# Social Mobility in China, 1645-2012: A Surname Study

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> *The dragon begets dragon, the phoenix begets phoenix, and the son of the rat digs holes in the ground* (traditional saying).

This paper estimates the rate of intergenerational social mobility in Late Imperial, Republican and Communist China by examining the changing social status of originally elite surnames over time. It finds much lower rates of mobility in all eras than previous studies have suggested, though there is some increase in mobility in the Republican and Communist eras. But even in the Communist era social mobility rates are much lower than are conventionally estimated for China, Scandinavia, the UK or USA. These findings are consistent with the hypotheses of Campbell and Lee (2011) of the importance of kin networks in the intergenerational transmission of status. But we argue more likely it reflects mainly a systematic tendency of standard mobility studies to overestimate rates of social mobility.

This paper estimates intergenerational social mobility rates in China across three eras: the Late Imperial Era, 1644-1911, the Republican Era, 1912-49 and the Communist Era, 1949-2012. Was the economic stagnation of the late Qing era associated with low intergenerational mobility rates? Did the short lived Republic achieve greater social mobility after the demise of the centuries long Imperial exam system, and the creation of modern Westernized education? The exam system was abolished in 1905, just before the advent of the Republic. Exam titles brought high status, but taking the traditional exams required huge investment in a form of "human capital" that was unsuitable to modern growth (Yuchtman 2010). Did the end of the exam system result in a period of rapid social mobility with the rise of a new western-educated elite? And did the turmoil of the Communist era radically disrupt the old social order, and

**Table 1: Estimates of b for China, by Period and Group**

| PERIOD | North Zhejiang 1645-90 Exam Elite | North Zhejiang 1781-1810 Exam Elite | North Zhejiang 1870-1900 Exam Elite | South Jiangsu 1645-90 Exam Elite | South Jiangsu 1781-1810 Exam Elite | South Jiangsu 1870-1900 Exam Elite |
|---|---|---|---|---|---|---|
| 1645-1810[a] | 0.83 | 0.89 | 0.81 | 0.85 | 0.89 | 0.86 |
| 1781-1900[a] | 0.92 | 0.87 | 0.81 | 0.95 | 0.92 | 0.86 |
| 1871-1949[b] | 0.84 | 0.84 | 0.78 | 0.85 | 0.86 | 0.81 |
| 1930-1990[c] | 0.66 | 0.70 | 0.74 | - | - | - |
| 1950-2010[d] | | | | 0.63 | 0.66 | 0.66 |

Data for elites: [a] juren (provincial exam passers), [b] college students from lower Yangzi, [c] notable people from North Zhejiang, [d] Nanjing University incoming students from South Jiangsu

bring an entirely new class of people to positions of education, prosperity, and power? In particular was there a comeback of the old elites in the post-Mao era, 1978-2012?

We measure intergenerational mobility rates through b, the implied intergenerational correlation of social status. Table 1 summarizes our estimates of b for initial elite surname groups in two provinces of China starting in 1645-90.

These estimates suggest a strong persistence of status over generations, even in the Communist era, with the fall of the Empire in 1912 producing very modest gains in social mobility rates. This persistence is so strong that we shall see that the elite surnames of the Imperial Era are still slightly overrepresented among modern elites in Communist China. These persistence rates for status are much higher than has been estimated by most other scholars for China. We detail below why we believe the surname estimates correctly show such low rates of social mobility.

## Surnames and Social Mobility

We measure social mobility in China over these 360 years by observing the speed with which surnames concentrated among elites achieve a distribution across the ranks of society which is the same as the overall distribution of status. Despite the small number of surnames among the Han Chinese, a mere 4,000 in all, we are able to identify some rarer surnames which had on average high occupational status in Imperial China, and then track the status of these surnames over generations from then to the present.

We assume in this paper that if $x_t$ measures the social status of families in generation t then

$$x_{t+1} = bx_t + e_t$$

where $x_t$ and $x_{t+1}$ are assumed to have a mean of 0, and a constant variance $\sigma^2$., and $x$ is normally distributed. However, we typically do not directly observe the complete social status of families, but some partial measure, $y_t$ , where such measures would be earnings, wealth, years of education, educational status, or occupational status. For each generation t

$$y_t = x_t + u_t$$

where $u_t$ is a random component linking the underlying status of the family to the particular observed measure of status. This implies that the conventional studies of social mobility, based on estimating the β in the relationship

$$y_{t+1} = \beta y_t + v_t$$

will underestimate the true b linking social mobility across generations. In particular the expected value of β will be

$$E(\beta) = b\frac{\sigma_x^2}{\sigma_x^2 + \sigma_u^2}$$

Thus conventional estimates of social mobility, based as they are on one generation studies, and on partial measures of overall social status, will systematically tend to overestimate social mobility rates. However, the surname measures that we use here over multiple generations, even when they are based on partial measures of social mobility such as educational or occupational status, will closely approximate to the true underlying b. This is because by aggregating

over groups of individuals with the same surname we can make the error component linking observed status *y* and underlying status *x* go to zero.

What we will observe using surnames is that in the initial period or generation some surname group has a higher average social status on such measures, as is portrayed in figure 1. However, we typically do not observe the whole distribution of status across a surname group, but just what fraction of that group lies in some upper tail of the distribution, and how this is changing over time. Our measure for China before 1905, for the exam era, is the fraction of a surname group that attains various degrees on the Imperial Exam system.

To extract implied intergeneration's bs we proceed as follows. Define the *relative representation* of each surname or surname type, z, in an elite group such as doctors as

$$relative\ representation\ of\ z = \frac{Share\ of\ z\ in\ elite\ group}{Share\ of\ z\ in\ general\ population}$$

With social mobility any surname which in an initial period has a relative representation differing from 1 should tend towards 1, and the rate at which it tends to 1 is determined by the rate of social mobility.

The overrepresentation of the surname in this elite could be produced by a range of values for the initial mean status, $\bar{y}_{z0}$, and the initial variance of status, $\sigma_{z0}^2$, for this surname. But for any assumption about $(\bar{y}_{z0}, \sigma_{z0}^2)$ there will be an implied path of relative representation of the surname over generations for each possible *b*. This is because

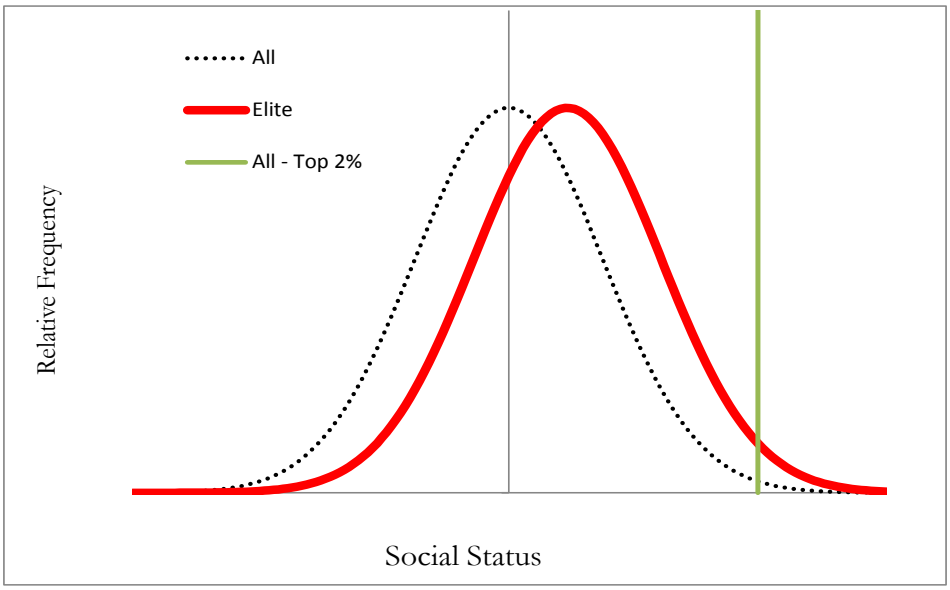
$$\bar{y}_{zt} = \bar{y}_{z0} b^t$$

Also since $\sigma_{zt}^2 = b^2\sigma_{zt-1}^2 + (1-b^2)\sigma^2$,

$$\sigma_{zt}^2 = b^{2t}\sigma_{z0}^2 + (1-b^{2t})\sigma^2$$

If we can observe relative representation over multiple periods we can determine empirically what the best fitting values of b and $\sigma_{z0}^2$ are. Thus even though we cannot initially fix $\bar{y}_{z0}$ and $\sigma_{z0}^2$ for the elite surname just by observing its overrepresentation among an elite in the first period, we can fix these by

**Figure 1: Initial Position of an Elite**




choosing them along with *b* to best fit the relative representation of the elite surname z in the social elite in each subsequent generation. While we can in general expect that

$$0 < \sigma_{z0}^2 < \sigma^2$$

it turns out to matter little to the estimated size of b in later generations what specific initial variance is assumed. Below we assume that the initial variance of the elite surname status is the same as the overall variance, since this assumption fits the observed time path of relative representation well in most cases.

