Collectivization, Urbanization and Occupational Mobility in Inland North China in the Mid-Twentieth Century: Evidence from Shanxi Province

Xiangning Li[a], Matthew Noellert[b], Cameron Campbell[a], James Lee[a]

[a] The Hong Kong University of Science and Technology
[b] University of Iowa

Jan. 2019 Manuscript

Table of Contents

Abstract

This article examines the consequences of political, economic and social change in the mid-twentieth century China for occupational structure and intergenerational mobility patterns. Land reform, the collectivization of commercial enterprises, the Socialist Education Movement, and other changes took place during the mid-twentieth century dramatically altered the occupational structure and the labor market in both rural and urban society. I use novel linked administrative data compiled in Shanxi Province in north China in the mid-1960s. These data record detailed occupation information of individuals for 7,265 father-son pairs from 2,738 households in the Yanggao County Seat in Shanxi Province. The results of log-multiplicative layer effect model imply a U-shaped trend in the overall origin-destination association. The topological model results show a monotonously increasing trend of "reverse" mobility from white-collars to manual workers in the mid-twentieth century. This article is among the first studies to systematically describe the changing occupational structure and mobility patterns in China during the mid-twentieth century.

1. Introduction

The study of the transmission of socioeconomic advantage and disadvantage from one generation to generation is one of the core problems in sociology. China's history around the mid-twentieth century provides a unique opportunity for a better understanding of social mobility in a previously unstudied context. First, examining the transition from a rural, pre-industrial society with a stable occupational structure to a society in an early stage of industrialization and urbanization helps further our understanding of the influence of industrialization on intergenerational mobility. China's transition depicts a more nuanced picture of the mobility path of farmers and people with other elementary jobs. Second, a series of institutional changes and political campaigns - Land Reform, the collectivization of commercial enterprises, the Socialist Education Movement, and others altered the labor market in both rural and urban society. The effect and long-term influence of these radical institutional re-arrangements on occupational structure and mobility patterns have been largely ignored before.

A large literature in comparative stratification examines the effects of industrialization on intergenerational occupational mobility. There are two prominent hypotheses. The first predicts that the more industrialized and economically advanced a society is, the greater the degree of social mobility and social openness (e.g., Blau and Duncan, 1967; Treiman, 1970). Second, Featherman, Jones, and Hauser (1975) proposes that the relative rates and patterns in social mobility are similar in all industrial nations.[1] However, Long and Ferries (2013) challenge both of these hypotheses by arguing that intergenerational occupational mobility in the U.S was much higher in the late-nineteenth century than in the mid-twentieth century. Xie and Killewald (2013) point out that their main conclusion of declining mobility in contemporary society is an artifact of the significant changes in occupational structure over the long term, and more specifically, is driven by the results for farmers.

1 The constant social fluidity is incompatible with the first perspective and has been discussed and tested in numerous empirical studies across a variety of countries (e.g. Breen and Jonsson 2007; Erikson and Goldthorpe, 1992; Grusky and Hauser, 1984; Xie, 1992).

The Long and Xie debate is worthwhile for two reasons. First, the creative usage and linkage of historical data over a long time-span in Long and Ferrier's work encourages sociologists to explore historical resource and model the occupational mobility patterns during the transition from pre-industrialized to industrialized society and examine the effect of the pace of industrialization on mobility patterns. Sec ond and more essentially, the emphasis on the "unique case of farmers" in Xie and Killewalds' comment raises questions for social mobility research.

Meanwhile, the influence of political institutions on occupational mobility patterns within the socialist bloc also attracts the attention of sociologists and historians. Communist governments adopted specific policies to "de-stratify" their societies for political, ideological, and economic purposes during the twentieth century. Agrarian reforms, the elimination of private property, and the introduction of central planning and a command economy brought dramatic changes to these societies and significantly affected the social stratification. In the past few decades, there were two basic questions with conflicting conclusions. The first is whether the socialist revolutions and subsequent de-stratification policies produced patterns of mobility pattern that differed from the ones in capitalist societies. In other words, is the FJH hypothesis also relevant within the socialist bloc (Erikson and Goldthorpe, 1992; Marshall et al., 1995; Wong, 1995, 2002)? Second, market transition and privatization started in post-socialist nations since the 1990s have inspired scholars to explore the legacy of socialism and its effect on mobility patterns (e.g., Domanski, 1995; Gerber and Hout, 2004; Walder and Hu, 2009; Xie and Zhou, 2015).

In this article, I explore the changing occupational structure and mobility patterns in North China over a period of more than half a century, from the late-nineteenth century to mid-twentieth century, based on 7,256 father-son pairs recorded in Yanggao County Seat in Shanxi Province. Unlike most other mobility studies that focus on large urban areas, I focus on a county seat, a low level of urban administration comprising a mix of urban and rural populations. I analyze data from a unique dataset series, the China *Siqing* Social Class Dataset (CSSCD). These data were originally recorded in 1965-1966 on household registration forms, called "*jieji chengfen dengjibiao* 阶级成份登记表" by work teams who conducted interviews and systematically gathered extant archival data recorded between ca. 1946 and ca.1966. I

apply the log-multiplicative layer effect model to assess whether the relationship between father's occupation and son's occupation varies by cohort. I the use the modified topological models based on the CASMIN core models to test four hypotheses about potential mechanisms for the qualitative pattern of occupational mobility. Rather than estimate the causal effect of father's occupation on son's occupation, the purpose of this article is to describe and compare general patterns of intergenerational mobility across different time periods.

To the best of my knowledge, this is one of the first studies to systematically describe the temporal patterns of the association between father's occupation and son's occupation in China from the late-nineteenth to the mid-twentieth centuries. The findings reveal a U-shaped trend of occupational mobility patterns in the mid-twentieth century. Based on the theory developed from comparative research on social mobility in industrialized nations, I specify four pathways through which son's occupation may be related to father's occupation. By outlining these pathways and then assessing them with specifically designed topological models, I not only show the relative importance and explanatory power of current hypotheses but also provide a way to further test and refine my current understanding of the effect of fathers' occupations in the early years of the People's Republic of China (PRC).

This article is divided into four parts. First, I introduce the literature on the patterns of occupational mobility in China. In this part, I also provide a historical overview of the structural change in employment during the Republican period and in Communist China based on aggregated national and provincial data. Second, I introduce the CSSCD dataset series, and outline the local environmental, historical, and economic characteristics of Yanggao County Seat in Shanxi Province. To capture the distinct nature of the occupational structures in socialist regimes, I also introduce a modified occupational classification scheme based on the classic and highly comparable EPG (Erikson–Goldthorpe–Portocarero) scheme in this part (Erickson et al., 1979). Third, I introduce the empirical strategy and present the main descriptive and empirical findings on the occupational structure, and intergenerational occupational mobility in Yanggao County Seat across cohorts. Finally, I conclude with some brief remarks about the implications of these findings.

2. Background

2.1 Occupational Mobility: the Chinese Context

Imperial China is particularly interesting for the study of intergenerational mobility because it was both hierarchical and meritocratic. In Imperial China, there were four broad status categories defined by occupation in descending order. These were *shi* (gentries and scholars), *nong* (peasants and farmers), *gong* (artisans and craftsmen), and *shang* (merchants). As there was little in the traditional economy that was not part of or closely connected with the agricultural sector, *nong* were supposed to have played the most significant role in traditional Chinese society in terms of economic significance. To sustain such a highly hierarchical society, social status was at least in theory supposed to be permanent and hereditary until as late as the beginning of Ming Dynasty (1368-1644 AD). As the old saying goes, *peasants' sons should always be peasants, artisans' sons should always be artisans, etc*.[2]

However, Confucian social concepts also emphasize that social inequality was based not on birth but on individual merit. Empirical studies of the imperial civil service examination, through which people with superior academic abilities gained entry to officialdom, have shown that men of undistinguished parentage did indeed have a chance to attain the degrees that qualified them for office. Ho (1959) suggests that the hereditary aristocracy began to break down during the Tang dynasty, during which time the competitive examination system began to develop into its now familiar form. Vertical mobility into and back out of the national elite started to increase and reached its maximum during the Ming dynasty (1368-1644 AD). Afterwards, it began to decrease. In the period of peak mobility during the Ming as many as one-half of successful candidates had neither a father nor grandfather who held a degree (Ho 1962).

The few available quantitative studies on rural Chinese populations before the twentieth century also suggest that society was relatively fluid. A series of studies based on

[2] The original Chinese sentence is "士之子恒为士，农之子恒为农，工之子恒为工，商之子恒为商." see 《管子（小匡）》。

the Banner populations in rural Liaoning from 1789 to 1909 confirm that in those communities, between one-half and two-thirds of men who held salaried official positions were from households where no other senior male kin held titles. Although kinship networks increased the chances of acquiring a title, official titles were not monopolized by prominent lineages. In contrast, there was substantial downward mobility among the sons of prominent families (Lee and Campbell, 1997; Campbell and Lee, 2003).

There is little empirical evidence relating to intergenerational occupational mobility during the Republican period, even though this was a period of economic transformation. A recent study examines the origins of students from eight universities in Shanghai during the Republican Period. The results show that children of merchants and professionals have overwhelmingly higher proportions over children of farmers and manual workers. Such advantages were more apparent in missionary universities and private universities, whereas students in public universities had more diversified origins (Liang et al., 2017). However, the link between father's occupation and son's occupation remains unclear in this period.

The majority of the studies on occupational mobility in Mao's China after 1949 depicts an unusual mobility pattern that distinguishes China from not only North American and other capitalist nations in Western Europe, but also from socialist bloc countries. First, education remained the predictor of occupational success. Direct inheritance of job status from parents to children was lower than before 1949, and the link between father's and son's educational attainments was half as strong as in other countries (Parish, 1984; Deng and Treiman, 1997). On the other hand, after 1965, an apparent trend of downward mobility from the professional and managerial class to the agriculture class has been confirmed by scholars using various data (Parish, 1984; Davis, 1992; Cheng and Dai, 1995; Wu and Treiman, 2007). Cheng and Dai (1995) emphasize that this downward mobility was due to the drastic policies of rustication during the Maoist era: two waves of "sent-down" campaigns before and during the Cultural Revolution (1966-1976).

Wu and Treiman (2007) challenge this explanation by pointing out that most urban youths who were sent down had returned to the cities by the 1980s. Instead, they suggest that the long-range downward mobility back to agriculture is a unique product of the *hukou* system which permits only the best educated men from rural areas to attain urban registration

status, and blocks occupational opportunities for the rural majority. Their study also provides a dual picture of mobility during the first two decades of the reform period: a high immobility rate among men from rural origins; simultaneously, a high level of social fluidity among those from rural origins who have been able to overcome structural barriers associated with *hukou* and attain urban status.

In terms of the occupational mobility pattern in the last three decades during the transition from state socialism to a market economy, Zhou and Xie's (2015) work presents two countervailing mobility trends using data from six nationally representative surveys between 1996 and 2012. On the one hand, the link between fathers' occupation and sons' occupation in vertical social status has significantly strengthened, indicating a decline in social fluidity following China's transition from state socialism to a market economy. On the other hand, during this period of rapid industrialization, horizontal mobility between the agricultural and nonagricultural sectors increased sharply.

Using archival data compiled between ca.1965, my study departs from the literature described above by investigating changes in occupational structure and social fluidity during the time of transformation in the middle of the twentieth century. Due to the scarcity of relevant data, none of the literature described above provides a detailed picture of changes in occupational structure and mobility before the 1960s, even though the first half of twentieth century was a key period in China's transition from a peasant society to an industrial economy. Developing a deeper understanding the decades leading up to the 1960s is important because China experienced many other dramatic changes in areas that influenced or were influenced by the economy, occupational structure and labor market: the family system, education, demographic regime, and gender relations. While a comprehensive investigation of the role of these other factors is beyond the scope of this article, as we will see below, the data I use offer the potential for conducting such a study.

The archival data I use have significant advantages over the conventional survey data used in most studies of occupational mobility. Most empirical studies of occupational mobility use nationally representative survey data. They find it difficult to account for local context. They depict average relationships across the entire country, but the lack of granularity means that they cannot delve into the specific processes that drove relationships at

the local level.my data also record the names of work units, it allows us to get more reliable occupation information rather than subjective self-reported information by respondents in surveys. Moreover, unlike many previous studies in China that focus on urban areas, my data records occupation in a society with partly rural and partly urban populations, providing a more refined picture of a segment of society that accounted for most of China's population, and which is usually assumed to be highly immobile.

2.2 Occupational Structure in Transition, 1912-1949

The rise of the modern cities and the development of industrial economy in the late nineteenth and early twentieth century gave rise to the appearance of new types of occupations and changed the traditional social hierarchy. Significantly, merchant class was no longer discriminated against in late Qing, and young talents would like to climb the ladder of social status by running business instead of preparing the civil examination (Feuerwerker, 1970; Wright, 1957).[3]

With the establishment of Republican China in 1911, the transition in occupations accelerated in urban areas in two ways. Here I take the example of the census of occupations in Shanxi Province from 1912 to 1924 conducted by the provincial Statistical Division. Table 1 divides occupations into twenty-one categories based on the nature of work, e.g., civil service, professionals and agricultural producers. The aspiration of the Republican government to promote the idea of a modern labor market was apparent, even though the economy in the early twentieth century was still largely pre-industrial: the proportion in the agriculture sector was around 50%. Some new occupations such as journalists, lawyers and parliamentarians were included in the census, even though the numbers in those categories were tiny. From 1912 to 1924, however, the number of the people in the new occupations gradually increased. For example, the number in 'modern' professions in 1924 soared,

[3] For instance, Liu Dapeng, a local gentry in Shanxi Province who failed to pass the civil examination several times, and had to make a living by working for coal industry, found out that the hierarchy between scholars (shi) and merchants (shang) was reversed in some sense. He noticed that the young generation looked down on studying the classics to prepare for the examination and envied merchants (Harrison, 2005).

reaching four times of that in 1913. The rise in the proportion of students also indicates the expansion of education in the early years of Republican China, at least in Shanxi.

[Table 1 here]

Comparison of the results for Shanxi with available tabulations for other locations provides some insight into the extent of regional variation. While no census of occupations was conducted for the entire country during the Republican era, a census was conducted in selected provinces and cities in 1947. According to the summary of the results in Table 2, the proportion in the agriculture sector varied from region to region. The distribution of occupations in Shanxi Provinces in 1947 broadly resembled the one in 1924. The effects of urbanization and industrialization on occupational structure are apparent in the figures for large cities or industrial centers, where around 30%-40% of the population were engaged in trade or industry. In Nanjing, the capital of the Kuomintang government in 1947, the proportion who were civil servants or professionals was nearly 17%. This was much higher than what was reported for other areas. Second, there were gender differences in the extent of regional variation. For males, the regional difference in distribution of occupation was clear, but for females, in most surveyed places, over 80% women engaged in domestic works or remained unemployed.

