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# Lineage-based heterogeneity and cooperative behavior in rural China<sup>☆</sup>

Quqiong He<sup>a</sup>, Ying Pan<sup>b</sup>, Sudipta Sarangi<sup>c,d,\*</sup>

<sup>a</sup> School of Economics and the Center for Econometric Analysis and Forecasting, Dongbei University of Finance and Economics, China

<sup>b</sup> Fannie Mae, Washington, DC 20016, United States

<sup>c</sup> Virginia Tech, 3016 Pamplin Hall, Blacksburg, VA 24061-0316, United States

<sup>d</sup> DIW Berlin, 10117 Berlin, Germany

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## ABSTRACT

This paper investigates how lineages, the commonly found organizations in rural villages of China, affect people's intra- and cross-lineage cooperative behavior. We use data from the Chinese Household Income Project Survey 2002, which exclusively contains information about the lineage structure in these villages allowing us to classify three levels of lineage-based heterogeneity. Our identification strategy relies on the exogeneity of lineage-based heterogeneity. We find evidence that people in a village with higher lineage-based heterogeneity are less likely to exhibit reciprocity behavior within lineages or contribute to the provision of public goods that are jointly shared across lineages. The estimation results remain robust to the inclusion of various control variables and additional background characteristics. Finally, we examine a number of other economic outcomes and find that more homogenous villages do better than other types of villages.

## 1. Introduction

Developing countries, including China, make tremendous efforts to promote rural development and reduce poverty. Because the success of many economic endeavors, such as the exchange of goods and services and the provision of public goods depend on cooperation, understanding the nature of cooperative behavior is of vital importance. In developing areas where formal contract enforcement is often weak, informal institutions such as lineages, tribes, or castes guide people's behavior. In rural Chinese villages, for example, lineage solidarity, which is based on concepts of family and shared patrilineal descent, still plays an important role in providing informal institutions of accountability (Tsai, 2007). However, different villages have different lineage structures and therefore are more or less heterogeneous. This paper seeks to understand how an informal institution like clan lineage influences cooperation by examining villages with varying degrees of lineage-based heterogeneity.

Existing studies have associated heterogeneity, including ethnic, linguistic, religious and tribal heterogeneity, with trust (Alesina and La Ferrara, 2002), economic growth (Easterly and Levine, 1997), provision of public goods (Alesina et al., 1999) and the quality

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\* Corresponding author at: Virginia Tech, 3016 Pamplin Hall, Blacksburg, VA 24061-0316, United States.

E-mail addresses: [quqiong.he@gmail.com](mailto:quqiong.he@gmail.com) (Q. He), [Ying.Pan@fanniemae.com](mailto:Ying.Pan@fanniemae.com) (Y. Pan), [ssarangi@vt.edu](mailto:ssarangi@vt.edu) (S. Sarangi).

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of governance (La Porta et al., 1997). Our paper adds to this literature by investigating the effects of lineage-based heterogeneity on both intra- and cross- lineage cooperative behavior simultaneously in the same villages in rural China. To the best of our knowledge, this is the first paper that presents a full picture of cooperative behavior by examining both intra-group and cross-group cooperation. Bowles and Gintis (2008) state that cooperation can take the form of mutually beneficial transactions that may fail to materialize without trust and reciprocity (intra-group), or it can take the form of the providing public goods, which requires agreement and collective action (cross-group). Lineage networks play an important role in institutional development because intra-group moral commitment reduces enforcement cost, and social organizations spanning groups have a comparative advantage in facilitating cross-group cooperation. In this paper, we measure intra-group cooperation by the frequency of mutual help in monetary and non-monetary terms that occur between most familiar individuals while varying the lineage homogeneity across the villages of these individuals. Cross-group cooperation is measured by individual contributions to build village infrastructure and by the share of the village budget that is spent on village public goods. With this setup, we exploit not only both individual and village level variations but also the comparison between intra- and cross-lineage cooperation.