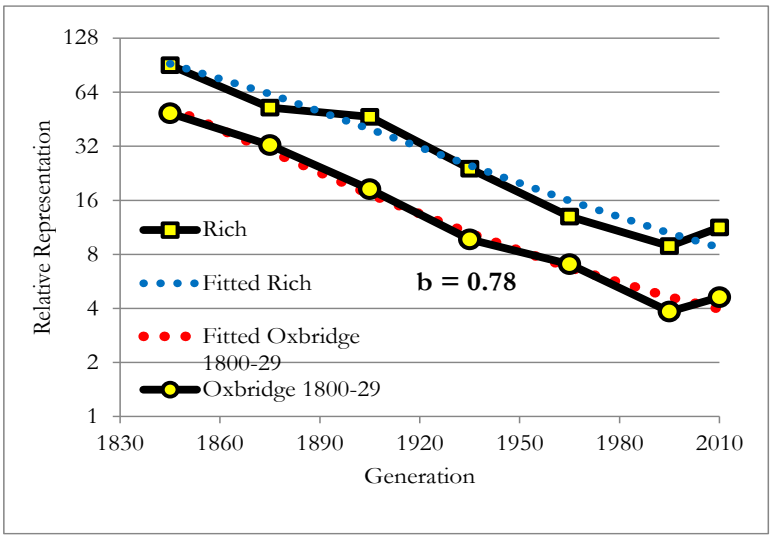
To illustrate how this estimate works in practice consider the data in table 2, which is drawn from a well-observed English elite. This shows the relative representation at Oxford and Cambridge Universities of high average wealth rare surnames, based on the wealth at death of those born 1780-1809 who died 1858 and later. In 1800-29 the high wealth surnames show up at 94 times their share in the population among entrants to Oxford and Cambridge. Relative representation for this elite group declines very little in the years 1830-59, for the children of the first generation. We thus take this second generation as the baseline, and ask what the subsequent decline implies about the rate of social mobility.

**Table 2: Relative Representation of Rare Surnames at Oxbridge, 1800-2010**

| Period | All Oxbridge Attendees | N Wealthy Surnames | Relative Representation Wealthy Surnames | Relative Representation Any Rare Surnames 1800-29 |
|---|---|---|---|---|
| 1800-29 | 18,651 | 169 | 94 | 117 |
| 1830-59 | 24,418 | 210 | 91 | 49 |
| 1860-89 | 35,503 | 184 | 55 | 34 |
| 1890-1919 | 22,005 | 77 | 43 | 19 |
| 1920-49 | 44,231 | 73 | 25 | 9.8 |
| 1950-79 | 95,792 | 67 | 9.1 | 6.3 |
| 1980-2010 | 213,303 | 65 | 9.2 | 4.0 |

Source: Clark and Cummins, 2012.

**Figure 2: Relative Representation at Oxbridge, 1830-2010**




Source: Clark and Cummins, 2012.

The table shows that the rich rare surnames steadily converging in relative representation towards 1. However, the rate of convergence is slow. Even for the cohort entering Oxbridge 1980-2010 the rich rare surnames are still 9 times more frequent relative to the stock of 18 year olds with that name than are common indigenous English names such as *Brown* or *Clark*.

What does the pattern in decline of relative representation shown in table 2 imply about the b for education? If we assume a normal distribution of status, and that all those of high status had the same variance as the general population, then we can estimate what the b for educational status 1830-2010 was. Since the high status surnames had a relative representation of 91 among the top 0.7% of the educational hierarchy in 1830-59, this fixes what the mean status of those names had to be, relative to the social mean, assuming the variance of their status was the same as that of the general population. For each possible b their relative representation would decline generation by generation in a predicable manner. Figure 2 shows the actual pattern, as well as the single b that best fits the data.[1] For the wealthy group that is b = 0.79. Notice also that there is no sign that educational mobility has speeded up in the last few generations. The single b of 0.79 fits the pattern well in all generations.

The rare surnames in this English sample are all associated with wealth. We can form from the Oxbridge records another larger rare surname group which consists just of rare surnames that show up as entrants to Oxbridge 1800-29. Table 4 also shows the relative representation of these surnames at Oxbridge to 2010. Here there is a large decline between 1800-29 and 1830-59. But to measure the true implied b it is necessary to start with the generation 1830-59, where the elite surnames were selected based on their occurrence earlier, and so the data is not contaminated by positive errors. As can be seen this group also remains an elite even to 1980-2010. We can also calculate the implied b for the regression to the mean of this group 1830-59 to 1980-2010, assuming as before that the initial variance in status was the same as for the population. It is 0.78, as is shown in figure 5. As before there is no sign of any speeding up of the process in the most recent generations.

Suppose we instead assume that the status variance of the rare surname group observed at Oxbridge in 1800-29 is instead 0 in 1830-59. How would that change the estimated b to best fit the observed pattern of relative representation? Figure 3 shows the fitted path in this case that minimizes the sum of squared deviations. Here the fit is less good. Such an assumption about initial variance

[1] Judged by minimizing the sum of squared deviations (in logs).

implied a much more rapid initial decline in relative representation, which is not consistent with the data. However, the implied b that best fits the observed pattern changes hardly at all. So if we use the pattern of relative representation over many generations to estimate the implied b, even though we have to make an assumption about the initial variance in status of the elite, that will have little effect on the estimated value of b. In the results below we thus assumed that the variance in status of elite groups always equals that of the population.

In this Oxbridge illustration the cutoff for entry into this elite remained at roughly 0.7% of each generation from 1800 to 2012. If the population share in the observed elite changes over time, as we will find in China, then we have to adjust the b estimates for such changes. But this adjustment is simple to accomplish within this basic framework for measuring intergenerational mobility.

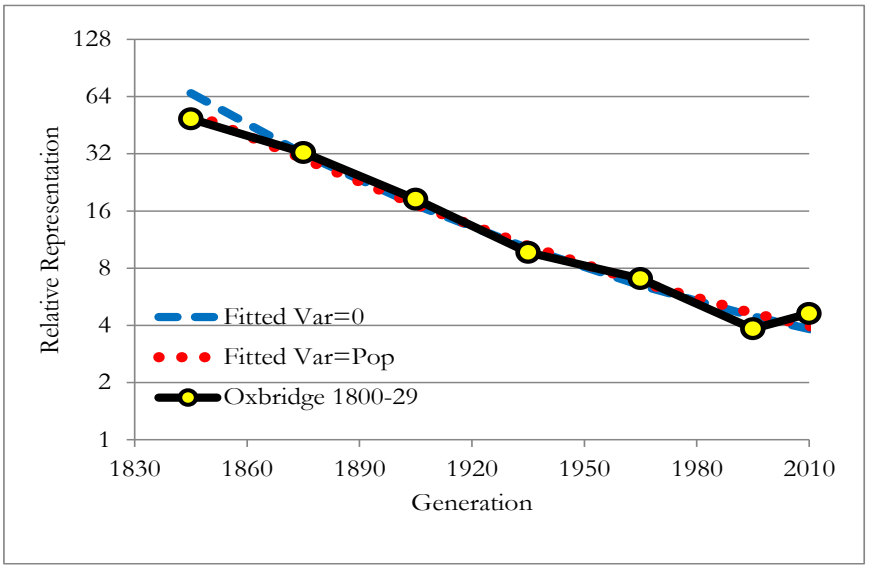
More importantly this measure of intergenerational mobility is premised on the idea that even though we observe only the extremes of the distribution, social mobility rates are all across the distribution of status governed by the simple equation

$$x_{t+1} = bx_t + e_t$$

This has the implication that even social elites will tend to have the same variance of status as the population as a whole. We do not have data on the complete distribution of outcomes by surname groups in China to test this idea. But for Sweden we can illustrate that this assumption does indeed seem reasonable.

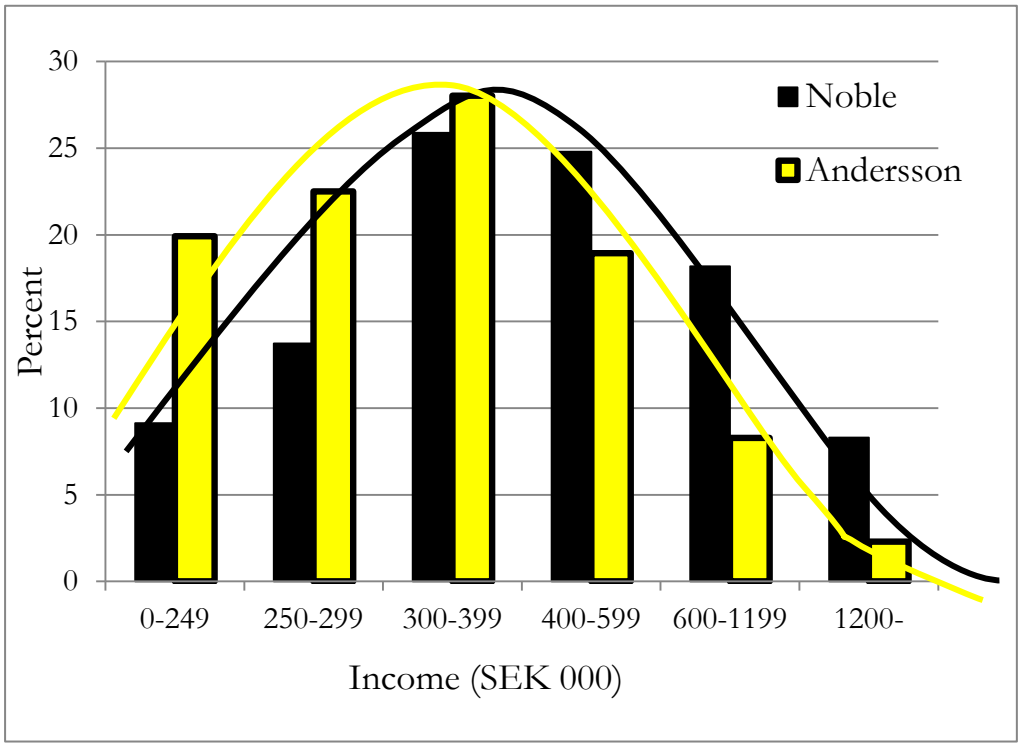
In Sweden the surname Andersson, for example, is a relatively lower class name, while there are a set of surnames that belong to aristocrats, whose titles of nobility were mainly conferred before 1700, and which remain concentrated in elites. If we look at taxable income in Sweden in 2008, and take a sample of each type of surname, we find that the distribution of income among the elite looks like it has been shifted to the right compared to the Anderssons, as in figure 4.