[Table 2 here]

The role of the agricultural sector and rural population in shaping occupational structure during the process of industrialization and urbanization was much more complicated. Economist William A. Lewis (1954) suggested that modern economy consists of separate capitalist and subsistence (i.e., agriculture) sectors. But in the Republican China, the two sectors went hand in hand. The great difference between rural population and pure agricultural producers in rural Shanxi provided a good illustration. In 1914, the number of farming households in Shanxi reached 1,949,000. Given that the average household size was 4.82 in 1910, by estimation, the rural population should be around 9,394,180, accounting for 89.5 percent of Shanxi's population of the day (Xu, 1983).

Farmers, however, may also have engaged in trade or domestic industry. The data from Table I and Table 2 indicates that only around 40% of the population were solely in the agricultural sector. Local gazetteers also provided vivid examples of the diversity of

occupations and the potential for overlapping activities in rural Shanxi. The Wenxi gazetteer in 1919 recorded: *"In that area, rural population accounted for eighty to ninety percent of total population, but some of them were working in the salt manufacture, some of them in wine-making*."[4] Table 3 shows the distribution of occupations in rural China in the late 1920s to and early 1930s as reported from the Buck survey. In rural China, 72.6% of males were fully or partially engaged in agriculture production and 20.0% had non-agricultural employment. Nearly one thirds of the direct agricultural producers may have engaged in other types of occupations simultaneously.

[Table 3 here]

There were several key points in the transformation of the occupational structure in China from 1912 to 1949. First, the modern occupations came into being along with the industrialization and the development of modern education system in the Republican China. A typical illustration is that by 1947, the number of people engaged in the modern sector in Shanghai and Nanjing appeared to be larger than that in the agricultural sector (see Table 2). Second, the formation and development of modern occupation gradually diversified the pathways to achieve upward mobility.

2.3 Socialist Revolution and Social Stratification in China, 1949-1965

The establishment of the PRC in 1949 created new patterns of social stratification and social mobility that profoundly differed from the ones in Republican China. The impact of communist revolution on peasants in term of social mobility is quite complicated. In the rural area, land reform redistributed rural wealth among peasants, and the heredity class labels assigned during that time laid out the foundation for the discrimination system that favored landless and poor peasants and demoted landlords and previous rural elites (Hinton, 1966; Wong, 1973). On the one hand, the expansion of education in the early years of the PRC may further provide more upward mobility chances for previous agricultural poor (Liang and Lee,

[4] The original Chinese sentence is "业农者十之九，为佃户者佃工者有焉，有兼营工商业者，有于农隙熬土碱、制柿酒者，有驱骡马服盐者，而皆以农耕为本业"。 See 余宝滋修、杨毓田等纂. 1919. 《民国闻喜县志》. 第 6 卷, "生业"。

2013). On the other hand, agricultural collectivization, launched in 1953 and reached its peak in 1958, further equalized the society and radically changed the ways of agricultural production. The heavy extraction of the rural resources and the launch of Hukou system may have intensified the immobility of peasants (Wemheuer, 2014).

The impact of the socialist revolution in urban areas is a more paradoxical one. First, Large-scale movement of Three Antis & Five Antis and the succeeding collectivization of commercial enterprises almost wiped out the existence of all forms of private business and transformed it into state or collective enterprise. The previous capitalists or proprietors were educated or transformed to be sales workers or managers who worked in the state or collective enterprises (Walder, 2015). Second, the urgent need in developing industrialization called for high demand in manual workers, especially in the heavy industry. Skilled manual workers with stable salaries may be the greatest beneficiaries under socialism. There was large-scale urban migration associated with industrialization and the Great Leap Forward in the 1950s. After the Great Leap Forward, the government took policies to reduce the number of staffs and workers and forced the rural migrants to return to the countryside. Nationwide, from 1957 to 1960, the number of staffs and workers increased by 92.5%, rising from 31 million to 59.69 million in 1960, whereas from 1960 to 1963, this number decreased by 26.8% and was only 43.72 million in 1963 (Li, 2001).

Although the descriptive analysis of social mobility in the Maoist China is well documented, less attention has been paid to the systematic empirical inquiry into the effect of socialist transition in the occupational structure. There are a bunch of literature on peasants' income and social inequality to reveal the social transformation under and after agricultural collectivization (e.g., Potter and Potter, 1990; Selden, 1993; Yan, 2003). However, none of them clearly account for how the occupational structure changed and the degree to which the new regime made the mobility channels more open or close to people from certain class origins.

Based onmy review of the relevant literature, andmy overview of changes in the occupation structure over the twentieth century, I identify four hypotheses to test:

H1: The linkage between fathers' occupations and sons' occupations were weakened in the collectivization period than that before 1949 because of the de-stratification policies

and more equal distributions of educational opportunities after 1949. Specifically, the strong inheritance effect of local elites before 1949, namely salaried state officials and managers in my analysis, was broken down by the socialist revolution.

H2: New institutional arrangements after 1949 provided more possibilities of upward mobility for the previously disadvantaged class, i.e., peasants and unskilled workers.

H3: Conversely, due to the barricade set up by Hukou system in 1958 and heavier resources extraction from the agricultural sector, people from peasant and manual worker origins are harder to achieve non-manual positions.

H4: Due to the need of industrial development and upgrade of manual workers in both socioeconomic status as well as in the ideological discourse, sons of officials and manager, small proprietors and sales workers were more likely to become manual workers than they were before 1949.

3. Data and Measures

3.1 The CSSCD

The uniqueness and major contribution of this article lies in its use of a novel data from a grass-roots location during the transition from a pre-industrial society to a rapidly industrializing socialist planned economy. I make use of a subset of the China *Siqing* Social Class Dataset (CSSCD) series, which is constructed from Four Cleanups social class registers in the collection at the Tsung-Dao Lee Library at Shanghai Jiaotong University.[5] The Library currently holds 3,176 Four Cleanups household social class registers from Shanxi Province. In this article, I make use of 2,738 households from 12 brigades in Yanggao county seat, of which 1,805 are urban households.

These household registers were compiled in 1965-66 during the Socialist Education Movement and the Four Cleanups Campaigns and recorded by investigation teams who

[5] The dataset used in this article was constructed independently of another Shanxi subset of the CSSCD that Matthew Noellert helped construct at the Research Center for Chinese Social History (RCCSH) at Shanxi University. The RCCSH dataset contains an additional 7,800 household forms from the archival collection of the RCCSH (Xing et al., 2016).

conducted interviews and systematically gathered extant archival data recorded between ca.1946 and ca.1966 (Xing and Ma, 2008; Xing et al. , 2016). Much of the data for the period between 1946 and 1966 are accordingly prospective in the sense that when the registers were compiled between 1965 and 1966, some of the information was extracted from village government records that had been compiled contemporaneously.

The content of the CSSCD data provides cross-sectional information describing individuals and households around 1966 as well as retrospective longitudinal information about ancestors and relatives going back before the 1940s. The household forms included systematic information for every household, including property from before land reform ca.1946 to ca.1966, the household head's social relations, a three-generation family history, and demographic details on every adult member over 15 *sui* in the household at the time the forms were compiled. The registers from which the CSSCD was constructed also include the entire text of family histories that in some case go back to the Qing dynasty (Xing et al., 2016; Liu, 1990).

To categorize occupations, I have modified the EGP class scheme that is widely used in studies of occupational mobility. Table 4 presents the comparison of the original EGP scheme with my modified class scheme. Specifically, I code occupations into a six-category variable: salaried officials and managers (I), professionals (II), small proprietors (III), sales workers and custom clerks(IV), manual workers (V) and farmers and farm laborers (VI). Simple descriptions of each class and example occupations can be found in Table 4. In light of the low level of industrialization and the unique aspects of state socialism in the early years of the PRC, I concluded that I couldn't apply without modification the occupational classification schemes that are widely used in social mobility studies. For instance, were I to follow the widely used EGP class scheme in comparative stratification, the proportions of the service class and lower grade technicians in my sample would appear to be extremely low (Goldthorpe and Hope, 1974, Goldthorpe, 1987).

[Table 4 here]

One problem that emerged was to identify the occupation to use in the analysis of father-son associations that requires each father or son to be represented by only one occupation in situations when the data indicated that an individual held multiple occupations.

The occupation variables in the CSSCD are transcribed from open-ended narratives. In the data entry process, coders entered all the occupations or means of livelihood that appear in the raw texts. For instance, some household heads' fathers may have up to seven distinctive occupation records in the dataset. Without any further information regarding the sequences and duration of each job appeared, I selected the most privileged occupations based on my six-category class hierarchy to use as the occupation in the analysis. There is only one exception: for farmers and farm workers (VI) who also have records of engaging in rudimentary or temporary manual jobs or street vendors in the same period, I select the lower class on the six-category hierarchy, which is farmers and farm workers (VI). This is because it was common in rural society that the direct agricultural producers engaged in other types of occupations simultaneously[6], and compared to other occupations, rudimentary or temporary manual jobs and street vendors requires little training and very small capital investments.

I examine the link between fathers' occupations and sons' occupations as apparent in variables that record occupations of household members in 1965-66 and at earlier points in time.[7] I make use of information about males who are ancestors, descendants, or siblings of the household head, including grandfathers, fathers, brothers and sons. Brothers, of course, are sons of the household head's father. I exclude grandsons of the household head because they are uncommon.

Following the common practice in analyzing occupational mobility, I deleted observations whose representative occupation indicating they were not in the labor market, e.g. retired people, students, housework and soldiers, which leads a decrease in the number of households from 2,738 in the full sample to 2,601 in the analytical sample. Using the linkage method described in the former paragraph, I obtained 5,435 unique father-son pairs and 1,807 unique grandfather-father-son trios from the 2,601 households from Yanggao County Seat in the dataset. Table 5 presents the number of households by the number of unique father-son pairs. 692 households record one father-son pair with valid occupation information for both,

[6] See the discussions in 2.2.

[7] There are ten sets of occupation variables across different time periods in the CSSCD. Based on the quality of the recorded variables, in this article I use pre-1949 occupations of household heads, pre-1949 occupations of household heads' fathers, pre-1949 occupations of household heads' grandfathers, current (1965-1966) occupations of household heads, current (1965-1966) occupations of adult family members, and current (1965-1966) occupations of adult family relatives.

917 households record two father-son pairs that both the fathers and the sons were in the labor market, 444 households record three father-son pairs. There are 58 households record more than five unique father-son pairs and one household record eight unique father-son pairs, which is the most in CSSCD-SX. Take this household for example, the household head was 62 *sui* in the mid-1960s and was co-residing with his two adult sons. The CSSCD also records the occupational information for the four brothers of the household heads. In total, the eight unique father-son pairs in this household include one pair of the household head's grandfather and his father, one pair of the household's father and himself, four pairs of the household's father and the household heads' brothers, two pairs of the household head and his sons.

[Table 5 here]

Table 6 presents the definitions of the cohorts and numbers of observations in each cohort. To better capture the vast difference in the occupational structure before and after 1949, I divide cohorts based on distinctive origins and destinations in a three-cohort scheme. Cohort 1 capture occupational mobility before 1949. The Destinations in Cohort 1 are *sons' pre-1949 occupations*, and the origins are *pre-1949 occupations of their fathers*. The destinations in Cohort 2 are *sons' occupations in 1965-66*, and the origins are *fathers' occupations before 1949*. Therefore, Cohort 2 represents the transition period from 1949 to 1965-66. In Cohort 3, I included pairs of recorded fathers' current occupations in 1965-66 and sons' current occupations in 1965-66, which generally capture some characteristics of mobility patterns of a younger generation after 1949. However, as all the current occupation information are extracted from the cross-sectional individual sub-dataset in CSSCD-SX, the number of observations appeared in this cohort is relatively small, with only 734 observations.my data only records individuals' age between 1965-1966, and the second column in Table 6 shows the cut off ages in each cohort.[8] There are in total 7,265 cohort pairs

[8] In most cases, the data do not record the exact time points indicating when the individuals recorded in our data were engaged in a particular occupation. In a previous study of assortative mating in Shanxi in the mid-twentieth century, couples were compared according to whether they married before or after 1949, which would indicate roughly whether or not the husband was already 25 in 1949 (Xing et al., 2017). The same strategy cannot work in an analysis of occupational mobility, because individuals might hold their most high-status job at a later age. Now the cohort definition is mainly based on the period indicating by the variables recorded in the dataset. The cut-off ages are not playing a deciding role in defining cohorts, but only to make my sample cleaner. For instance, in the dataset, there are household heads who were 15 *sui* (or even younger) in 1965-1966 but had information for their pre-land reform occupations which were apparently problematic.

across the three cohorts. There are 1,674 household heads who have the records both before land reform and in the current period are double counted in Cohort 1 and Cohort 2. Similarly, most father-son pairs are double used in Cohort 3 because fathers who have records in the current period normally have valid occupation information before land reform.

[Table 6 here]

3.2. Economic and Social Structure in Yanggao County Seat

Yanggao County, surrounded by high mountains on three sides, is in Northeast Shanxi, located north of Datong, a city that is famous for its coal production. The terrain of Yanggao County has geographic characteristics typical of the Loess Plateau region. Mountainous areas, plains and the rolling hills account for one-third of Yanggao County respectively. Map 1 shows that the County lies at the border of three provinces, i.e., Shanxi, Hebei and Inner Mongolia, and has historically been the site of battles between Han and other minority nationalities. Therefore, Yanggao has long been seen as a strategically important location in war and large-scale agricultural production did not emerge there until the late Ming Dynasty (YGXZ, 1993: 1)

[Map 1 here]

The opening of the *Jing-Sui* 京绥 railway in 1911 led Yanggao County to become an important trade center in Shanxi Province. The active grain market also spurred the growth of service industries. The commercialized economy in the early twentieth century in Yanggao led to a diversified labor market. According to the gazetteer, at that time, there were over 400 small business from more than 10 industries in the county seat (YGXZ, 1993: 352).

Figure 1 to Figure 4 present changes in population in Yanggao County after the founding of the PRC. The rise of population was relatively slow compared to other northern counties, increasing from 189,578 in 1949 to 207,111 in 1966 (Figure 1). As Figure 2 shows, by 1966, the proportion of the non-agricultural population had raised to 8.27 percent from 5.11 percent in 1949. Interestingly, the percentage of rural labor force stabilized at around 35 percent of the total population, excepting the special years of 1964 and 1965 (Figure 3). The

sharp growth of rural labor force stemmed from the Socialist Education Movement, a campaign that sent down cadres, students and urban workers to work with peasants (Brown 2012). In terms of occupational change in Figure 4, the number of staffs and factory workers (*zhigong* 职工) grew the most, from 749 (0.4%) in 1949 to 4386 (2.31%) in 1966. The development of both light and heavy industry in Yanggao County created many jobs (Yanggao 1993: 294-306).

[Figure 1 here]

[Figure 2 here]

[Figure 3 here]

[Figure 4 here]

Table 7 and Figure 5 presents the distributions of all the pieces of occupation information that appear in the CSSCD dataset. Individuals who were recorded with more than one occupation will appear more than once. This table is based on the full sample which consists of 2,738 households from Yanggao County Seat. Figure 6 presents the distributions of representative occupation after the selection of the highest-status occupation for the data I use for analysis. Figure 5 and Figure 6 shows a similar picture of the changing occupational structure in the first half of the twentieth century in the Yanggao County Seat.