We begin by examining intra-group cooperation. Empirical studies on intra-group cooperation are rare. Conflict theory in sociology suggests that diversity fosters in-group solidarity as well as out-group distrust (Blalock, 1967). However, Putnam (2007) claims that the fundamental assumption behind the conflict theory: in-group trust and out-group trust are negatively correlated – is essentially unwarranted. In other words, bonding with own-group members is not necessarily at the cost of bridging with other groups. Putnam (2007) further argues that there might be the possibility that diversity actually reduces both in-group solidarity and out-group trust and presents some evidence from the United States. Thus, having heterogeneity in the lineage structure of the villages allows us to see how the composition of the village and the extent of the presence of other groups in the village affect intra-group cooperation. Our results support Putnam's hypothesis where we find that more homogeneous villages demonstrate greater cooperation – just the possibility of repeated interaction within your own group can lead to more cooperation.

There is a large body of literature studying the impact of heterogeneity on the provision of public goods. The findings generally indicate that heterogeneity in ethnicity, religion or social class undermines cross-group cooperation and the provision of public goods (Alesina et al., 1999; Bandiera et al., 2005; Banerjee et al., 2005). In this paper, we present evidence that villages that are more heterogeneous in terms of lineage spend a lower share of the village budget on village public goods and villagers contribute less labor to build village infrastructures. These findings are consistent with the burgeoning studies emphasizing the importance of tribal structures. For example, Fukuyama (2011) provides new insights into China's development and argues that it was shaped by two forces working in tandem: legalism and Confucianism. One of the great constants in Chinese history is the importance of family, kinship and lineage ties for the social fabric or organization. While legalism sought to centralize the state, Confucianism supported patrimonial power and the importance of the family enabling the two forces to reinforce each other. Although at certain periods one force may dominate the other, they were not in conflict and work together to shape China's transition. In rural China, local governments bear almost complete fiscal responsibility for local public good provision (Oi, 1996; Tsai, 2007). Before the 1980s, village leaders in rural China were generally appointed by the upper levels of the government. Because of increasing conflicts between leaders and villagers over taxes and fees, the *Organic Law of Village Committees* (draft) was first implemented in Guangxi province at the end of 1980 (Fan, 2001; He et al., 2001). This law laid out comprehensive provisions for the election of village committees so that villagers were able to elect their own leaders (Zhang et al., 2004). This institutional shift not only improved the efficiency of local governance but also improved the efficiency of public spending (Zhang et al., 2004; Wang and Yao, 2007; Brandt and Turner, 2007; Luo et al., 2010). On the other hand Xu and Yao (2015) document that informal institutions such as the lineage culture facilitate local governance.

A general concern in the literature is that the residential sorting process is endogenous (Easterly and Levine, 1997; Alesina and La Ferrara, 2002; Miguel and Gugerty, 2005). However, in our analysis the village composition is independent of economic activities (Coleman, 1994; Peng, 2004). In other words, the identification strategy of this paper relies on the assumption that the lineage structure in a rural village, measured by surname patterns, is exogenous to cooperative behavior.<sup>1</sup> Shortly after communist China was founded in 1949, the central government established administrative villages to strengthen the party's rule and to build the commune system.<sup>2</sup> Administrative villages, the lowest level of administrative unit in China, also serve as the lowest rung of collective farming in the commune system. To meet the needs of collective farming, administrative villages included one or more adjacent lineages (Wang, 2006). Therefore, the lineage composition within a village was exogenously determined by a shock – that of China's administrative re-organization. In addition, in 1958, China enacted the household registration system, which inhibits free migration and essentially ties rural people to the land where they were born. Thus, the lineage structure in rural villages has remained stable since 1958 (Solinger, 1999).

Using data from the Chinese Household Income Project Survey (CHIPS) 2002, we find that lineage-based heterogeneity has a negative effect on both the frequency of monetary and non-monetary mutual help. It turns out that villagers do not treat them differently with regard to lineage obligations and enforcement. Our results show that lineage-based heterogeneity has a negative

<sup>1</sup> Despite the possibility that over time cooperative behavior may lead to larger families, this is unlikely to be a serious concern for us. In her seminal study of surname groups Tsai (2007) notes that surname patterns were largely determined exogenously in the pre-communist period by imperial land settlement policies and natural disasters. Moreover, the post-communist period of around fifty years is not long enough to have had a sizable impact on the population growth of cooperative families. Moreover, our heterogeneity variable is defined by village composition instead of lineage sizes. As we explain later, the village border is exogenously determined by the central government.

<sup>2</sup> The goal of the reorganization was to facilitate the penetration and concentration of the Communist regime but did not take into account the common interests of the villages.

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