**Figure 3: Assumed Elite Status Variance and the Implied Path of Relative Representation, Oxbridge, 1830-2010**




Source: Clark and Cummins, 2012.

**Figure 4: Taxable Income, Noble Surnames v. Anderson, 2008, Sweden**




Source: Clark, 2012.

## Surnames and Social Mobility in China

Initially it seemed as though surnames would not be useful in China as a tracer of social mobility rates, because of the small numbers of surnames, and their long antiquity. As noted, there are only around 4,000 surnames in use by the Han Chinese. The 100 most common of these account for nearly 85% of the population. In contrast in England and Wales in 2002 there were 270,000 surnames shared by 5 or more people.

The great antiquity of Chinese surnames also meant that there were many generations over which elite surnames could gradually revert to average status. Though surnames first appeared among the nobility and high civil servants, the introduction of civil service exams in 600 AD, by which commoners could obtain official positions by taking exams on the Confucian classics, was associated with a decline in average status for the original noble surnames. By the Qing era (1644-1912), all the aristocratic surnames of great antiquity -王, 谢, 陆, 顾, 孙, 崔, 卢, 李, 郑, 裴, 韦, 杜, 朱 – appear among the national exam passers, jinshi, at no greater a rate than the average Chinese surname. The common surnames in China are all, once regional distribution is controlled for, of average social status.

However, we can find surnames that even in recent generations were of high average status by using surname – place of origin combinations. Given how numerous most surnames are in China, families and lineages would distinguish themselves in China in the Imperial and Republican eras by noting their county of origin – the place where the family originated. Such Surname-Place of Origin combinations (S-POs) include the Fan Family of Ningbo (宁波范氏), the Zha family of Haining (海宁查氏), and the Weng family of Changshu (常熟翁氏). These surnames themselves - Fan, Zha, Weng - are common and average in social status at the national level. But such a name combined with a place of origin can have a relative representation of much greater than 1 among exam passers in the Qing era, and thus allow us to track rates of social mobility from 1645 on.

To measure social mobility in this way we concentrate on two regions in the lower Yangzi, South Jiangsu and North Zhejiang, and on surname lineages identified by the combination of a surname and a lineage place of origin. We find S-POs of initially high status by looking at the relative representation of these surnames among passers of Provincial Exams (juren) in the Qing era,

It was common practice that exam passers, on their published exam paper, reported their remote ancestors, their mother's remote ancestors, and any exam passers within five generations in the entire kinship. Editors of local chronicles of the origin counties also reported even exam passers whose great-grand-fathers had emigrated from the county 100 years before. Hence it is possible to trace such S-POs of high status, even inclusive of migration outside their county of origin, at least within the exam era.

Such elite S-POs are particularly concentrated in the lower Yangzi delta, the most developed region of pre-industrial China. During the Mongol invasions of 1205-79, many elite kinships from Northern China migrated south of the Yangzi River, settling in the cities and countryside around Hangzhou, the capital of the southern Song dynasty (Wu, 2010). Another source of these regional elite kinships were Salt Monopoly merchant families who migrated from Anhui province from the 15$^{th}$ century on (Ho, 1999). Moreover, the 15$^{th}$ to 19$^{th}$ centuries witnessed the emergence of various *nouveau riche*, who profited from rural industrialization and commercialization, and achieved high social status by producing exam passers (Li, 2000).

To trace these groups into the Republican era and further, we need to know the lineage place of origin of people listed among various elites. We can do this in the Republican era because university rosters and alumni records still reported places of origin. Under Communism, however, such practices became less common. Fortunately, two sources are available with places of origin reported at the county level even in the Communist era: a catalogue of notable people for modern Zhejiang, and the records of incoming students of Nanjing University. With these sources we can get sufficiently large samples of elite surname

frequencies to get estimates of b across the three regimes of Chinese History: Empire, Republic, and Communist.

## Lower Yangzi Local Surname Elites

For the lower Yangzi, we track the status over time of elite S-POs, such as the Yun family from Wujin, for two subareas: South Jiangsu and North Zhejiang. We establish the share of surnames in each district by county of origin from the records of 21,644 soldiers from the lower Yangzi dying in the civil wars of 1933-36, and 1945-49, and the external wars of 1937-45 and 1950-3 (12,737 from South Jiangsu, 8,907 from North Zhejiang). For the Yun from Wujin in South Jiangsu, for example, their population share in South Jiangsu is 9 out of 12,737 dead soldiers, or 0.071%. It might appear more natural to use modern population censuses, or the like, to estimate these population frequencies. But no such S-PO censuses exist. We thus assume that the share of surnames found among soldiers dying 1933-53 is representative of the population, and that the population share of surnames is constant over time. Below we test the validity of these assumptions.

We can similarly calculate the share of name-place combinations like Yun-Wujin among the juren of South Jiangsu in 1645-90. The juren lists are collected from local Chronicles. These local documents record not only places of birth of exam passers but also their places of origin (ancestors) based on relevant genealogies. In this case it is 5 out of 1,045 juren, or 0.48%. Dividing this by the population share shows that the relative representation of this S-PO was 6.8 among juren in 1645-90 All S-POs from South Jiangsu with a relative representation of 5 or more were included in the 1645-90 elite surname sample, which gave 48 surname-county pairs. Table 3 shows that in South Jiangsu these 48 S-POs constituted 2.04% of the sample of dead soldiers, but 21.7% of juren from 1645-90.

**Table 3: Summary Statistics for six Elite Surname Groups**

| | North Zhejiang 1645-90 elites | North Zhejiang 1781-1810 elites | North Zhejiang 1870-1900 elites | South Jiangsu 1645-90 elites | South Jiangsu 1781-1810 elites | South Jiangsu 1870-1900 elites |
|---|---|---|---|---|---|---|
| Elite surname share - 1933-53 (%) | 1.90 | 1.77 | 1.86 | 2.04 | 1.98 | 1.78 |
| Share of 1645-90 juren (%) | **15.92** | 7.69 | 3.89 | **21.70** | 6.91 | 6.13 |
| Share of 1781-1810 juren (%) | 5.68 | **12.69** | 5.99 | 8.48 | **16.08** | 7.68 |
| Share of 1871-1900 juren (%) | 4.78 | 6.33 | **12.92** | 7.60 | 9.9 | **19.58** |
| Share of 1973-89 elites (%) | 2.21 | 2.46 | 3.02 | 2.11 | 2.87 | 2.58 |
| Number of S-POs | 62 | 58 | 62 | 48 | 40 | 41 |
| Max modern population S-PO | 23,000 | 16,000 | 25,000 | 24,000 | 30,000 | 23,000 |
| Min modern population S-PO | 800 | 500 | 400 | 600 | 800 | 300 |

A similar procedure, with a cutoff of at least 5 times relative representation for an S-PO to be included was used to construct the other 5 samples of surnames from each subarea for elite surnames 1645-90, 1781-1810, and 1870-1900. Table 3 summarizes the share of the elites of four periods, 1645-90, 1781-1810, 1871-1900, and 1973-89 that these surnames constituted.

**Regression to the Mean for S-PO Elites**

Figures 5 and 6 show, for South Jiangsu and North Zhejiang, the share of common surnames, and of the two earlier S-PO elite surname groups, among various elite populations 1645-2012.

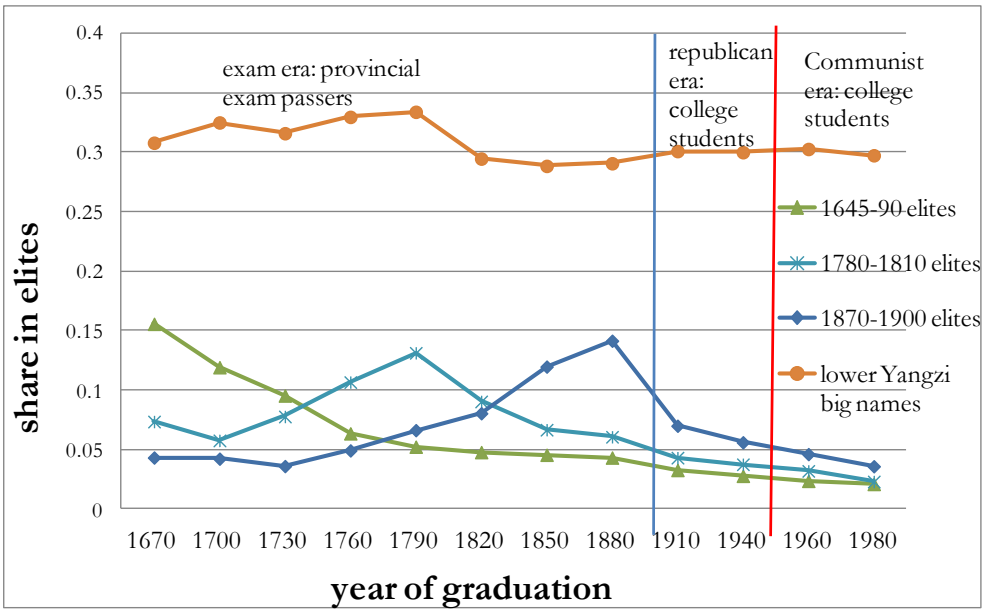
Up to 1905 the elite are the juren, the provincial degree holders, under the Imperial Exam. For the Republican era, we use as a measure of the elite a sample of 11,000 university students who graduated 1900-50. After 1949 we have different elite samples for the two subareas.

