracting migrants, in contrast to the effects of instrumental *guanxi* culture.

Notable contributions of this research lie in the exploration of the role of *guanxi* culture at the prefecture level and in distinguishing between the effects of instrumental and sentimental *guanxi* culture. Our approach diverges from the prevalent micro-level case studies in the field of *guanxi* and social capital. Prior research has demonstrated that having social ties benefits an individual's job search, socioeconomic status and sense of belonging to a city.⁶⁷ However, when viewed as a collective attribute, instrumental *guanxi* practices related to institutional malfeasance and social disorder escalate labour market costs in host areas, negatively affecting inbound mobility. As a result, although building *guanxi* networks may prove effective for individual instrumental goals, diffused *guanxi* culture across a city, an area or a society acts as a barrier, preventing newcomers from entering and settling in. Moreover, the positive impact of sentimental *guanxi* culture on enhancing regional appeal aligns with existing literature on the moral and orderly aspects of *guanxi*.⁶⁸ This research makes a theoretical contribution by illuminating the juxtaposition of the “bright side” of sentimental *guanxi* and the “dark side” of instrumental *guanxi* for migrants.

There are, of course, some limitations to this research. First, the IGC we construct may not perfectly encapsulate all manifestations of a city's instrumental *guanxi* culture, as there are various ways to cultivate and maintain *guanxi* with influential individuals, such as through “wining and dining.” Nevertheless, gift giving to higher-ups is acknowledged as one of the most widely employed practices of instrumental *guanxi* in Chinese culture. Second, owing to data constraints, our models only control for economic development, wages, unemployment and human capital. Nonetheless, the FE models assist in mitigating the impact of time-invariant confounders, enabling us to draw causal conclusions. Third, the mediating analysis is exploratory and based on relatively limited data on wages and living expenses, particularly the data on extra living costs; there may be other underlying mechanisms. For future studies, we advocate for more comprehensive data to measure *guanxi* culture at the group level, including quality interviews and surveys. For instance, in China high-end tobacco and alcoholic goods are common gifts for higher-ups. Collecting original purchase information for such items could yield more reliable data on gift-giving behaviour. Additionally, surveys

67 Bian 1997; Palloni *et al.* 2001; Lin 2004; Chen, Yunsong 2022.

68 King 1991; Fei 1992.

on festival rituals could provide deeper insights into the dynamics of sentimental *guanxi* culture. With the inclusion of such data, we can obtain a panorama of *guanxi* culture in China, offering a novel and contemporary perspective on this longstanding issue.

Supplementary material. The appendix can be consulted online at <https://doi.org/10.1017/S0305741024000316>

Acknowledgements. The authors express appreciation to the anonymous reviewers of *The China Quarterly* for their valuable feedback. The perspectives presented in this article solely belong to the authors, who bear full responsibility for the interpretations and any lingering inaccuracies. This research was funded by the National Social Science Fund of China (No. 19ZDA149) and the Major Research Project of Philosophy and Social Sciences of the Ministry of Education of the People's Republic of China (No. 23JZD028).

Author contributions. Zhihui Fu and Shukai Liu contributed equally to this work as co-first authors. Zhihui Fu, Shukai Liu, and Yunsong Chen devised the research plan and carried out the data analysis. Wen Ma organized the literature and took the lead in writing the manuscript. Guodong Ju provided support for the manuscript writing. Yunsong Chen supervised the entire research process. All authors discussed the results and contributed to the final manuscript.

Competing interests. None

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Cite this article: Fu Z, Liu S, Ju G, Ma W, Chen Y (2024). Instrumental Guanxi Culture and Inbound Urban Migration in China: A Prefecture-level Analysis Using Online Search Data. *The China Quarterly* 1–19. <https://doi.org/10.1017/S0305741024000316>