[Table 7 here]

[Figure 5 here]

[Figure 6 here]

A number of changes over time are apparent in Table 7. First, the highly diversified labor market in Table 7 confirms the prosperity of the commercial economy in Yanggao County since the early twentieth century. Second, along with the advent of modern state-building at the local level in China, the proportions of male salaried state officials and managers witnessed a roughly tenfold growth between 1911 and 1965 in Table 7. Third, self-employed groups including small proprietors, vendors, and merchants dwindled away after 1953 (see Figure 7). Meanwhile, the development of both light and heavy industry and the service industry resulted in large increases in manual workers and sales workers (see Figure 8). For instance, the percentage of technicians was only 0.15 before 1911 and 2.81 in 1953-1966. Interestingly, some subcategories for the manual workers indeed witnessed a great

decrease. The proportion of tailors decreased from 8.36 % in the early twentieth century to 3.62% during 1953-1966 mainly because of the increasing popularity of sewing machines in Shanxi Province during the mid-twentieth century (Noellert et al., 2017). Fourth, for those not in the labor market, the percentage of students increased largely, from 0.04 before 1911 to 1.71 after 1949, indicating a great expansion in education.

[Figure 7 here]

[Figure 8 here]

In terms of the gender difference during 1953 to 1966, similar to Buck's estimation in the 1930s (Table 3), more than 80 percent of women in Yanggao County Seat engaged in either agricultural production or domestic works (Figure 9).

[Figure 9 here]

4. Method

4.1. UNIDIFF Model

Traditional way to identify a relationship between two categorical variables is to calculate percentages within categories of the independent variables and to compare these percentages across the categories of the dependent variables. It is not adequate to examine mobility patterns because it does not account for the influence on numbers of observations of the total numbers of father and son in each occupational category. For instance, more observations of combinations with specified occupations simply because people in that category are especially common, not because there exists a specific mobility pattern for such father-son pairs.

To examine variations in the strength of the association between father's occupation and son's occupation for different cohorts, I apply the log-multiplicative layer effect model (Xie, 1992), also known as uniform-difference (UNIDIFF) model (Erikson & Goldthorpe, 1992) for the three-way table of sons' occupations by parents' occupations by cohort. The UNIDIFF model is commonly applied to cross-tabulated data in the literature on comparative social mobility. It requires cross-classified tables to display a common pattern of association, and captures variation in the strength of the association through a layer-specific multiplicative

parameter (Xie, 1992).[9] In the context of this article, it postulates a similar pattern of sons' occupations and fathers' occupations across cohorts. Cohort 1 is normalized to unity and used as the reference category. UNIDIFF parameter less than 1 indicates an overall weakening in the associations; UNIDIFF parameter greater than 1 indicates an overall increase in the associations.

I compare a sequence of log-linear models according to their goodness of fit. First, I fit the Conditional Independence Model as the baseline model. The formula is written as below:

$$\log(F_{ijk}) = \lambda + \lambda_{\mathrm{i}}^{\mathrm{O}} + \lambda_{\mathrm{j}}^{\mathrm{D}} + \lambda_{\mathrm{k}}^{\mathrm{C}} + \lambda_{\mathrm{ij}}^{\mathrm{OC}} + \lambda_{\mathrm{Jk}}^{\mathrm{DC}} \quad (1)$$

where O denotes fathers' occupations, D denotes sons' occupations, and C denotes cohorts. λ is the intercept and $\lambda_{\mathrm{i}}^{\mathrm{O}}$, $\lambda_{\mathrm{j}}^{\mathrm{D}}$ and $\lambda_{\mathrm{k}}^{\mathrm{C}}$ represent the marginal effects of O, D and C, resepectively; $\lambda_{\mathrm{ij}}^{\mathrm{OC}}, \lambda_{\mathrm{Jk}}^{\mathrm{DC}}$ represent the two-way interactions between O and C, and D and C, respectively. After controlling for the marginal distributions, the Conditional Independence Model assume no association between fathers' occupations and sons' occupations. It is only used as a baseline for comparison. Second, the Constant Social Fluidity Model adds 25 = (6-1) *(6-1) extra parameters that estimate fathers' occupations i by sons' occupations j association using a full interaction of formulation. But it assumes the association to be constant across all cohorts. Third, to capture the different mobility patterns across cohorts, the UNIDIFF model just need (i − 1)*(j − 1) degrees of freedom, and (k − 1) cohort- specific parameters β, which means that UNIDIFF requires only 28/26 additional parameters about Conditional Independence Model.

The mathematic descriptions of the CnSF and UNIDIFF models are specified below:

$$\log(F_{ijk}) = \lambda + \lambda_i^O + \lambda_{\mathrm{j}}^D + \lambda_k^C + \lambda_{i\mathrm{k}}^{OC} + \lambda_{jk}^{DC} + \lambda_{ij}^{OD} \quad (2)$$

$$\log(F_{ifc}) = \lambda + \lambda_i^O + \lambda_{\mathrm{j}}^D + \lambda_k^C + \lambda_{i\mathrm{k}}^{OC} + \lambda_{jk}^{DC} + \lambda_{ij}^{OD} + \lambda_{\mathrm{ij}}^{\mathrm{OD}} * \varphi_{\mathrm{c}}^{\mathrm{C}} \quad (3)$$

[9] Here a layer-specific multiplicative parameter means that the table-specific origin-destination association is formulated as the log-multiplicative product of a common pattern and a table-specific comparison parameter (Xie, 1992).

4.2. Topological Model

However, if the assumption of stable qualitative pattern of occupational mobility across cohorts does not hold, topological models are more suitable to be used instead to address potential variations in its qualitative pattern (Erikson & Goldthorpe, 1992). The outcome variable is a count of combinations of fathers and sons with specified occupation categories. Categorical right-hand side variables specify the father's and son's occupation, and additional categorical variables (modified CASMIN models described in the following) capture qualitative patterns of mobility , such as whether or not father's and son's occupations are in the same category, how 'distant' the father's and son's occupations are from each other and whether the father is of higher or lower occupation hierarchy than the son.

In order to measure how far the industrial societies, deviate from the core patterns of social fluidity generated from the FJH hypothesis, Goldthorpe and Erikson constructed an explicit topological model of core fluidity to make a comparison of this kind. They proposed the model based on a number of designed and theoretically-informed matrices. They distinguished four effects: hierarchy, inheritance, sector, and affinity. Based on this, eight separate topological matrices are generated: H1, H12, IN1, IN3, SE, AF1, and AF2, which can further be combined into one unified topological model. The matrices of the four effects are designed for the 7 X 7 intergenerational mobility table under CASMIN class schema.

Because of similar reasons indicated in the data part, I designed the modified topological model to capture the mobility patterns in the transition from a pre-industrial economy to a socialist economy. The matrices of the original CASMIN core model of social fluidity are shown in Panel A in Table 8. Panel B is my modified topological matrices.

[Table 8 here]

First, the IN matrices express the intergenerational immobility and mobility of occupations. In the original CASMIN model, IN1 expresses the general inheritance pattern for all classes, IN2 expresses the additional immobility for the professionals and proprietors, and IN3 expresses the immobility for farmers. No essential changes have been made in IN1 and IN2, expect for moving the "1" to the second diagonal cells, since professionals ranked second in my occupational hierarchy. Some may argue that calculation of inheritance effect in

small proprietors and merchants (III) after collectivization. I didn't further modify IN2 here, because in my analytical sample there is only one observation ended in the category of small proprietors and merchants (III) after 1949. I delete the outlier observation, and the whole column has been omitted in the after 1949 cohort.[10] I changed IN3 because of the distinctive nature of self-employed farmers in Western nations and China. According to my *Hypotheses 1*, I designed IN3 expressing the inheritance pattern of salaried state officials and managers (I).

Second, my modified SE matrix expressing the sectoral barrier between manual laborers (V & VI) and those "white collar" classes, aiming at to test my *Hypotheses 2&3*. In my analytical data, most of the manual workers are indeed engaging in rudimentary manual works that required little training. Therefore, I assume there are only two sectors in my analytical sample in which the class hierarchy is flatter than that in a fully industrialized sample.

Third, by introducing HI matrices, the CASMIN model also specifies three hierarchical levels of social stratification. In an industrialized society, the class structure is believed to be partition into a threefold division, and HI1 in the original CASMIN model capture the formal properties of "crossing parameters." Because no real service class or highly privileged class can be partitioned in my township level sample, HI1 effects are omitted in my modified version. I only captured the long-distance mobility for farmers in my HI matrices.

Fourth, I designed two AF matrices intending to better capture the mobility patterns after 1949. Similar to AF1 in the original CASMIN model, my AF1 stresses the long-distance mobility from farmers (VI) to salaried state officials and managers (I). According to *Hypotheses 4*, my modified AF2 intends to capture the upgrade of the worker class after 1949.

Goodness of fit measures how well the model reproduces the observed data. I mainly rely on the Bayesian Information Criterion (BIC), which measures how well the model reproduces the counts in the cells, and rewards parsimony by penalizing the introduction of additional variables. The model with the lowest value of BIC is considered the best model, in the sense that it does the best job of reproducing the pattern of counts of different types of

[10] I also tried to keep the outliers, and add 0.001 to all the zero cells. No fundamentally different results are found.

marriages in the table while using the fewest variables. To clarify the implications of results, in some cases I also present coefficients for selected categories from one of the models. Estimated parameters capture whether patterns are more or less pronounced than predicted from the underlying distributions of father's and son's occupations .

5. Results

5.1. Trends of Social Fluidity across Cohorts

Table 9 and Table 10 summarize the investigation on the extent of changes in the occupational distributions across the three cohorts. In the Panel A of Table 10, the origins are fathers' occupations, and the destinations are sons' occupations. Panel B presents the changes in the distributions of occupations of male household heads in the analytical sample at two-time points, before 1949 and 1965-66, respectively.

[Table 9 here]

[Table 10 here]

First, it is clear that collectivization eliminated private property and small proprietors totally disappeared in 1965-66. Second, the first 15 years of Yanggao County Seat experienced a great expansion of the numbers of state officials and managers (I), from 2.73% to 10.53% in Cohort 2. Third, as a result of the promotion of industrial developments, the proportion of manual workers (V) also increased. Moreover, following the expansion of education after 1949, the proportion of professionals increased, mainly teachers and doctors in the analytical sample.

The descriptive statistics suggests a U-shaped trend in occupational mobility after 1949, in that Cohort 2 has a higher percentage of mobility, and Cohort 3 has the lowest percentage of mobility. The actual extent of fluidity needs to be explored through more formalized tests.

Table 11 shows the UNIDIFF results for the trends in relative mobility across the different cohorts.

[Table 11 here]

The baseline model, which assumes no association between origin and destination, poorly fits the data with G^2 being equal to 2419.7 for 75 degrees of freedom. I then proceed to fit the CnSF model with the association of origin and destination included. This uses up 25 degrees of freedom, and reduces the G^2 by 91.92 percent ($G^2$is 195.5). This confirms that the association between origin and destination does change over cohorts. The UNIDIFF model postulates that occupational mobility varies across cohorts. Hence, a comparison between this model and the previous one provides evidence on potential assoiciations cross cohorts. Considering the deviance and the degrees of freedom of these models, it is apparent that UNIDIFF improves over the constant association model. For instance, the deviance is reduced from 195.5 to 114.8 (41.28%).

The layer effect falls from Cohort 1 to Cohort 2 and rises thereafter, implying a U-shaped trend in the overall origin-destination association. The UNIDIFF estimated parameters falls from 1.000 in Cohort 1 to 0.6827 in Cohort 2, and rise to 1.1997 in Cohort 3. Cohort 2, which is the transition period marked by collectivization and relatively dramatic structural change, shows the greatest degree of social fluidity. The increase in the UNIDIFF parameter in Cohort 3 is remarkable and surprising, indicating that as the new social structure stabilized, the impact of inheritance on occupations in socialist China in the mid-1960s was even stronger than before 1949.

5.2. Topological Model Results

The result of a series of models are reported in Table 12. The first two models postulate no dependence between origin and destination, with Model 1 applying to all cells and Model 2 to non-diagonal cells. Neither model is acceptable in Cohorts 1 and 2. However, the significant reduction of G^2 in Model 2 indicates that immobility is an important factor, and is much more important in Cohort 1before 1949. Model 4 introduces IN matrices and uniform association effect and fits the data reasonably well, explaining 93.8 % and 78.3% of the origin-destination association with only four parameters in the two cohorts, respectively. Adding the SE and HI matrices to Model 4 increase the fitness of both cohorts. In Cohort 1,

compared with Model 4, there is a 29.3% decrease in G^2 using only two additional degree of freedom. Similar conclusions can be drawn if the BIC statistic is used for model selection. The AF matrices are designed to capture the structural change after 1949. In Cohort 1, with the two additional degrees of freedom, Model 7 does not fit better than the Model 6. In Cohort 2, adding AF matrices largely increases the fitness, with a 77.9 % decrease in G^2 compared with Model 6 and a preferable BIC statistic. Two dimensional associations are also explored, but no better fitted models are found. In Cohort 3, Model 2 is the most parsimonious and has a preferable BIC statistic, indicating a strong inheritance pattern.

[Table 12 here]

Table 13 presents the coefficients from Model 7 in Table 12. Cohort 3 has an overall stronger link between fathers' occupations and sons' occupations than Cohort 1 and 2. The overall immobility effect in Cohort 2 is not statistically significant. Similarly, the immobility patterns for professionals are stronger than those of the other classes in Cohort 2. The inheritance patterns for salaried officials and managers in Cohorts 1 and 2 present neither stronger nor weaker immobility patterns than other diagonal cells, although the signs are both negative and the coefficients are both statistically insignificant.

In all three cohorts, the manual worker classes and farmers have little "cross-border" mobility in moving to the "white-collar" class. The barrier is more severe after 1949 than before 1949 (-0.608 versus -0.546). The sign of the SE parameter is positive in Cohort 2, but is only statistically insignificant.

The coefficients for AF2 in Cohort 2 show a great degree of mobility from salaried state officials and managers, small proprietors and service workers to manual worker positions, with a coefficient of 0.800, significant at the 0.001 level. The AF2 coefficient in Cohort 2 is 1.125 and is significant at the 0.001 level, indicating a monotonously increasing trend of "reverse mobility" from the white-collars to blue-collar sector after 1949.

The signs of the AF1 coefficients in Cohort 2 and 3 are positive but both are statistically insignificant. Compared with Cohort 1, this indicates that farmers were more likely to enjoy long distance upward mobility after 1949. Unexpectedly, the HI coefficient is positive and is significant at the 0.10 level in Cohort 1, which indicates that downward

mobility from salaried officials and managers to farmers was more likely to occur than the reverse upward mobility before 1949.