For north Zhejiang there is the Zhejiang Provincial Archive, which lists notable Zhejiang people born 1930-70, covering a wider spectrum of occupations, such as entrepreneurs, artists, professors, and officials. This population includes people who had migrated out of the region. We exclude those without a college degree from the elite.

For South Jiangsu the Nanjing university archive allows searching for students by names, places of origin and year of graduation even after 1952. Nanjing University, located in South Jiangsu, ranks third among Chinese universities, and enrolls disproportionally from Jiangsu (40% of incoming students). To enroll in Nanjing University, students have to achieve scores in the highest 3-5% of those taking the College Entrance Exam. Those taking the entrance exam constitute only 20-50% of each population cohort. Thus Nanjing students represent an upper 0.6-2.5% of the South Jiangsu distribution of scholastic ability. For North Zhejiang after 1949, the elite sample (*notable people*) only covers people graduating until 1990, whereas for South Jiangsu the dataset covers college students from Nanjing University until 2010.

In figures 5 and 6 the local dominant surnames account for around 30% of elites for each period from 1645-2012, suggesting that relative name frequencies were not changing over time even over this long era. The various elite surname groups are 1.5-2% of the population, but their shares in elites differ greatly from

**Figure 5: Share of north Zhejiang elites of 1645-90 and 1780-1810 in the elites of other generations**




**Figures 6: Share of south Jiangsu elites of 1645-90 and 1780-1810 in the elites of other generations**

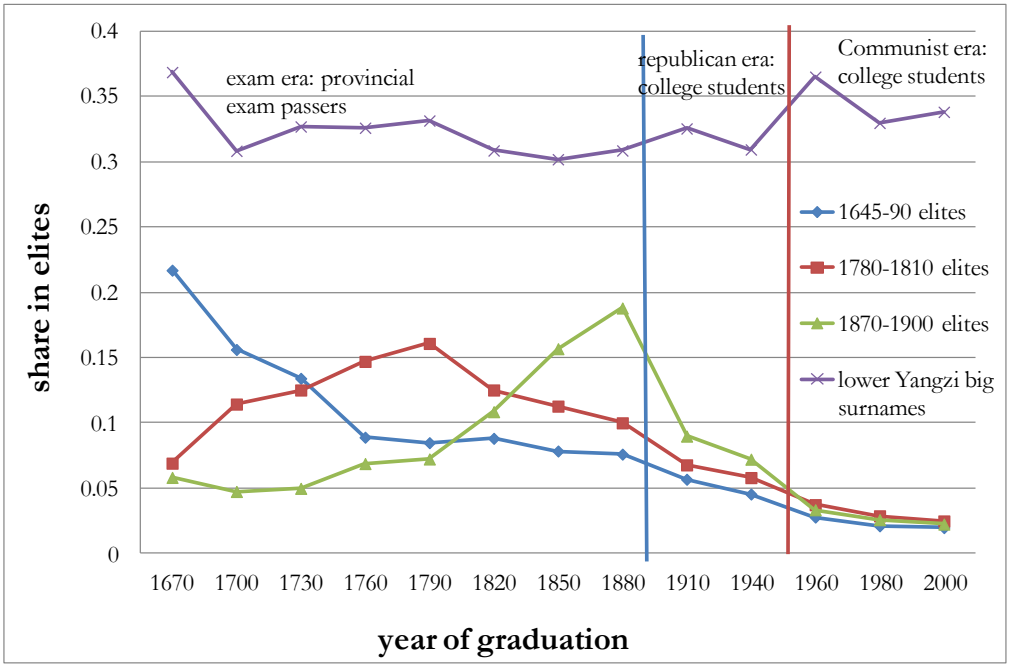


**Figure 7: Relative Representation of north Zhejiang Surname Elites**

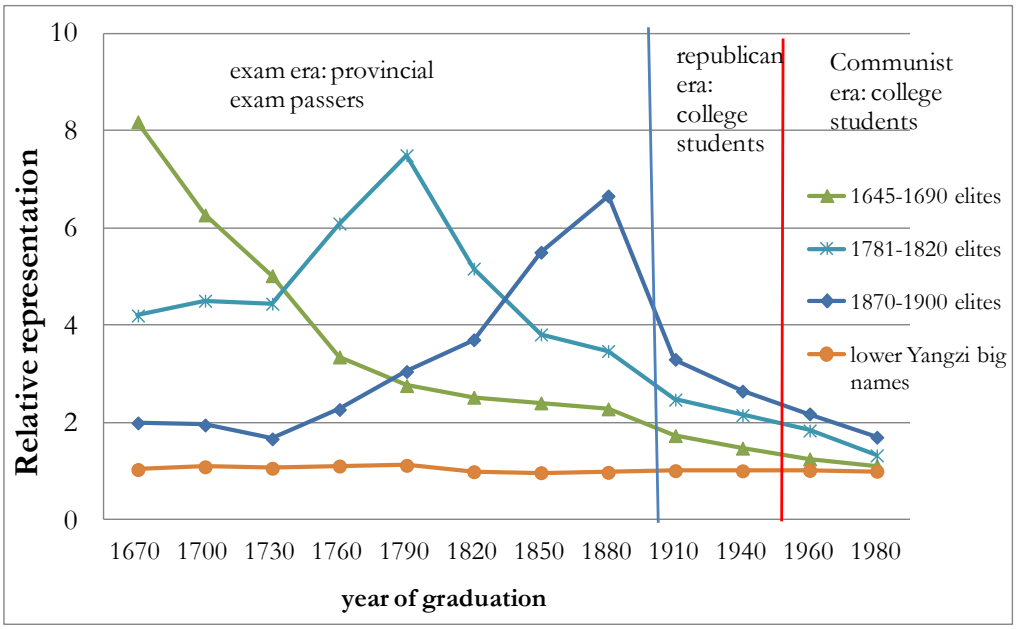
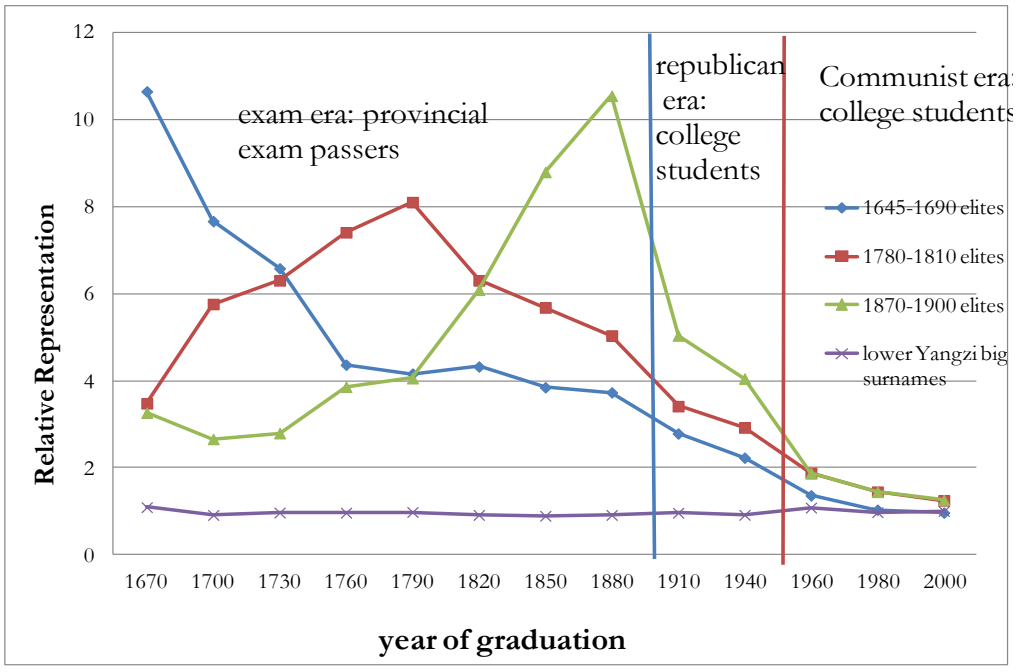



**Figure 8: Relative Representation of south Jiangsu Surname Elites**



their population shares. Figures 7 and 8 show, based on the shares of names in soldier deaths from these two areas 1933-53, the Relative Representation over the generations of the 1645-90 elites, the 1781-1810 elites, and the reference lower Yangzi big surnames.

**Estimating b by period**

We estimated the b's by period by the simulated described above for these six elite S-PO groups. To do that we need to estimate for each period what share of the population our observed elite groups constituted. Table 4 contains the information needed for this calculation. We take the elite share of the population as that listed in the last column of table 4.