[Table 13 here]

Table 14 shows the results of aggregate analysis of occupational mobility across the three cohorts. Although the fully interactive model (Model 4) fits better than the invariant model (Model 3), this does not mean that all of the relative mobility parameters vary with the cohort. Tests for variation in the specific matrixes are conducted from Model 5 to Model 11. Based on the fitness statistics from Model 5 to Model 11, I obtain model 15, which is preferable according to all of the selection criteria.

[Table 14 here]

[Table 15 here]

To facilitate discussion on the extent of the cohort variation, the coefficients from Model 15 from Table 14 are reported in Table 15. Three key conclusions can be made.

First, the time variant coefficients of IN1, which is -0.575 (p-value = 0.000) in Cohort 1, -0.362 (p-value = 0.011) in Cohort 2, and 0.466 (p-value =0.000) in Cohort 3, indicate a similar U-shaped trend of occupational immobility before and after 1949 to that found in the UNIDIFF model. The strengthened social immobility was not contributed by the immobility of salaried state officials and managers.

Second, in all cohorts, manual workers and farmers were difficult to cross the barrier and were more likely to stay in the bottom class, and the SE parameter is -0.550 (p-value = 0.000). While the positive HI parameter indicates the existence of long-distance mobility between farmers and salaried officials and managers across cohorts. The HI coefficient is 0.317 but is only marginally significant (p-value = 0.090).

Third, after 1949, manual workers increasingly came from various origins, including the descendants of local political, economic elites and those of non-manual sales workers. Accordingly, the AF2 coefficients in Cohort 2 and 3 suggest a monotonously increasing trend of reverse mobility after 1949 (0.652 versus 1.326).

6. Conclusions and Discussions

Based on 7,265 father-son pairs from 2,738 households across three cohorts in the Yanggao County Seat in Shanxi Province, this article is among the first studies to systematically describe the changing occupational structure and mobility patterns in China from the late-nineteenth century to the mid-twentieth century. The differences in levels of social mobility before and after 1949 in Yanggao County Seat are striking. The U-shaped trend of the inheritance pattern contrasts with the prevailing conception of social fluidity and equity in Communist China. Due to the radical de-stratification policies and other social re-arrangement measures, the patterns of occupational immobility became weaker during the period of collectivization. However, after the new social structure stabilized, without a second spurt of state building or a dramatic structural transformation in the labor market, the link between father's occupation and son's occupation was strengthened for the younger generation in the mid-1960s, and the immobility rates became even stronger than in the pre-revolutionary period. Farmers and manual workers did not enjoy the apparent advantages in achieving upward mobility after 1949, whereas a clear trend of "reverse mobility" is evident from white-collars to manual workers.

Without the private property and physical capital that enhanced the intergenerational conversion process in the pre-revolutionary period and other capitalist societies, the intensified inheritance pattern in the mid-1960s is surprising. Studies of intergenerational mobility in the Soviet Union and Eastern Europe indicate that as state socialist nations enter their third and fourth decades as command economies, the rates of intergenerational mobility slow down and the overall patterns of the reproduction of social class begin to resemble those of Western market economies (Szelenyi, 1988). Moreover, this line of research suggests that cultural capital plays a vital role for class reproduction of the former privileged classes under socialism.

The U-shaped immobility pattern revealed in this article suggests an increasing dependency on bureaucratic institutions in the mid-1960s. Mao's economic policies, which included eliminating the labor market and criminalizing entrepreneurship, resulted in the tight control of labor after 1956. Moreover, the process of "decommercialization" increased the

dependency of workers on the welfare perks of particular employers and thereby raised the cost of any type of mobility, whether horizontal, vertical, or geographic.

One limitation of this article is the retrospective nature of the data. One problem is that households who emigrated or went extinct before 1966 would not have been registered in the data. The disproportionate number of local elites in the analytical data before 1949 suggests this possibility. Another problem is that the households that were included in the highly localized data, might have been subject to other kinds of significant selection biases (Xing et al. 2016: 8). For instance, the sample cannot capture those who attained a high or extreme level of upward mobility and managed to reside in the major cities. This could have led to the underestimate the mobility rate after 1949.

Some caveats need to be noted about the definitions of the time periods. In this article, the *pre-1949 occupations of the household heads' fathers* are used twice, which may have intensified certain qualitative patterns of mobility. More thorough robustness checks and analyses need to be conducted here. Using more data available and more three generation pairs, in the future, I plan to conduct a three-way contingency table analysis of the *pre-1949 occupations of household heads*, *pre-1949 occupations of household heads' fathers*, and *current occupations of household heads*, which should enable me to examine the patterns of intergenerational and intragenerational mobility simultaneously.

With more cleaned data from other parts of Shanxi Province and other provinces in North China, I will be able to conduct further analyses across three or four cohorts and regions, which will probably indicate the changing trends from the late-nineteenth century to mid-twentieth century in various locations. I will also examine three-generational mobility. Moreover, as the dataset contains more detailed cross-sectional information in 1965-66, association models and ordered logistic regression can be used to further assess the impact of educational attainment and political affiliation on occupational mobility in the mid-twentieth century.

7. References

Blau, P. & Duncan, O. D. (1967). *The American Occupational Structure*. NY: Free Press.

Breen, R. & Jonsson, J. O. (2007). Explaining Change in Social Fluidity: Educational Equalization and Educational Expansion in Twentieth - Century Sweden. *American Journal of Sociology*. 112: 1775-1810.

Buck, J. L. (1937). *Land Utilization in China: a Study of 16,786 Farmers in 168 Localities, and 38,256 Farm Families in 22 provinces in China, 1929-1933*. The University of Chicago Press.

Cheng, Y. & Dai, J. (1995). Intergenerational Mobility in Modern China. *European Sociological Review.* 11(1): 17-35.

Davis, D. (1992). "Skidding": Downward Mobility among Children of the Maoist Middle Class. *Modern China.* 18(4). 410-437.

Davis, D. F. (1985). Intergenerational Inequalities and the Chinese Revolution: The Importance of Age-Specific Inequalities for the Creation and Maintenance of Social Strata within a State-Socialist Society. *Modern China.* 11(2): 177-201.

Deng, Z & Treiman, D. J. (1997). The Impact of the Cultural Revolution on Trends in Education Attainment in the People's Republic of China. *American Journal of Sociology.* 103: 391-428.

Erikson, R., & Goldthorpe, J. H. (1992). *The Constant Flux: A Study of Class Mobility in Industrial Societies.* Oxford University Press.

Erickson, R., Goldthrope, J.H. & Portocarero, L. (1979). Intergenerational Class Mobility in Three Western European Societies: England, France and Sweden. *British Journal of Sociology.* 30: 415-41.

Featherman, D. L., Jones, F. L. & Hauser, R. M. (1975). Assumptions of Social Mobility Research in the US: The Case of Occupational Status. *Social Science Research*. 4: 329-360.

Feuerwerker, A. (1970). *China's Early Industrialization: Sheng Hsuan-huai (1844-1916) and Madarin Enterprise.* Scribner.

Gerber, T. P. & Hout M. (2004). Tightening up: Declining Class Mobility during Russia's Market Transition. *American Sociological Review*. 69(5).

Grusky, D. B. & Hauser. R.M. (1984). Comparative Social Mobility Revisited: Models of Convergence and Divergence in 16 Countries. *American Sociological Review*. 49(1): 19-38.

Harrison, H. (2005). *The Man Awakened from Dreams: One Man's Life in a North China Village, 1857-1942.* Stanford University Press.

Henryk, D. (1995). Social Mobility Barriers in Six East European Countries: Basic Continuity. *Polish Sociological Review*. 122: 303-324.

Hinton, W. (1966). *Fanshen: A documentary of revolution in a Chinese village*. University of California Press.

Ho, P. (1959). Aspects of Social Mobility in China. 1368-1911. *Comparative Studies in Society and History.* 1(4): 330-359.

-(1962). *The Ladder of Success in Imperial China. Aspects of Social Mobility, 1368-1911*. Columbia University Press.

Lewis, W. A. (1954). Economic Development with Unlimited Supplies of Labour. *The Manchester School.* 22(2): 139-191.

Long, J. & Ferrie, J. (2013). Intergenerational Occupational Mobility in Great Britain and the United States since 1850. *American Economic Review*. 103(5): 2041-49.

Li, R. 李若建. (2001). 困难时期的精简职工与下放城镇居民. 《社会学研究》. 6: 31-42.

Liang, C. 梁晨, Zhang, H. 张浩, Li, L. 李兰, Ruan, D. 阮丹青, Campbell, C. 康文林 & Lee, J. 李中清. (2013). 《北京大学、苏州大学学生社会研究，1949-2002》. 北京：三联书店.

Liang, C. 梁晨, Ren Y. 任韵竹, Wang Y. 王雨前 & Lee, J. 李中清. (2017). 民国上海地区高校生源量化刍议.《历史研究》. 3.

Liu, J. 刘杰。 (1929). 山西人口职业的分析。《劳资合一》.1.

Liu, K. 柳柯. (1990). 解放前 50 年八角村农户经济的变迁——近代农村社会经济调查札记之三。《中国经济史研究》.1: 66-75.

Marshall, G., Sydorenko, S. and Roberts, S. (1995). Intergenerational Social Mobility in Communist Russia. *Work, Employment & Society*. 9(1).

Noellert, M., Xing, L., Hu Y., and Lee, J. (2017). Equality and Growth: Changes in the Composition and Distribution of Wealth in Rural China, 1946-1966. *Unpublished Manuscript.*

Treiman, D. J. (1970). "Industrialization and Social Stratification" in Laumann, E. O. (ed). *Social Stratification: Research and Theory for the 1970s*. Indiannapolis: Bobbs Merrill.

Parish, W. L. (1984). Destratification in China. *Class and Social Stratification in Post-revolution China*. 84-120.

Potter, S. H. & Potter, J. M. (1990). *China's Peasants: The Anthropology of a Revolution.* Cambridge University Press.

Selden, M. (1993). *The Political Economy of Chinese Development*. ME Sharpe.

Szelenyi, I. (1988). *Socialist Entrepreneurs: Embourgeoisement in Rural Hungary*. University of Wisconsin Press.

Walder, A. G. (2015). *China under Mao: A Revolution Derailed*. Harvard University Press.

Walder, A. G. & Hu, S. (2009). Revolution, Reform and Status Inheritance: Urban China, 1949-1996. *American Journal of Sociology.* 114(5): 1395-1427.

Wemheuer, F. (2014). *Famine Politics in Maoist China and the Soviet Union*. Yale University Press.

WXXZ. Yu, B. 余宝滋。 (1919). 闻喜县志。

Wong, J. (1973). *Land Reform in the People's Republic of China. Institutional Transformation in Agriculture.* New York: Praeger Publishers

Wong, R. S. (1995). Socialist Stratification and Mobility: Cross-National and Gender Differences in Czechoslovakia, Hungary, and Poland. *Social Science Research.* 24: 302-328.

-2002. Occupational Attainment in Eastern Europe under Socialism. *Research in Social Stratification and Mobility.* 19: 191-230.

Wright, M. C. (1955). *The Last Stand of Chinese Conservatism: The T'ung-Chih Restoration, 1862-1874.* Stanford University Press.

Wu, X. and Treiman, D. J. (2007). Inequality and Equality under Chinese Socialism: The Hukou System and Intergenerational Occupational Mobility. *American Journal of Sociology*. 113(2): 415-445.

Xie, Yu. 1992. “The Log-Multiplicative Layer Effect Model for Comparing Mobility Tables.” *American Sociological Review* 57(3).

Xie, Y. & Killiewald, A. (2013). Intergenerational Occupational Mobility in Britain and the U.S. since 1850: Comment. *American Economic Review*. 103(5).

Xing, L. & Ma, W. (2008). Rural Grassroots files from the Collectivization Era: Archives of the Chinese Social History Research Center of Shanxi University. *Modern China*. 34(3): 372-395.

Xing, L, Noellert, M., Li, X., Hao, X. & Lee, J. (2017). The CSSCD-SX User Guide: An Introduction to the China Siqing 四清 (Four Cleanups) Social Class Dataset – Shanxi Province. *Unpublished manuscript.*

Xing, L., Campbell, C., Li, X., Noellert, M. & Lee, J. (2017). Education, Class and Marriage in Rural Shanxi, China in the Mid-Twentieth Century. *Under review*.

Xu, D. 许道夫. (1983). 中国近代农业生产及贸易统计资料。上海人民出版社.

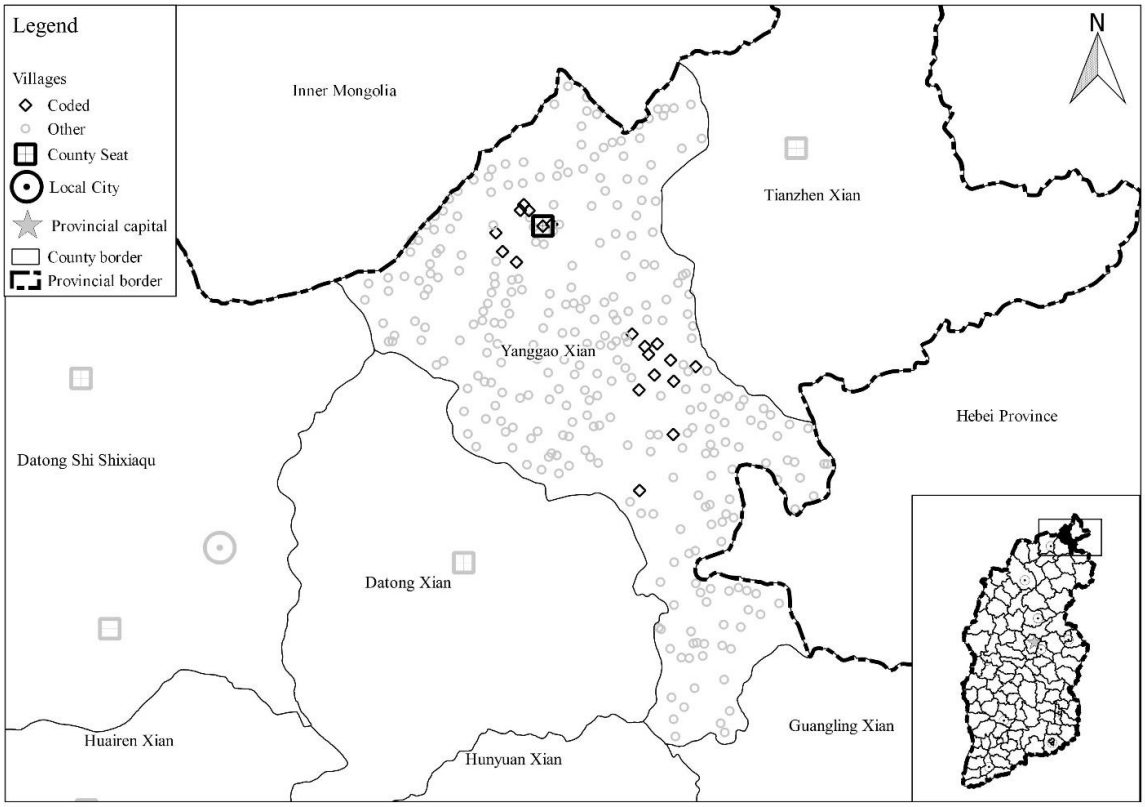
YGXZ. Guo, H. 郭海。 (1993). 阳高县志。北京：中国工人出版社.