In the exam era, juren were a very small share of the male population. Based on the numbers observed in each district, and the populations of the districts, typically only 0.03% of males would attain this status. To get the shares of the population before 1900 that belong to the provincial exam elite (juren), we assume a life expectancy of 30 years, and that half the population was female.[2] The juren were thus a very exclusive elite in Imperial society.

The university students of the Republican era that we employ as the measure of the elite of this era were a much larger slice of the society. In 1949 an estimated 0.34% of males in recent cohorts in the lower Yangzi attained a college degree, so we assume this elite was the top 0.2-0.5% of the society. Since 1949 there has been a progressive expansion of university education. By 1950-66, 2% of people aged 18-21 entered college. For 1966-76 the college entrance exam, the CEE, was suspended. But in 1977-90 college graduates represented 2-4% of the cohort, and by 1991-2000 college students represent 5% of the cohort.

Our observed elites before 1900 are the complete sample of the high gentry class, whereas after 1900 our observed elites are only part of those with the highest educational attainment. As shown in the last column of table 6, we estimate the 1901-49 elite share to be the share of each cohort entering college. For 1950-2000 we set the cutoff to be the college student share times 0.2,

[2] Because of female infanticide the female population would be a smaller share than a half, but we do not try and estimate the strength of this effect.

**Table 4: The lower Yangzi elite, 1645-2000**

| Period (year of graduation) | Size of Elite | Population (m.) | Elite Share (males) % | Elite share used for simulation % |
|---|---|---|---|---|
| | **North Zhejiang** | | | |
| 1645-1690 | 1,156 | 5 | 0.048 | 0.05 |
| 1690-1720 | 1,040 | 8 | 0.026 | 0.03 |
| 1721-50 | 1,247 | 9.5 | 0.026 | 0.03 |
| 1751-80 | 1,462 | 11 | 0.027 | 0.03 |
| 1781-1810 | 1,584 | 12.5 | 0.025 | 0.03 |
| 1811-40 | 1,714 | 14 | 0.024 | 0.03 |
| 1841-70 | 1,754 | 15.3 | 0.023 | 0.03 |
| 1871-1900 | 1,548 | 5.9 | 0.052 | 0.06 |
| 1901-33 | 2,313 | 9.4[a] | 0.049 | 0.2 |
| 1934-49 | 3,017 | 8.4[b] | 0.072 | 0.5 |
| 1950-66 | 2,526 | 10.3[c] | 0.049 | 0.5 |
| 1977-90 | 1,948 | 12.3[d] | 0.032 | 0.7 |
| | **South Jiangsu** | | | |
| 1645-1690 | 1,025 | 4.8 | 0.044 | 0.05 |
| 1690-1720 | 917 | 7.5 | 0.024 | 0.03 |
| 1721-50 | 883 | 8.5 | 0.021 | 0.03 |
| 1751-80 | 1,043 | 9.8 | 0.021 | 0.03 |
| 1781-1810 | 1,102 | 11.2 | 0.020 | 0.03 |
| 1811-40 | 1,283 | 12.4 | 0.021 | 0.03 |
| 1841-70 | 1,427 | 13.8 | 0.021 | 0.03 |
| 1871-1900 | 1,550 | 4.8 | 0.065 | 0.06 |
| 1901-33 | 2,449 | 7.8 | 0.063 | 0.2 |
| 1934-49 | 2,619 | 7.6 | 0.069 | 0.5 |
| 1950-66 | 2,843 | 10.5 | 0.054 | 0.5 |
| 1977-90 | 4,437 | 14.7 | 0.060 | 0.7 |
| 1991-2000 | 4,034 | 17.6 | 0.052 | 1 |

Notes: [a]1928, [b]1947, [c]1957, [d]1980, from population census

Source: Pre-modern data is from Ho, 1962, and Cao, 1998.

**Figure 9: Estimating b by Period for South Jiangsu 1645-90 Surname Elite**

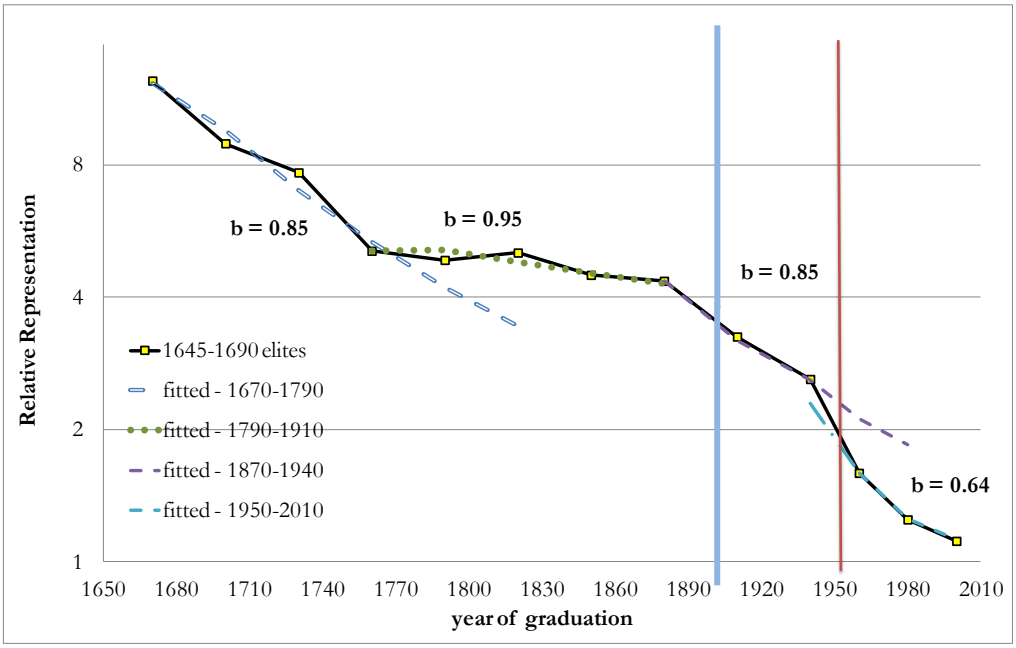
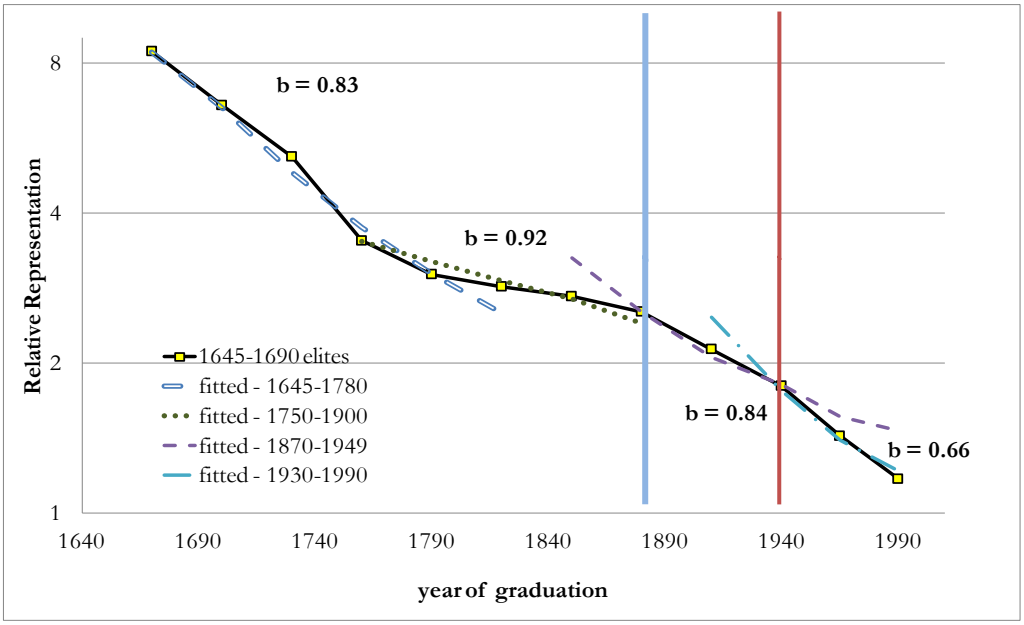



**Figure 10: Estimating b for North Zhejiang 1645-90 elite, b varies**



because Nanjing University typically enrolled only the top 20% of incoming college students from South Jiangsu.

Knowing the relative representation of each surname group in the elites of each generation 1645-2012, and how exclusive these elites were, we can proceed to estimate the best fitting bs for the Imperial, Republican and Communist eras.

However, it is evident from the data that even within the Imperial era, there was a period of faster downwards mobility in the early Qing, and of slower mobility in the late Qing. Figure 9, for example, shows the relative representation of the 1645-90 surname elite by generation in South Jiangsu in logarithms. A constant b roughly corresponds to the downward slope of this line plotting relative representation being constant. As can be see the slope changes over the generations. The best fitting b for each sub-period is shown on the figure.

Interestingly, North Zhejiang shows a very similar pattern over time, and produces similar estimates for the various sub-period bs. The message is that social mobility rates as revealed by the surnames were extremely slow in the Imperial Era, and continued to be slow even in very different regime of the Republic. There was an increase in mobility rates under Communism, but even in this era the implied b is 0.64-0.66, which implies a high degree of persistence, explaining why the relative representation of these surnames – identified by their overrepresentation among the elite in 1645-90, continues to be greater than one even among the most recent elites.