ZHNJ. 中华年鉴。(1948). 中华年鉴社。

Zhou, X., and Xie, Y. (2015). Market Transition, Industrialization, and Social Mobility Trends in Post-Revolution China. *Population Studies Center Research Report*. 15-838.

Maps

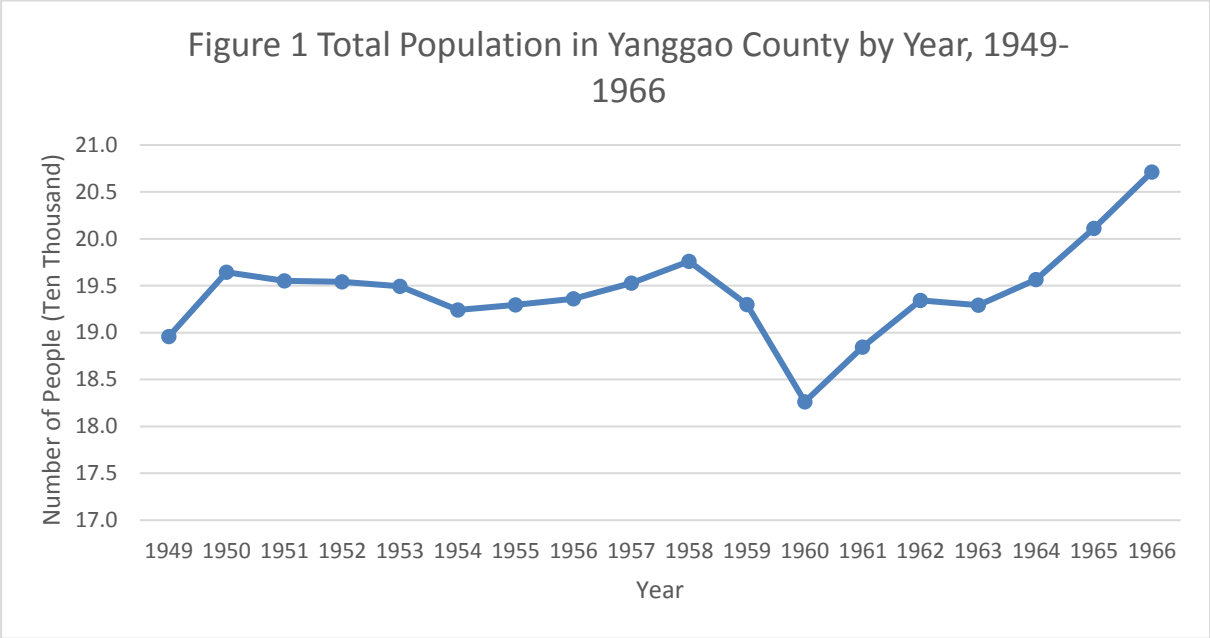
Map 1. Yanggao County



Source: Xing, L. et al. 2017. "The CSSCD-SX User Guide: An Introduction to the China Siqing 四清 (Four Cleanups) Social Class Dataset – Shanxi Province." *Unpublished manuscript.*

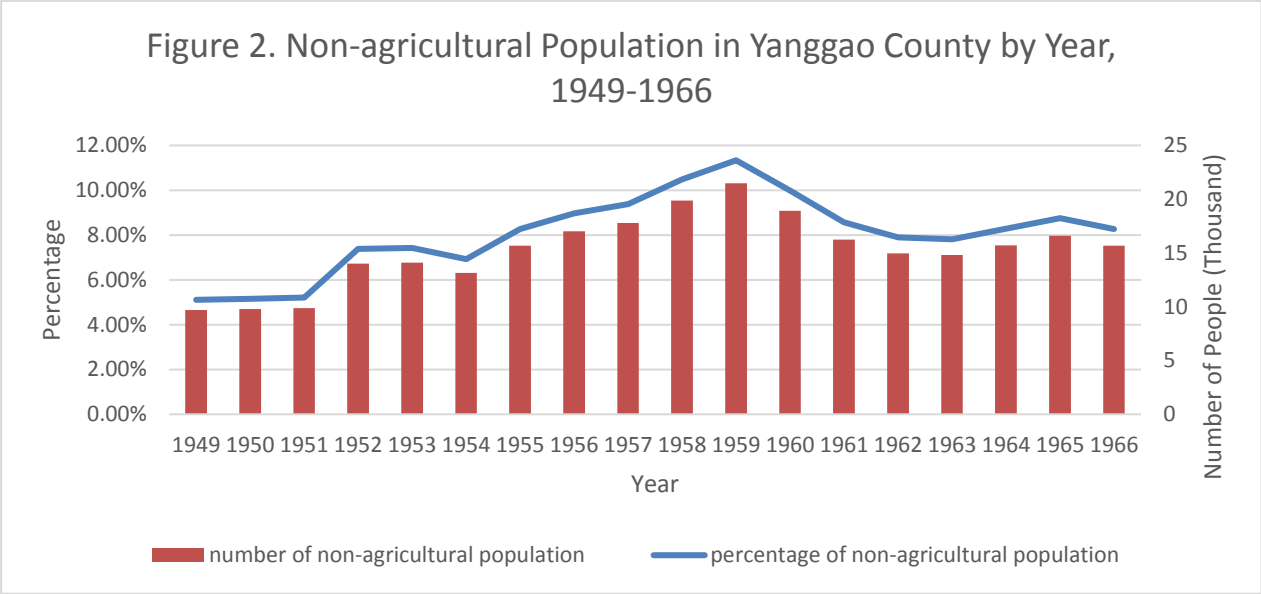
Figures

Figure 1. Total Population in Yanggao County by Year, 1949-1966



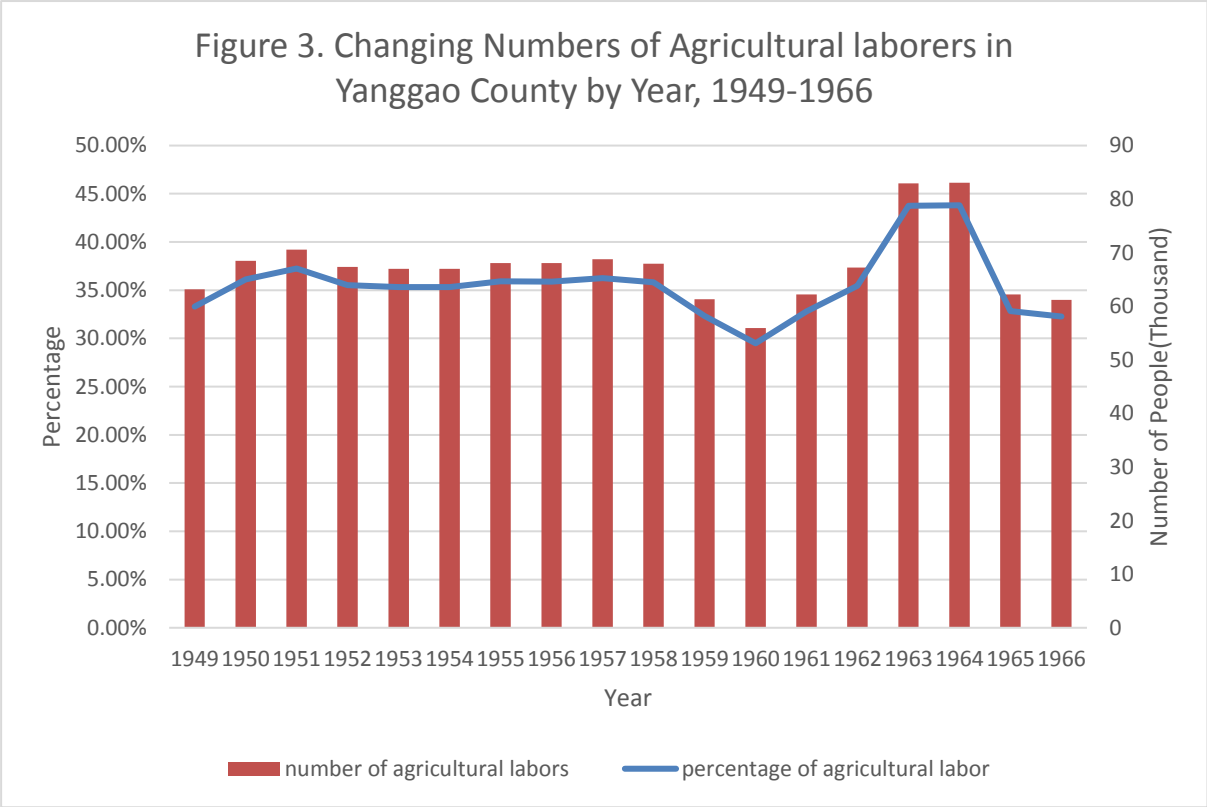
Source: YGXZ. 1993: 703.

Figure 2. Non-agricultural Population in Yanggao County by Year, 1949-1966



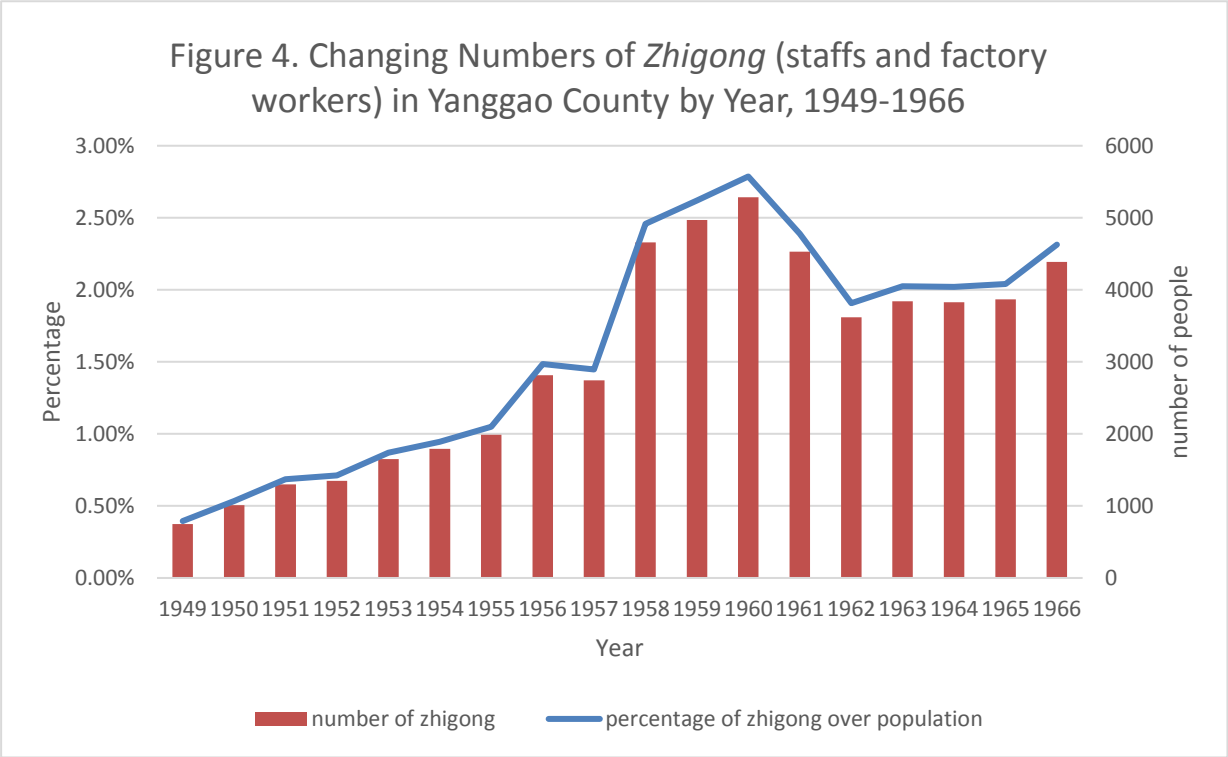
Source: YGXZ. 1993: 703.

Figure 3. Changing Numbers of Agricultural Laborers in Yanggao County by Year, 1949-1966



Source: YGXZ. 1993: 703.

Figure 4. Changing Numbers of *Zhigong* (staffs and factory workers) in Yanggao County by Year, 1949-1966



Source: YGXZ. 1993: 703.

Figure 5. Distributions of Males' Occupations in Yanggao County Seat in CSSCD-SX, ca. 1911- ca. 1965