The pattern of mobility for the middle Qing 1781-1810 surname elites is very similar for the years after 1810 to that of their 1645-90 counterparts as shown in figures 11 and 12. This is shown in the bs estimated in table 1. But here we can also estimate the rate of social mobility by looking at the upwards path of relative representation as a surname becomes elite. The model posited above that underlying status is linked across generations by the formula

$$x_{t+1} = bx_t + e_t$$

also has implications about what the path of relative representation will be for surnames observed to be elite in any specific generation in the periods before that observation. The OLS estimator of b in this expression is

$$\hat{b} = \frac{\sum x_{t+1} x_t}{\sum x_t^2}$$

Suppose we were instead to posit that

$$x_t = \beta x_{t+1} + \varepsilon_{t+1}$$

The OLS estimator of β would then be

$$\hat{\beta} = \frac{\sum x_{t+1} x_t}{\sum x_{t+1}^2}$$

If the variance of $x_t$ is the same as that of $x_{t+1}$ , that it will also be the case that $E(b) = E(\beta)$. Since we have normalized variance to be the same in each generation we have met this condition. Thus the rate of rise of surnames to be an observed elite in any generation should mirror their rate of decline back to mediocrity. Table 1, and figures 11 and 12 show the implied bs also for the rise of these mid Qing elites. These b values are remarkably similar to those for the downwards movement of the 1645-90 elites over the same period, as can be seen in table 1. The implication is that along with slow downward mobility in the Qing we see the upward movement of much less elite lineages over many generations to positions of high average status.

Finally figures 13 and 14 show the rise and decline of the 1871-1900 exam era surname elites, measured by the relative representation by generation. The declines post 1900 again is similar to that for the earlier samples of elite S-POs, as table 1 shows. And again the rates of rise of these surnames looks similar to the rates of decline of the earlier elites 1645-1900. Except, however, both sets of surnames show no decline in relative representation as we move backwards from 1710-40 to 1680-1710 and then 1645-80.

Averaging across the various periods in table 1 gives the following period estimates for b:

| | |
|---|---|
| Early Qing (1645-1810) | 0.86 |
| Late Qing (1781-1900) | 0.88 |
| Republic (1871-1949) | 0.83 |
| Communism (1930-2010) | 0.68 |

Social mobility rates are thus extremely slow in the Imperial and Republican eras, and still very modest in the Communist era, though faster than before.

**Figure 11: South Jiangsu 1781-1810 Surname Elite**

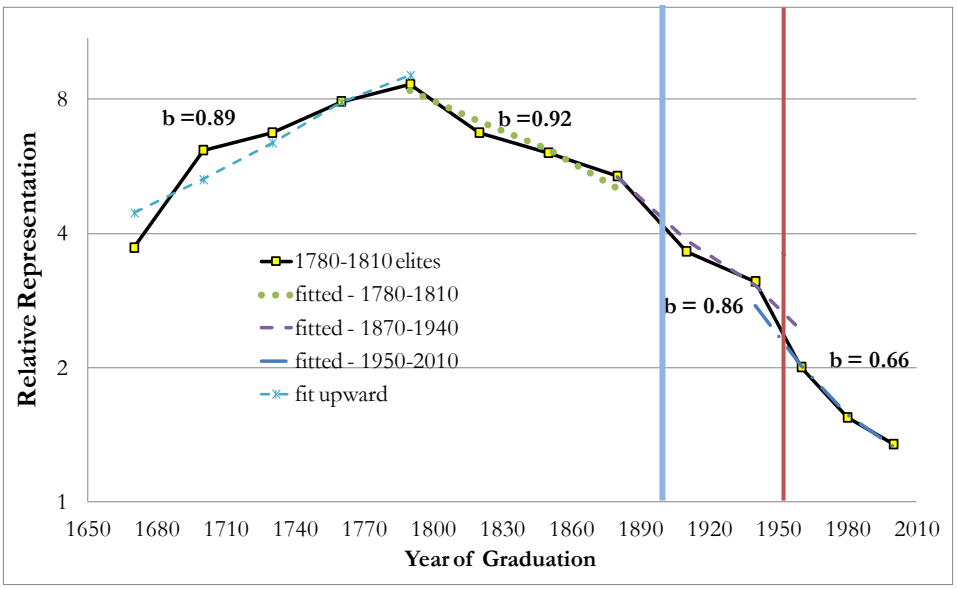



**Figure 12: North Zhejiang 1781-1810 Surname Elite**

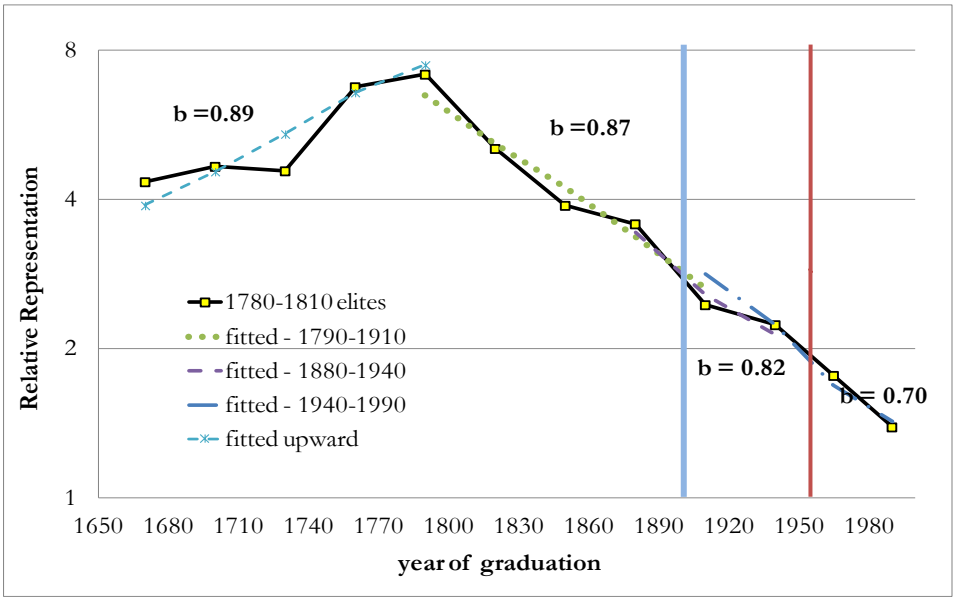


**Figure 13: South Jiangsu, 1870-1900 Surname Elite**

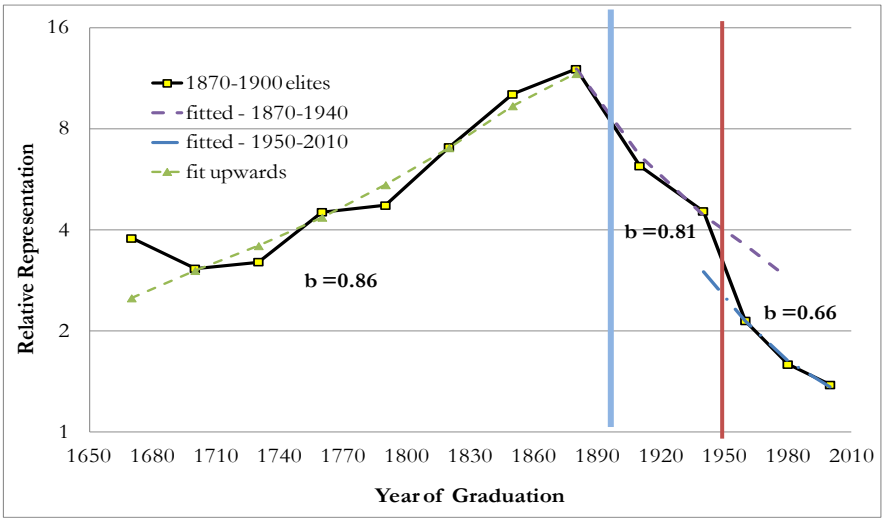
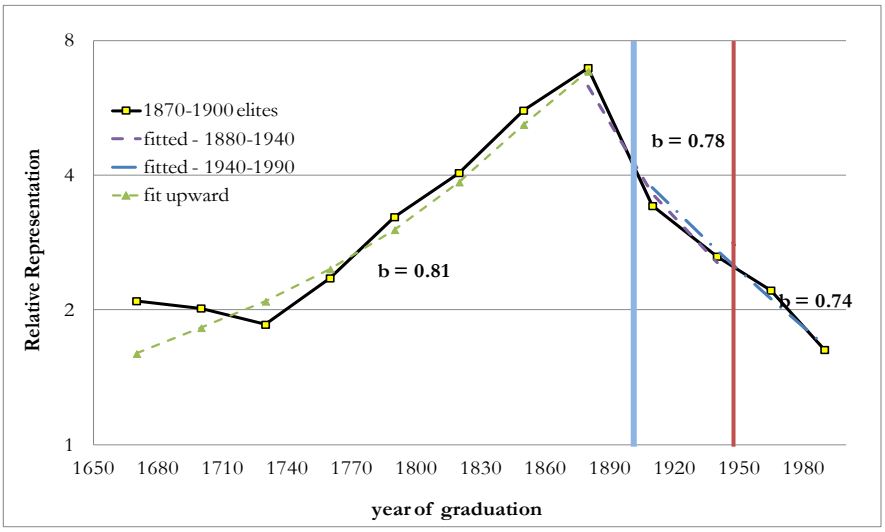



**Figure 14: North Zhejiang, 1870-1900 Surname Elite**



This implies that even with the disruptions of the end of the of the Imperial Exam system in 1905, of the Imperial Era itself in 1912, of the Japanese war and Civil War of the 1930s and 1940s, the high status surname groups of the Qing saw only a modest decline in their social position as measured by graduates of the new modern universities.