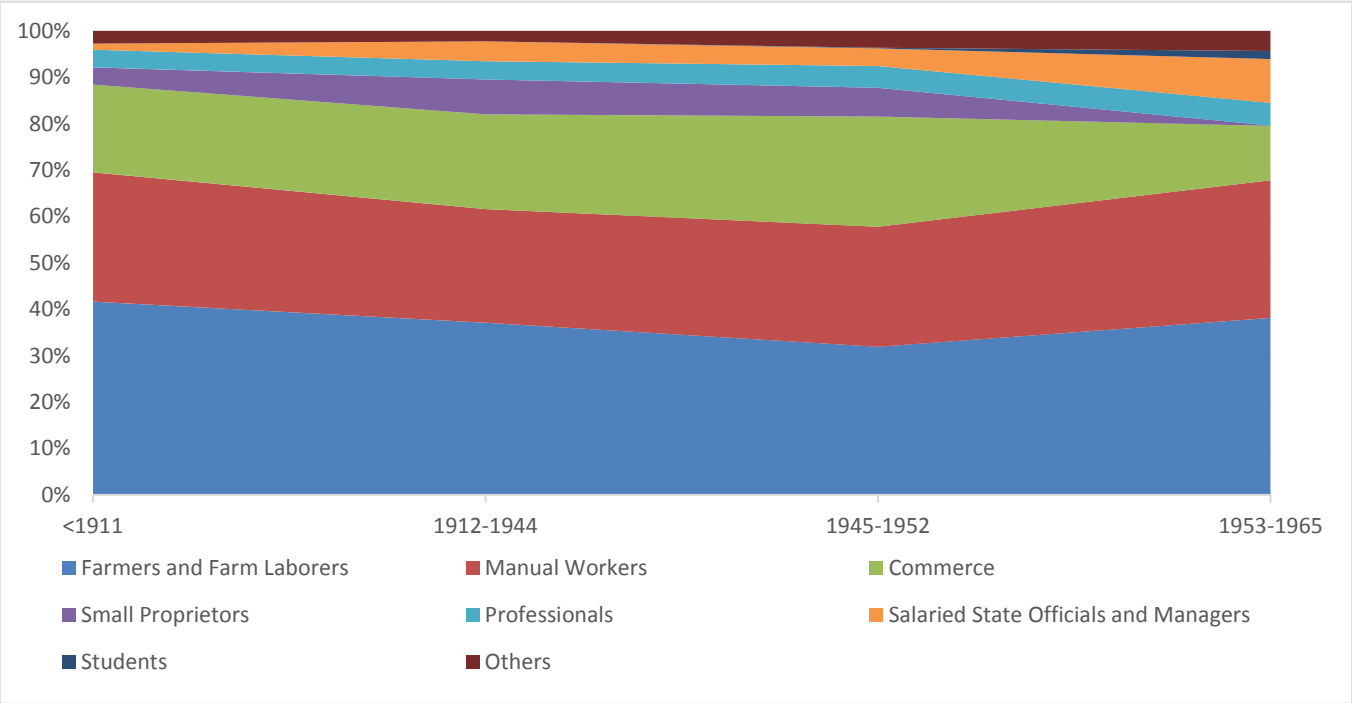
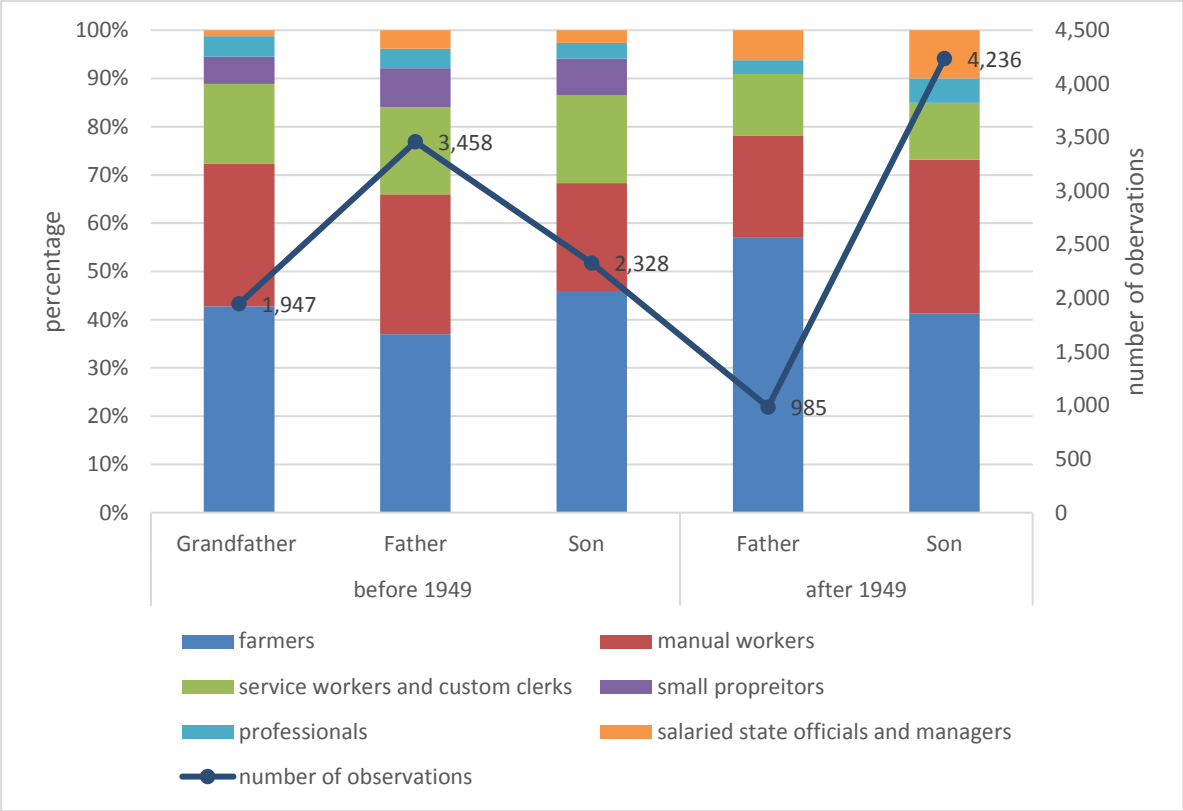


Figure 6. Distribution of Occupations of Yanggao County Seat in CSSCD-SX



Note: based on the author's calculations.

Figure 7. Distributions of sub-classification under "Commerce"

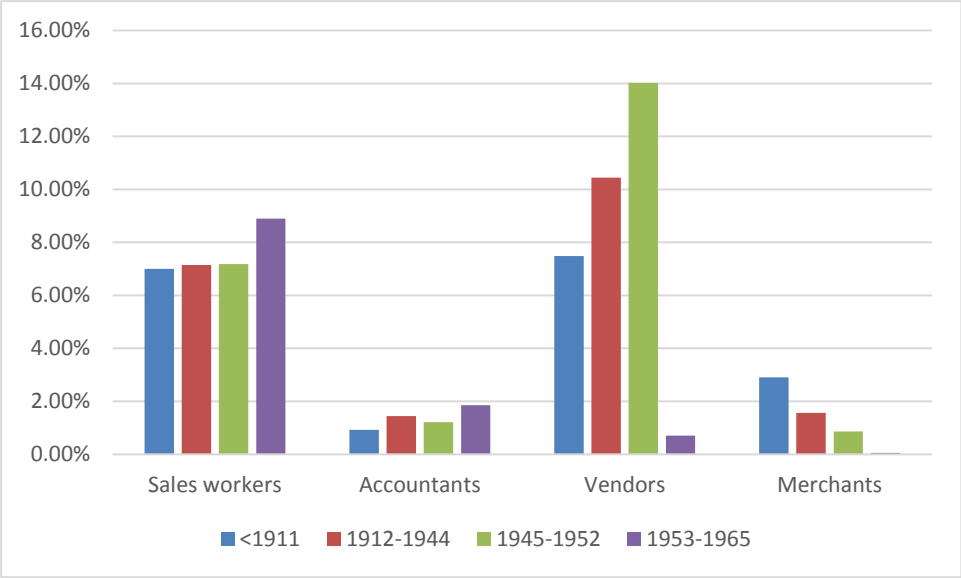
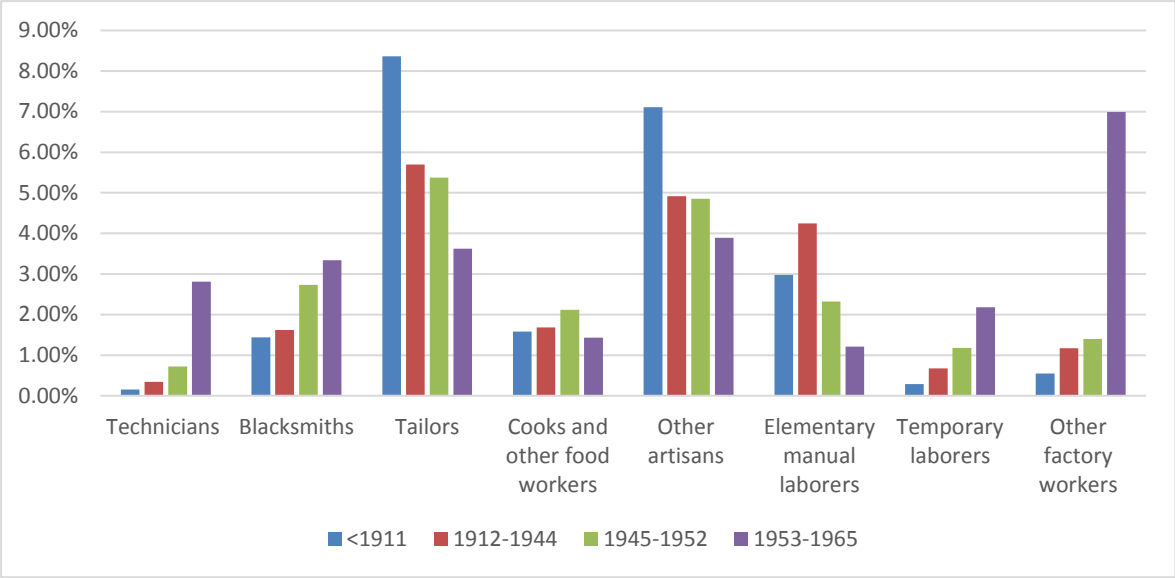
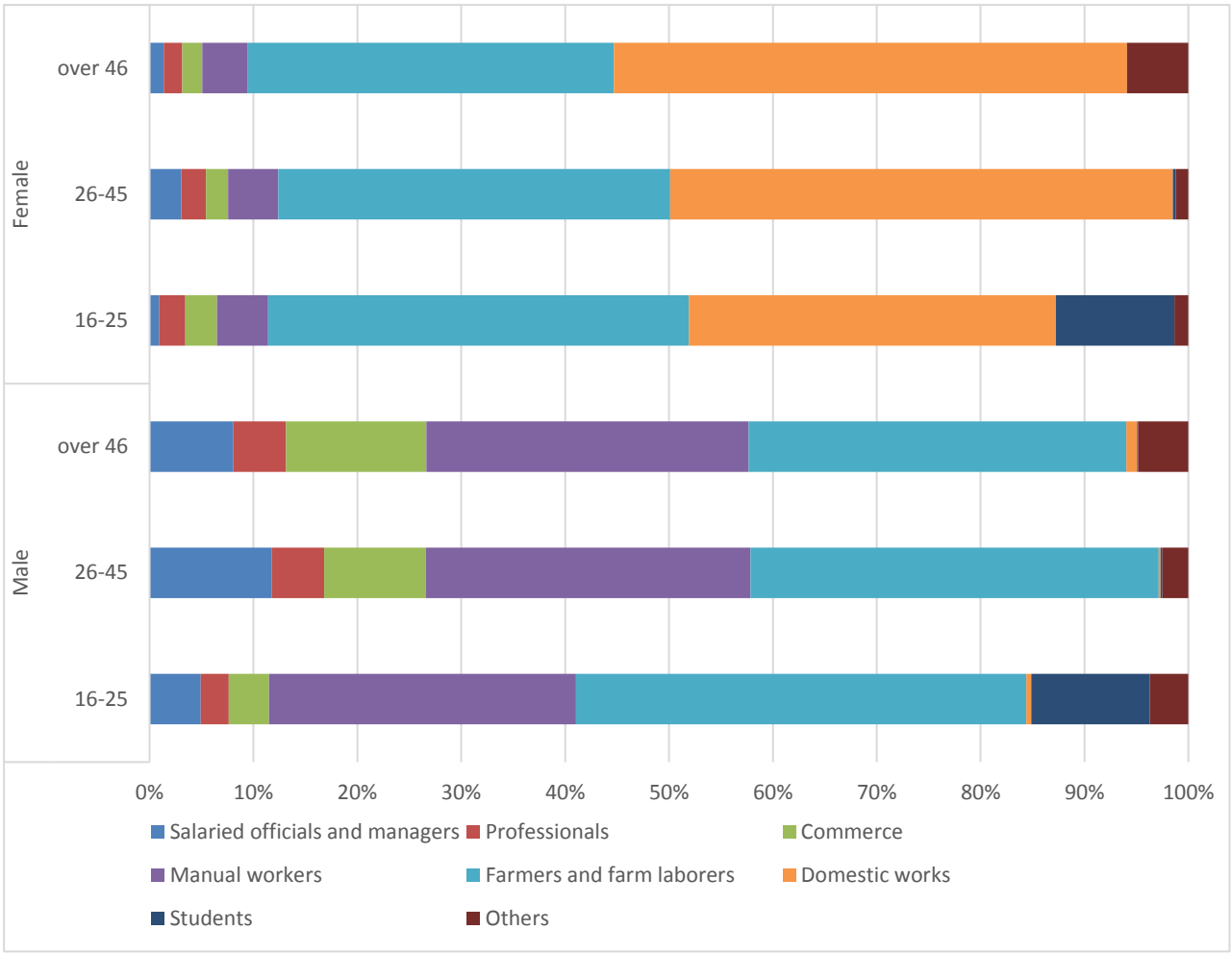


Figure 8. Distributions of sub-classifications under "Manual Workers"



Note: Occupations with total proportions less than 1% are not listed here, which are bricklayers, carpenters, weavers, paper workers, barbers and domestic helpers.

Figure 9. Gender difference in Occupational Distribution ca.1965



Tables

Table 1. Census of Occupations in Shanxi Province, 1912-1924 (in percentage)

	Year												
Occupation	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Parliamentarians	0.03	0.02	N/A	0.0007	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002
Officials	0.02	0.02	0.07	0.02	0.02	0.02	0.8	0.02	0.04	0.04	0.04	0.04	0.04
Clerks	0.07	0.08	0.07	0.07	0.08	0.1	0.1	0.1	0.1	0.15	0.13	0.1	0.1
Soldiers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.3	0.3	0.3
Police	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08	0.07	0.08
Education	0.2	0.06	0.15	0.16	0.2	0.16	0.2	0.2	0.2	0.27	0.3	0.3	0.3
Journalism	0.0008	0.0009	0.004	0.0002	0.0002	0.0003	0.0002	0.001	0.0007	0.0008	0.001	0.0008	0.001
Medicine	0.05	0.06	0.05	0.07	0.07	0.07	0.06	0.06	0.07	0.07	0.07	0.06	0.07
Law	0.0004	0.001	0.0006	0.0003	0.0004	0.0004	0.0003	0.0005	0.0006	0.0007	0.0009	0.0008	0.0009
Agriculture	40.3	35.2	36.6	34.1	39.7	48	38	43.7	52.8	46.3	50.9	47.7	47.4
Fishery	0.001	0.001	0.005	0.002	0.003	0.002	0.004	0.004	0.005	0.004	0.005	0.004	0.003
Animal Husbandry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.3	0.3	0.3
Industry	5.9	3.1	3.4	3.4	3.8	3.8	3.5	3.6	3.7	5.5	5.2	5.2	4.9
Labor	N/A	N/A	N/A	N/A	N/A	4.6	3.7	3.4	7.2	5.6	5.9	6.5	6.9
Mining	0.5	0.5	0.5	0.5	0.5	0.6	0.6	1.4	0.5	0.6	0.8	0.6	0.6
Trade	7.5	5.9	6.5	6.4	6.6	5.3	6.7	11.5	12.4	5.6	7.3	7.8	5.7
Prostitutes	N/A	N/A	N/A	N/A	N/A	0.005	0.009	0.006	0.006	0.006	0.01	0.007	0.007
Students	2.9	2.8	3	3	3.4	2.9	3.9	5	6.1	7.5	8.7	9.2	9
Others	44.7	52.1	49.5	46.4	45.5	19.8	33.1	23.9	13.5	20.05	4.96	7	9.4
Not employed	N/A	N/A	N/A	N/A	N/A	13.5	10	6.9	3.5	5.7	15	15.4	14.2
Total	10,081,896	10,000,825	10,253,416	10,385,675	10,540,823	11,338,958	10,161,609	11,387,723	11,417,257	11,654,283	11,730,486	11,799,109	11,942,578

Source: Liu, Jie 刘杰. 1929.《山西人口职业的分析》。《劳资合一》，1929(1).

Table 2. Census of Occupations in Republican China, 1947（in percentage）

	Locality											
Occupation	Hubei	Shanxi	Fujian	Taiwan	Liaoning	Liaobei	Jilin	Nanjing	Shanghai	Beijing	Qingdao	Hankou
Total												
Civil Service	1.58	1.55	1.31	1.65	2.14	1.92	2.46	9.42	2.09	3.80	2.89	3.47
Professionals	1.17	1.92	0.80	1.11	0.81	1.01	0.41	7.21	1.83	3.19	1.48	3.28
Agriculture	57.38	40.59	41.58	41.04	32.87	38.61	44.82	8.42	4.14	11.95	16.43	7.88
Mining	0.09	0.71	0.21	0.55	2.23	0.65	0.17	0.31	0.03	1.41	0.12	0.13
Industry	7.79	2.65	3.20	3.08	2.52	1.59	3.80	11.03	18.69	7.90	12.42	23.23
Trade	6.01	4.34	4.09	4.05	3.30	3.02	5.98	18.78	19.76	16.26	14.15	22.20
Transport	0.84	0.51	1.04	0.79	0.68	0.56	0.85	4.65	6.02	4.07	3.21	6.96
Domestic Helpers	9.77	4.00	34.74	5.19	1.52	2.83	0.66	22.07	5.17	5.20	7.94	6.41
Others	1.88	1.97	0.92	1.96	1.28	1.17	2.10	4.75	2.66	6.76	7.38	14.68
Not employeed	13.50	41.76	12.11	40.56	52.66	48.64	38.77	13.36	39.61	39.45	33.98	11.76
Males												
Civil Service	2.77	2.77	2.41	2.93	3.85	3.51	4.32	13.34	3.26	4.48	4.64	4.31
Professionals	1.46	2.31	1.10	1.70	1.36	1.49	0.59	7.27	2.15	2.65	2.09	3.09
Agriculture	67.28	69.70	65.08	56.81	54.30	64.74	57.09	10.48	4.67	14.89	24.14	6.47
Mining	0.09	1.29	0.39	1.00	3.90	1.20	0.32	0.48	0.05	1.62	0.19	0.21
Industry	5.13	3.72	5.31	5.56	4.46	2.98	6.79	15.29	25.81	10.95	14.32	21.88
Trade	8.37	6.40	7.51	7.16	5.95	5.51	10.83	27.01	33.66	24.05	23.31	28.57
Transport	1.49	0.89	1.61	1.50	1.22	1.06	1.59	7.45	10.44	6.47	5.50	9.43
Domestic Helpers	2.40	4.48	0.52	4.57	2.29	2.31	1.07	4.09	3.19	5.68	1.62	5.80
Others	1.68	2.26	1.39	2.74	2.10	1.33	2.88	4.30	3.89	6.20	8.81	9.84
Not employeed	9.32	6.18	14.69	16.02	20.56	15.88	14.53	10.29	12.87	23.01	15.37	10.39
Female												
Civil Service	0.24	0.05	0.17	0.38	0.32	0.17	0.31	4.04	0.55	2.83	0.51	2.45
Professionals	0.83	1.44	0.48	0.53	0.22	0.49	0.20	7.11	1.41	3.97	0.54	3.51
Agriculture	46.20	4.91	17.06	25.38	10.13	9.94	30.69	5.59	3.44	7.81	5.97	9.56
Mining	0.08	0.00	0.02	0.11	0.46	0.04	0.00	0.09	0.01	1.11	0.03	0.03
Industry	10.80	1.33	1.00	0.62	0.46	0.07	0.36	5.19	9.36	3.59	9.85	24.88
Trade	3.34	1.82	0.52	0.96	0.48	0.29	0.40	7.50	1.56	5.26	1.74	14.48
Transport	0.12	0.05	0.44	0.08	0.10	0.02	0.01	0.80	0.24	0.68	0.10	3.97
Domestic Helpers	18.09	3.42	70.45	5.82	0.70	3.41	0.18	46.73	7.77	4.51	16.51	7.15
Others	2.09	1.62	0.44	1.18	0.41	0.99	1.19	5.36	1.05	7.56	5.43	20.55
Not employeed	18.21	85.37	9.42	64.94	86.72	84.60	66.66	17.58	74.62	62.68	59.22	13.42

Source: Zhong Hua Nian Jian She中华年鉴社. 1948.《中华年鉴》：105-107。

Table 3. Distribution of Occupations in Rural China, ca. 1929-1933 (in percentage)

		Male			Female	
Occupation	Total	North	South	Total	North	South
Agriculture	**45.2**	**41.7**	**49.7**	**9.2**	**10.7**	**7.2**
Agriculture and others	**27.4**	**29.6**	**24.5**	**20.4**	**17.9**	**23.6**
Housework	13.8	15.7	11.3	18.9	17.3	21.0
Trade	6.0	7.0	4.8	0.1	N/A	N/A
Manufacture	2.7	2.3	3.2	N/A	N/A	0.1
Transport	1.9	1.8	2.2	N/A	0.0	N/A
Professional	1.1	0.9	0.9	N/A	N/A	N/A
Domestic industry	1.0	0.9	0.9	1.3	0.6	2.2
Fishery	0.5	0.1	1.2	N/A	0.0	N/A
Civil service	0.3	0.4	0.1	0.0	0.0	0.0
Mining	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.1	0.1	N/A	N/A	N/A	N/A
Non-agriculture	**20.0**	**21.2**	**18.4**	**58.9**	**59.8**	**57.7**
Professional	8.6	9.0	8.0	0.8	0.8	0.8
Housework	5.4	5.7	5.0	55.1	57.2	52.5
Trade	2.8	3.6	1.8	0.2	0.2	0.2
Manufacture	1.8	1.4	2.2	0.1	N/A	0.1
Civil service	0.6	0.8	0.5	0.0	0.0	0.0
Transport	0.4	0.3	0.5	N/A	0.0	0.1
Domestic industry	0.3	0.3	0.2	2.7	1.6	4.0
Fishery	N/A	0.0	0.1	N/A	0.0	N/A
Mining	0.0	0.0	N/A	0.0	0.0	0.0
Others	0.1	0.1	0.1	0.3	0.4	0.2
Not employed	**7.3**	**7.4**	**7.3**	**11.3**	**11.2**	**11.3**
Total	**48,235**	**27,085**	**21,150**	**42,615**	**24,078**	**18,537**

Source: Notestein Frank W. Population. In Buck Jogn Lossing. *Land Utilization in China: a Study of 16,786 farmers in 168 localities, and 38,256 farm families in 22 provinces in China,* 1929-1933. Table 9. P. 372

Table 4. The Original EGP Scheme and the Modified Six-category Version

Original EGP Version	Six-category Version	Descriptions
I. Large proprietors, higher professionals and managers		
II. Lower professionals and managers	I. Salaried State officials and managers	Salaried administrators and officials in central and local government, in collective and private enterprises
	II. Professionals	Doctors, teachers, higher-grade technicians, performing artists
III. Routine non-manual works		
IVa. Small proprietors with employees IVb. Small proprietors without employees	III. Small proprietors	Small proprietors, with and without employees; merchants
	IV. Sales workers and custom clerks	Employees or apprentice in the small proprietors, street vendors before collectivization Sales workers and custom clerks in collective enterprises after collectivization
V. Lower grade technicians and manual supervisors VI. Skilled manual workers VIIa. Unskilled and semiskilled manual workers	V. Manual workers	Lower-grade technicians (e.g. tractor drivers) Craft and related trades workers (e.g. blacksmiths; handicraft workers in wood, textile, leather and related materials) Elementary occupations (e.g. domestic and related helpers, cleaners and laundries; building caretakers; doorkeepers)
IVc. Self-employed farmers VIIb. Agricultural laborers	VI. Farmers and farm laborers	Self-employed farmers and agricultural laborers. Farm workers in collective/state farms after collectivization

Table 5. Number of Households by the Number of Unique Father-son Pairs in Yanggao County Seat in CSSCD-SX

Number of Unique Father-son Pairs	Number of Households	Percent (%)
0	344	13.23
1	692	26.61
2	917	35.26
3	444	17.07
4	146	5.61
5+	58	2.23
Total	2,601	100.00

Note: Individuals whose representative occupations indicating they were not in the labor market are deleted in the analytical sample, resulting in a decrease in the number of households from 2,738 to 2,601.

Table 6. Three-cohort Scheme

Cohort	Descriptions	Son's cut-off ages in 1965-1966	Observations
1	O: Father's occupation before 1949; D: Son's occupation before 1949	>= 30	3,417
2	O: Father's occupation before 1949; D: Son's current occupation (1965-1966)	>=15 and <= 65	3,114
3	O: Father's current occupation (1965-1966); D: Son's current occupation (1965-66)	>=15 and <= 45	734

Table 7. Distributions of Occupations in Yanggao County Seat from CSSCD-SX by Period, ca. 1911 – ca. 1965

	Male				Female	
Occupation	<1911	1912-1944	1945-1952	1953-1965	1953-1965	Total
Salaried State Official and Manager (I)	**34**	**77**	**240**	**884**	**73**	**1169**
	2.91	***6.59***	***20.53***	***75.62***	***6.24***	***100.00***
	1.25	**4.30**	**3.68**	**9.31**	**1.94**	**4.81**
Official	4	22	33	275	13	325
	1.23	*6.77*	*10.15*	*84.62*	*4.00*	*100.00*
	0.15	1.23	0.51	2.90	0.35	1.34
Clerk	30	55	207	609	60	844
	3.55	*6.52*	*24.53*	*72.16*	*7.11*	*100.00*
	1.11	3.07	3.17	6.41	1.59	3.48
Professional (II)	**100**	**71**	**301**	**457**	**85**	**870**
	11.49	***8.16***	***34.60***	***52.53***	***9.77***	***100.00***
	3.68	**3.97**	**4.62**	**4.81**	**2.26**	**3.58**
Medicine	28	26	83	157	23	279
	10.04	*9.32*	*29.75*	*56.27*	*8.24*	*100.00*
	1.03	1.45	1.27	1.65	0.61	1.15
Education	68	42	202	258	46	529
	12.85	*7.94*	*38.19*	*48.77*	*8.70*	*100.00*
	2.51	2.35	3.10	2.72	1.22	2.18
Artist	4	3	16	42	16	62
	6.45	*4.84*	*25.81*	*67.74*	*25.81*	*100.00*
	0.15	0.17	0.25	0.44	0.43	0.26
Small proprietor (III)	**97**	**137**	**398**	**5**	**1**	**638**
	15.20	***21.47***	***62.38***	***0.78***	***0.16***	***100.00***
	3.57	**7.65**	**6.10**	**0.05**	**0.03**	**2.63**
Sales worker and custom clerk (IV)	**497**	**369**	**1518**	**1093**	**89**	**3566**
	13.94	***10.35***	***42.57***	***30.65***	***2.50***	***100.00***
	18.31	**20.61**	**23.28**	**11.51**	**2.37**	**14.68**
Sales worker	190	128	468	845	67	1698
	11.19	*7.54*	*27.56*	*49.76*	*3.95*	*100.00*
	7.00	7.15	7.18	8.90	1.78	6.99
Accountant	25	26	79	176	13	319
	7.84	*8.15*	*24.76*	*55.17*	*4.08*	*100.00*
	0.92	1.45	1.21	1.85	0.35	1.31
Vendor	203	187	914	67	8	1,379
	14.72	*13.56*	*66.28*	*4.86*	*0.58*	*100.00*

Occupation	Male <1911	1912-1944	1945-1952	1953-1965	Female 1953-1965	Total
Merchant	79	28	57	5	1	170
	46.47	*16.47*	*33.53*	*2.94*	*0.59*	*100.00*
	2.91	1.56	0.87	0.05	0.03	0.70
Manual Worker (V)	**802**	**469**	**1779**	**2931**	**181**	**6162**
	13.02	***7.61***	***28.87***	***47.57***	***2.94***	***100.00***
	26.94	**24.82**	**25.35**	**29.14**	**4.68**	**23.77**
Technician	4	6	47	267	17	341
	1.17	*1.76*	*13.78*	*78.30*	*4.99*	*100.00*
	0.15	0.34	0.72	2.81	0.45	1.40
Bricklayer	18	15	47	83	4	167
	0.66	*0.84*	*0.72*	*0.87*	*0.11*	*0.69*
	0.66	0.84	0.72	0.87	0.11	0.69
Carpenter	88	32	163	202	5	490
	17.96	*6.53*	*33.27*	*41.22*	*1.02*	*100.00*
	0.63	0.40	0.57	0.41	0.00	0.41
Blacksmith	39	29	178	317	19	582
	6.70	*4.98*	*30.58*	*54.47*	*3.26*	*100.00*
	1.44	1.62	2.73	3.34	0.50	2.40
Cobbler	39	25	57	89	3	213
	18.31	*11.74*	*26.76*	*41.78*	*1.41*	*100.00*
	1.44	1.40	0.87	0.94	0.08	0.88
Weaver	26	11	56	59	0	152
	17.11	*7.24*	*36.84*	*38.82*	*0.00*	*100.00*
	0.96	0.61	0.86	0.62	0.00	0.63
Paper worker	3	4	21	34	7	69
	4.35	*5.80*	*30.43*	*49.28*	*10.14*	*100.00*
	0.11	0.22	0.32	0.36	0.19	0.28
Tailor	227	102	350	344	22	1045
	21.72	*9.76*	*33.49*	*32.92*	*2.11*	*100.00*
	8.36	5.70	5.37	3.62	0.58	4.30
Cook and other food worker	43	30	138	136	8	355
	12.11	*8.45*	*38.87*	*38.31*	*2.25*	*100.00*
	1.58	1.68	2.12	1.43	0.21	1.46
Barber	2	4	19	35	5	65
	3.08	*6.15*	*29.23*	*53.85*	*7.69*	*100.00*
	0.07	0.22	0.29	0.37	0.13	0.27
Other artisan	193	88	316	369	22	988
	19.53	*8.91*	*31.98*	*37.35*	*2.23*	*100.00*
	7.11	4.92	4.85	3.89	0.58	4.07
Domestic helper	16	14	68	10	10	118
	13.56	*11.86*	*57.63*	*8.47*	*8.47*	*100.00*
	0.59	0.78	1.04	0.11	0.27	0.49
Elementary manual laborer	81	76	151	115	6	429
	18.88	*17.72*	*35.20*	*26.81*	*1.40*	*100.00*