The Communist era brought higher implied social mobility rates. But that is still a rate of social mobility that is surprisingly slow, slower than has traditionally been estimated for most modern countries. Despite successive waves of property confiscations and even of executions, the old elite survived to a degree even to the present day. Under the Agrarian Reform Law of 1950, for example, rural landowners saw their property seized and redistributed, and the landlords themselves were executed or sent for re-education. One potential interpretation is that property confiscations and executions under Communism were targeted to the "exploiting class", in essence the wealthy, rather than to kinships of high social status through occupation and education (Campbell and Lee, 2010).

The persistence of the old elite under Communism has a number of possible sources. They may have benefited from being more urban in their residence, and hence having better access to education in the 1950s and again in 1978 and later when the college entrance exam was fully restored. The advantages in income and education of cities compared to the countryside was institutionalized under Communism by setting low agricultural prices, and by the system of household registration (*hukou* system) (Bian, 2001, Wu and Trieman, 2007). Note also that North Zhejiang shows less increase in social mobility than South Jiangsu after the arrival of Communism. One potential reason is that for the North Zhejiang elite sample after 1949, we used "notable people of Zhejiang." This includes those who migrated to Taiwan, Hong Kong, and elsewhere overseas, and their descendants. The South Jiangsu elite sample, in contrast, uses incoming students to Nanjing University. Nanjing after 1949 only enrolled those residing in mainland China.

**Robustness Checks**

These results are derived using a number of assumptions. These assumptions include that the elite S-PO share of the population all the way from 1645 to 2012 is given by their share among the dead soldiers of the lower Yangzi 1933-53. They are also based on samples of surnames. How sensitive to the results are these assumptions, and how important could be sampling errors? Could the soldier lists for example, misrepresent the population shares of these S-POs? Or could their population share have been much lower in the past, because they had faster population growth as an elite than the general population?

The first check we can employ is to ask whether the frequency of surname-place of origin combinations among the dead soldiers is indicative of the current shares of these S-POs. As noted above, modern censuses do not give the place of origin of surnames. But for some counties we do get surname frequencies in recent years, so that we do get surname – place of registered residency (户籍人口). We can compare this to the earlier surname –place of origin frequencies.

Thus for Wujin county (containing the city of Changzhou) we have the name distribution of the modern population of 2 m in 2000. We can compare the surname shares of residents in Wujin in 2000 (for the 120 most common surnames) with the share of surnames among the 1543 dead soldiers 1933-53 who have Wujin listed as the place of origin. If out and in migration rates do not differ systematically for the various surnames these two measures should be correlated. Figure 15 shows this comparison, where the share is measured in log form to give more weight to the smaller share surnames. There is a strong correlation between the 1933-53 measures and the modern residency surname shares. Indeed if we regress for Wujin

$$LN(Share_{SOLDIERS}) = \alpha + \beta LN(Share_{2000})$$

**Figure 15: Measuring surname population share in places of origin Wujin county (武进县，包括今常州市区和武进县)**


Sources: "*Surnames in Changzhou*" (常州姓氏，2000); " *Gazetteers of Wujin county: name list of revolutionary soldiers* " (武进县志: 革命烈士姓名录, 1992)

the estimated value of β is 0.92, and the $R^2$ is 0.95. If we further include in this regression an indicator for the surnames of place of origin Wujin that are in the elite surname samples from the Qing era, then that indicator is insignificantly different from 0. These 16 earlier elite surnames (shown in the left in figure 15) have the expected frequency among the soldiers. Thus the relative shares of these surnames did not seem to change 1953-2000, and the shares in 1933-53 are a good indication of their later population shares.

Another issue is whether the population growth rate of elite surname groups was more rapid than for surnames as a whole 1645-1949? If this was the case then the actual social mobility rates would be higher than estimated since the

original elite S-POs would have an even higher relative representation in the Imperial era.

The evidence on the relative fertility of Qing elites is conflicting, however. A study of lineage groups in Tongcheng county in the Middle Yangzi, for example, finds that fertility among elite families in the eighteenth and nineteenth centuries was not much higher than for more average ones (Shiue, 2012). The males of the upper classes were more likely to marry, and to have multiple wives, but they had about the same number of children as lower class males. Campbell and Lee (2010), in contrast, find that for the same period the upper class in the Northeast of China (the frontier of China) was more successful in reproducing themselves. Thus it is uncertain if the Chinese upper classes had significantly higher fertility. The lower Yangzi delta resembles Tongcheng more than the Northeast in terms of culture, population density, literacy rate and incomes. So it seems reasonable to assume that these elite surnames were likely to have had a stable share of the population.

Besides, we are tracking S-POs as a whole that contain a higher fraction of members in the elite class, but not the elite class itself. The majority of the population even with these surnames will have been the illiterate lower class. So even if the members of the elite within this surname group did have a higher natural population growth rate, there should be little systematic difference between the elite S-PO's population growth rate and that of the general population.

To test how sensitive our b estimates are to differential rates of population growth in figure 16, we assume that the population growth rate of the North Zhejiang elite S-POs was 10% higher than general population per generation 1645-1949. It means that population share of this elite group in 1940 should be 2.4 times that in 1650, 8 generations before. The initial relative representation should be 2.4 times greater than we calculated. But this assumption, as can be seen in the figure reduces the average b estimated 1645-1949 of 0.84 only to 0.82. Thus our b estimates are not particularly sensitive to differential population growth rates among the elite S-POs.

**Figure 16: Persistence Rates with Faster Population Growth: North Zhejiang 1645-90 Elite**

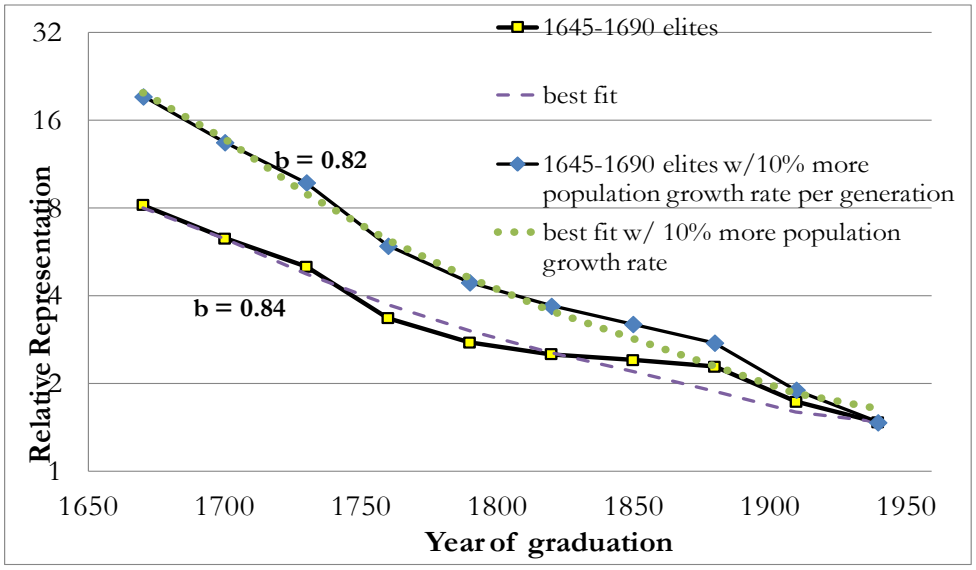



**Table 6: b Estimates from Resampling**

| Interval | | North Zhejiang | | | South Jiangsu | | |
|---|---|---|---|---|---|---|---|
| | | 1645-1690 elite | 1790-1820 elite | 1870-1900 elite | 1645-1690 elite | 1780-1810 elite | 1870-1900 elite |
| 1870-1950 | Average b | 0.76 | 0.84 | 0.74 | 0.84 | 0.86 | 0.83 |
| | S.e. b | 0.12 | 0.08 | 0.05 | 0.05 | 0.08 | 0.05 |
| | b original sample | 0.84 | 0.84 | 0.78 | 0.85 | 0.86 | 0.81 |
| 1930-90 or 1950-2010 | Average b | 0.60 | 0.63 | 0.72 | 0.62 | 0.64 | 0.63 |
| | S.e. b | 0.24 | 0.16 | 0.08 | 0.29 | 0.14 | 0.09 |
| | b original sample | 0.66 | 0.70 | 0.74 | 0.63 | 0.66 | 0.66 |

Another issue is sampling error. Each of the Qing elite groups contains 40-62 individual S-POs. But these S-POs have very different levels of relative representation, and they regress towards the mean of 1 at different individual rates. To get an idea of the likely sampling error we constructed 30 new samples of S-POs for each of the original samples, selecting the names with replacement from the original sample, then estimated b for each of these new samples. Table 5 shows the resulting mean estimated bs for the periods 1870-1949, and 1930-90 or 1950-2010, as well as the standard deviation of the b estimates. What these results show is that the standard errors on b tend to be smallest for the group with the greatest relative representation, the elite S-POs from 1871-1900. The standard errors on b are also highest in the Communist era when the relative representation of these surnames is only modestly above 1. Thus to get a better estimate of the b for the Communist era we will in a later version of the paper derive a new S-PO sample of elite surnames specifically for the period 1930-49, just before the Communist takeover.