Occupation	Male <1911	1912-1944	1945-1952	1953-1965	Female 1953-1965	Total
Temporary laborer	8	12	77	207	16	320
	2.50	*3.75*	*24.06*	*64.69*	*5.00*	*100.00*
	0.29	0.67	1.18	2.18	0.43	1.32
Other factory worker	15	21	91	664	37	828
	1.81	*2.54*	*10.99*	*80.19*	*4.47*	*100.00*
	0.55	1.17	1.40	6.99	0.98	3.41
Farmer and Farm Laborer (VI)	**1093**	**672**	**2039**	**3563**	**1395**	**8762**
	12.47	***7.67***	***23.27***	***40.66***	***15.92***	***100.00***
	40.27	**37.54**	**31.27**	**37.51**	**37.07**	**36.08**
Landlord	31	12	6	0	0	49
	63.27	24.49	12.24	0.00	0.00	100.00
	1.14	0.67	0.09	0.00	0.00	0.20
Farm worker	8	2	10	103	6	129
	6.20	1.55	7.75	79.84	4.65	100.00
	0.29	0.11	0.15	1.08	0.16	0.53
Farmer	1,054	658	2,023	3,460	1,389	8,584
	12.28	*7.67*	*23.57*	*40.31*	*16.18*	*100.00*
	38.84	36.76	31.03	36.43	36.91	35.35
Military	**4**	**12**	**106**	**117**	**6**	**245**
	1.63	***4.90***	***43.27***	***47.76***	***2.45***	***100.00***
	0.15	**0.67**	**1.63**	**1.23**	**0.16**	**1.01**
Religion	**18**	**10**	**16**	**16**	**0**	**60**
	30.00	***16.67***	***26.67***	***26.67***	***0.00***	***100.00***
	0.66	**0.56**	**0.25**	**0.17**	**0.00**	**0.25**
Student	**1**	**0**	**8**	**162**	**108**	**279**
	0.36	***0.00***	***2.87***	***58.06***	***38.71***	***100.00***
	0.04	**0.00**	**0.12**	**1.71**	**2.87**	**1.15**
Domestic work	**0**	**0**	**0**	**58**	**1712**	**1770**
	0.00	***0.00***	***0.00***	***3.28***	***96.72***	***100.00***
	0.00	**0.00**	**0.00**	**0.61**	**45.50**	**7.29**
Others	**49**	**19**	**111**	**212**	**123**	**514**
	9.53	***3.70***	***21.60***	***41.25***	***23.93***	***100.00***
	1.81	**1.06**	**1.70**	**2.23**	**3.27**	**2.12**
Total	**2,714**	**1,790**	**6,520**	**9,498**	**3,763**	**24,285**
	11.18	***7.37***	***26.85***	***39.11***	***15.50***	***100.00***
	100.00	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 8. Matrices of CASMIN core models and modified models applied to Six-class category

A. Original CASMIN Core Model of Social Fluidity in Industrial Society

	HI1	HI2	IN1	IN2	IN3	SE	AF1	AF2
I/II	0 1 1 1 1 1 1	0 0 0 0 0 1 1	1 0 0 0 0 0 0	1 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 0 1	0 0 0 0 0 0 1	0 1 1 0 0 0 0
IIIa/b	1 0 0 0 0 1 1	0 0 0 0 0 0 0	0 1 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 0 1	0 0 0 0 0 0 0	1 0 0 0 0 0 0
IVa/b	1 0 0 0 0 1 1	0 0 0 0 0 0 0	0 0 1 0 0 0 0	0 0 1 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 0 1	0 0 0 0 0 0 0	1 0 0 1 0 0 0
IVc	1 1 1 1 1 0 0	1 0 0 0 0 0 0	0 0 0 1 0 0 0	0 0 0 1 0 0 0	0 0 0 1 0 0 0	1 1 1 0 1 1 0	0 0 0 0 0 0 0	0 0 1 0 0 1 0
V/VI	1 0 0 0 0 1 1	0 0 0 0 0 0 0	0 0 0 0 1 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 0 1	0 0 0 0 0 0 0	0 0 0 0 0 1 0
VIIa	1 1 1 1 1 0 0	1 0 0 0 0 0 0	0 0 0 0 0 1 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 0 0 1	0 0 0 0 0 0 0	0 0 0 0 1 0 0
VIIb	1 1 1 1 1 0 0	1 0 0 0 0 0 0	0 0 0 0 0 0 1	0 0 0 0 0 0 0	0 0 0 0 0 0 0	1 1 1 0 1 1 0	1 0 0 0 0 0 0	0 0 0 0 0 1 0

B. Modified model of Social Fluidity in county seats in the mid-20th China

	HI1	HI2	IN1	IN2	IN3	SE	AF1	AF2
I		0 0 0 0 0 1	1 0 0 0 0 0	0 0 0 0 0 0	1 0 0 0 0 0	0 0 0 0 1 1	0 0 0 0 0 0	0 0 0 0 1 0
II		0 0 0 0 0 0	0 1 0 0 0 0	0 1 0 0 0 0	0 0 0 0 0 0	0 0 0 0 1 1	0 0 0 0 0 0	0 0 0 0 0 0
III		0 0 0 0 0 0	0 0 1 0 0 0	0 0 1 0 0 0	0 0 0 0 0 0	0 0 0 0 1 1	0 0 0 0 0 0	0 0 0 0 1 0
IV	dropped	0 0 0 0 0 0	0 0 0 1 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 1 1	0 0 0 0 0 0	0 0 0 0 1 0
V		0 0 0 0 0 0	0 0 0 0 1 0	0 0 0 0 0 0	0 0 0 0 0 0	1 1 1 1 0 1	0 0 0 0 0 0	0 0 0 0 0 0
VI		1 0 0 0 0 0	0 0 0 0 0 1	0 0 0 0 0 0	0 0 0 0 0 0	1 1 1 1 1 0	1 0 0 0 0 0	0 0 0 0 0 0

Table 9 Father's Occupation by Son's Occupation

Father's Occupation	Son's Occupation I	II	III	IV	V	VI	Total
	Observed Frequency						
	Percent of father whose son is of specified occupation						
	Percent of son whose father if of specified occupation						
Cohort 1							
Salaried state officials and managers (I)	11	4	12	29	8	19	83
	13.25	*4.82*	*14.46*	*34.94*	*9.64*	*22.89*	*100.00*
	8.53	3.08	3.97	4.39	0.87	1.49	2.43
Professionals (II)	23	53	9	30	13	30	158
	14.56	*33.54*	*5.70*	*18.99*	*8.23*	*18.99*	*100.00*
	17.83	40.77	2.98	4.54	1.41	2.35	4.62
Small proprietors (III)	7	5	105	52	26	40	235
	2.98	*2.13*	*44.68*	*22.13*	*11.06*	*17.02*	*100.00*
	5.43	3.85	34.77	7.87	2.83	3.13	6.88
Sales workers and custom clerks (I V)	31	33	52	263	118	95	592
	5.24	*5.57*	*8.78*	*44.43*	*19.93*	*16.05*	*100.00*
	24.03	25.38	17.22	39.79	12.84	7.45	17.33
Manual workers (V)	22	14	53	168	545	244	1,046
	2.10	*1.34*	*5.07*	*16.06*	*52.10*	*23.33*	*100.00*
	17.05	10.77	17.55	25.42	59.30	19.12	30.61
Farmers and Farm Laborers(VI)	35	21	71	119	209	848	1,303
	2.69	*1.61*	*5.45*	*9.13*	*16.04*	*65.08*	*100.00*
	27.13	16.15	23.51	18.00	22.74	66.46	38.13
Total	129	130	302	661	919	1,276	3,417
	3.78	*3.80*	*8.84*	*19.34*	*26.89*	*37.34*	*100.00*
	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Cohort 2							
Salaried state officials and managers (I)	19	10	0	22	41	24	116
	16.38	*8.62*	*0.00*	*18.97*	*35.34*	*20.69*	*100.00*
	5.79	5.71	0.00	5.73	3.82	2.08	3.73
Professionals (II)	24	28	0	19	29	24	124
	19.35	*22.58*	*0.00*	*15.32*	*23.39*	*19.35*	*100.00*
	7.32	16.00	0.00	4.95	2.70	2.08	3.98
Small proprietors (III)	37	24	0	39	95	52	247
	14.98	*9.72*	*0.00*	*15.79*	*38.46*	*21.05*	*100.00*
	11.28	13.71	0.00	10.16	8.85	4.51	7.93
Sales workers and custom clerks (I V)	74	45	0	122	225	88	554
	13.36	*8.12*	*0.00*	*22.02*	*40.61*	*15.88*	*100.00*
	22.56	25.71	0.00	31.77	20.97	7.63	17.79
Manual workers (V)	61	32	1	94	433	283	904
	6.75	*3.54*	*0.11*	*10.40*	*47.90*	*31.31*	*100.00*
	18.60	18.29	100.00	24.48	40.35	24.54	29.03
Farmers and Farm Laborers(VI)	113	36	0	88	250	682	1,169
	9.67	*3.08*	*0.00*	*7.53*	*21.39*	*58.34*	*100.00*
	34.45	20.57	0.00	22.92	23.30	59.15	37.54
Total	328	175	1	384	1,073	1,153	3,114
	10.53	*5.62*	*0.03*	*12.33*	*34.46*	*37.03*	*100.00*
	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Cohort 3							
Salaried state officials and managers (I)	10	5	0	5	30	5	55
	18.18	*9.09*	*0.00*	*9.09*	*54.55*	*9.09*	*100.00*
	21.28	15.63	0.00	10.42	11.11	1.48	7.49
Professionals (II)	1	11	0	0	6	6	24
	4.17	*45.83*	*0.00*	*0.00*	*25.00*	*25.00*	*100.00*
	2.13	34.38	0.00	0.00	2.22	1.78	3.27
Small proprietors (III)	0	0	0	0	0	0	0
	0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*100.00*
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales workers and custom clerks (I V)	5	4	0	20	54	14	97
	5.15	*4.12*	*0.00*	*20.62*	*55.67*	*14.43*	*100.00*
	10.64	12.50	0.00	41.67	20.00	4.15	13.22
Manual workers (V)	10	7	0	6	122	18	163
	6.13	*4.29*	*0.00*	*3.68*	*74.85*	*11.04*	*100.00*
	21.28	21.88	0.00	12.50	45.19	5.34	22.21
Farmers and Farm Laborers(VI)	21	5	0	17	58	294	395
	5.32	*1.27*	*0.00*	*4.30*	*14.68*	*74.43*	*100.00*
	44.68	15.63	0.00	35.42	21.48	87.24	53.81
Total	47	32	0	48	270	337	734
	6.40	*4.36*	*0.00*	*6.54*	*36.78*	*45.91*	*100.00*
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 10. Descriptive Mobility Patterns in Yanggao County Seat

	A. Intergenerational occupation mobility						B. Intragenerational occupation mobility	
	Cohort 1		Cohort 2		Cohort 3		Male household heads	
	O	D	O	D	O	D	before 1949	1965-1966
I	2.43	3.78	2.73	10.53	7.49	6.40	2.34	12.75
II	4.62	3.80	3.98	5.62	3.27	4.36	3.17	5.01
III	6.88	8.84	7.93	0.03	0.00	0.00	6.79	0.06
IV	17.33	19.34	17.79	12.33	13.22	6.54	17.87	16.54
V	30.61	26.89	29.03	34.46	22.21	36.78	21.94	27.90
VI	38.13	37.34	37.54	37.03	53.81	45.91	47.88	37.50
Percent of mobility	46.59		58.77		37.74		45.82	
N	3,417		3,114		734		1,796	

Table 11. Results of Fitting Different Loglinear Models (Layer: Cohort)

Goodnes of Fitness Statistics

Model	N	df	X^2	G^2	rG^2	BIC	DI
1. Conditional Independence	7,264	75	2977.7	2419.7	0.0	1752.9	24.7
2. Null effect	7,264	50	185.2	195.5	91.9	-249.1	6.1
3. UNIDIFF	7,264	48	114.8	114.8	95.3	-311.9	3.9
Cohort 1	1.0000						
Cohort 2	0.6827						
Cohort 3	1.1997						

Table 12. Cohort-Specific Mobility Patterns

	Cohort 1 N=3,417			Cohort 2 N=3,114			Cohort 3 N=734		
Model Description	df	G^2	BIC	df	G^2	BIC	df	G^2	BIC
1.Independence model	25	1473.705	1384.117	20	555.124	487.100	16	390.802	339.300
2.Quasi-Indepdence	19	139.876	71.789	15	113.709	62.691	**11**	**23.159**	**-12.248**
3.1+U	24	899.710	813.706	19	385.075	320.453	15	316.076	267.793
4.3+IN1+IN2+IN3	21	90.987	15.733	16	120.407	65.988	12	50.155	11.529
5.4+SE	20	70.890	-0.780	15	117.354	66.336	11	42.284	6.876
6.5+HI	**19**	**64.357**	**-3.730**	14	99.727	52.110	10	41.274	9.085
7.6+AF1+AF2	17	62.786	1.866	**12**	**22.046**	**-18.768**	8	13.651	-12.100

Note: Higher dimensional association models don't fit the data well. The outputs of higher dimensional models are not presented here.

Table 13. Parameter Estimates from Model 7 in Table 12

	Cohort 1		Cohort 2		Cohort 3	
	Coefficients	P-value	Coefficients	P-value	Coefficients	P-value
u	0.079	0.000	0.065	0.000	0.063	0.190
IN1	0.562	0.000	0.161	0.239	1.754	0.000
IN2	1.176	0.000	0.565	0.048	0.274	0.684
IN3	-0.458	0.287	-0.531	0.153	-1.510	0.087
SE	-0.546	0.000	-0.608	0.000	0.144	0.755
HI	0.545	0.073	0.326	0.214	-0.438	0.443
AF1	-0.013	0.970	0.428	0.126	0.833	0.196
AF2	0.145	0.211	0.800	0.000	1.125	0.000

Table 14. Aggregate Analysis of Social Mobility across Three Cohorts

N=7,264

Model Description	df	G^2	BIC
1.CnSF	50	195.691	-38.415
2.Conditional Independence	75	2419.630	2068.471
Full topological model			
3.Temporally invariant parameters	67	256.334	-57.369
4.Temporally changing parameters	53	98.749	-149.404
5.Only IN1 changes over time	65	151.826	-152.513
6.Only IN2 changes over time	65	233.691	-70.647
7.Only IN3 changes over time	65	250.904	-53.435
8.Only SE changes over time	65	176.329	-128.009
9.Only HI changes over time	65	251.315	-53.023
10.Only AF1 changes over time	65	251.514	-52.825
11.Only AF2 changes over time	65	201.679	-102.659
12.IN1 and IN2 change over time	63	147.324	-147.650
13.12+SE changes over time	61	138.957	-146.653
14.13+ AF2 changes over time	59	105.417	-170.829
15.12+AF2 changes over time	**61**	**107.736**	**-177.874**

Table 15. Parameter Estimates from Model 15 in Table 14

	Coefficients	P-value
u	0.068	0.000
IN1	0.575	0.000
IN1*Cohort2	-0.362	0.000
IN1*Cohort3	0.466	0.000
IN2	1.191	0.000
IN2*Cohort2	-0.669	0.015
IN2*Cohort3	-0.592	0.249
IN3	-0.609	0.019
SE	-0.550	0.000
HI	0.317	0.090
AF1	0.355	0.081
AF2	0.135	0.227
AF2*Cohort2	0.652	0.000
AF2*Cohort3	1.326	0.000