## National Surname Elites

For the Communist era most of our information on the status of surnames comes from sources at the national level. As confirmation on these results for the lower Yangzi, we can also look at individual surnames which at a national level were of average high status in the Imperial era and measure what their current status is.

We identify our elite sample as surnames which showed an unusually high frequency among Jinshi (进士), the national exam passers at the highest level of the exam system in the late Qing (1820-1905). Surnames were included in this sample if they showed a relative representation among Jinshi at least 4 times that of the three most common Chinese surnames, 王 (Wang), 李 (Li), and 张 (Zhang), constituting 21.4% of the modern Han population. There were 13 such national elite surnames.

However, these 13 surnames are all concentrated in the lower Yangzi among the modern population, and all lower Yangzi surnames tend to be overrepresented both among exam passers in the Imperial era and in modern elites. Geography still matters to social status in China. This will make rates of social mobility lower, but to exclude this geography effect and measure just social mobility within an area like the lower Yangzi we calculate the relative representation of these 13 Qing elite surnames in modern elites by comparing them to common surnames concentrated now in the lower Yangzi. We thus take their relative representation of elite surnames [3] compared to three equally regionally favored surnames, Gu, Shen and Qian, the "regional 3", that have only an average status at the regional level.

To establish that the Qing elite surnames are as regionally concentrated as the "regional 3", figure 17 displays the relative frequency of the surname groups among those with household registration in Shanghai in 1997. The late Qing elite surnames and the regional surnames are equally concentrated in Shanghai relative to the big three, which are modestly underrepresented in Shanghai. Although the "Regional 3" are all overrepresented by 2 to 3 in late Qing elite, this is due to regional advantages and also perhaps lower population growth in the lower Yangzi, so that the population shares of this area were higher 1820-1905.

Figure 18 portrays the relative frequency of the different surname groups among elite groups over time. Even using the "regional 3" as the standard, for example, the late Qing elite surnames had a relative representation in the Qing era of 3.37 among Jinshi 1870-1905. By 1912-49 under the Nationalists that relative representation had fallen to 2.31 for government officials. By 1949-88 under the Communists it fell further to 1.81 for members of the National People's Congress (NPC, 全国人大) and the National Committee of the Chinese People's Political Consultative Council (CPPCC, 政协). Even in the most recent

[3] The late Qing elite surnames are 13 lower Yangzi concentrated surnames that are still more representative than Gu in 1820-1905. They are 诸，竺，茅，濮，裘，巢，恽，端木，钮，忻，萨，笪，宓, totaling to be 0.058% of population

**Figure 17: late Qing elite surnames and regional control surnames**

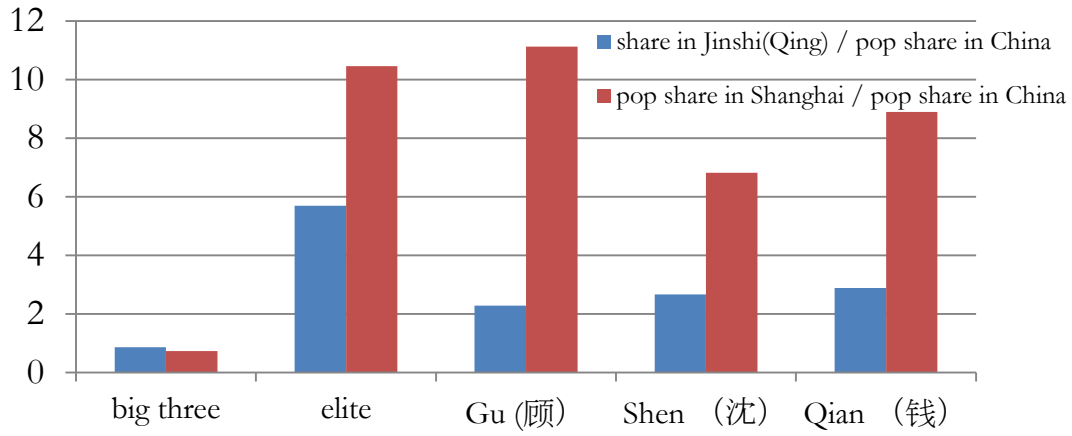
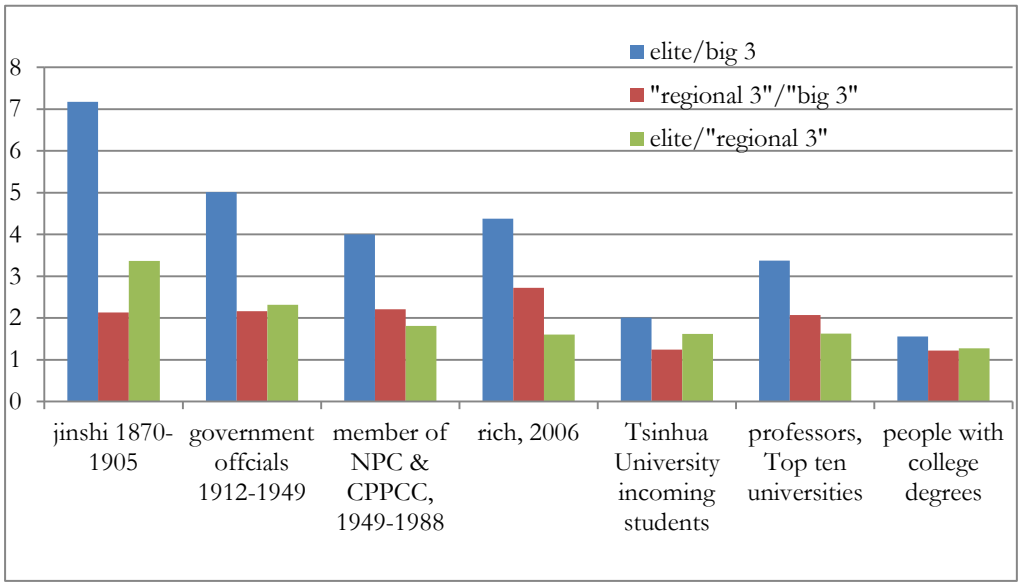



**Figure 18: Relative Representation of Surname Groups among Recent Elites**




elites, these surnames remain overrepresented relative to common lower Yangzi surnames. Their relative representation among the rich of 2006 was 1.61, among professors at the top 7 universities in China 2012 1.63, among incoming students to Tsinghua University 2003-11 1.62, and among college degree holders in 2010 1.28. This implies a b of 0.69-0.70 for the last four generations, assuming these

elites are on average the top 0.1% of the population. So at these higher levels of status social mobility in the Communist era is estimated to still be very slow.

Note that if we did not control for geography, and took the relative representation of the late Qing elite as that relative to the national "big 3" surnames, then estimated social mobility rates would be much lower, and indeed just as low as in the Imperial era. Below we estimate mobility rates from two sequences of modern elites: educational elites measured by incoming college students, educational elites measured by publications, and political elites measured by government officials. For each category, we do this by tracking relatively representation of elite surnames relative to that of "regional 3".

**Educational Elites**

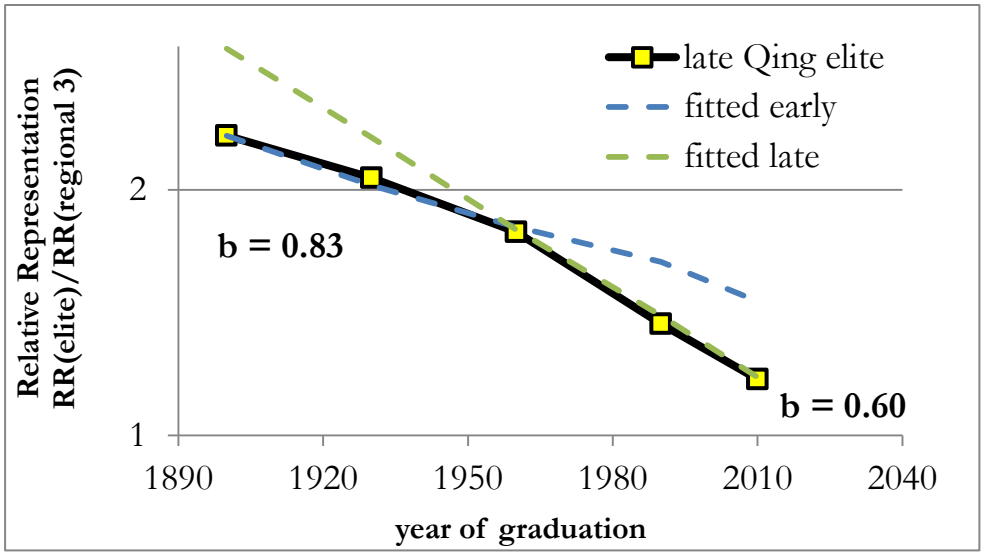
One modern indicator we have of high social status, in terms of an educational elite, is publications by surname. Table 7 shows the sources available on publications at different periods. Publications represent, however, a shifting level of eliteness in society over time. Before 1949, for example, less than 0.17% of the population had college degrees, and likely to be publishing. Post 1978 those with college degrees increased to 2.23% of the population. To try to keep the selectivity of this elite constant for 1977-83, and 1998-2000 we used only Engineering Publications from the CNKI dataset. And for 2010-12 we used PhD dissertations, doctoral degree recipients then accounting for less than 0.1% of the entire population. However, the most elite students in China in this period would complete PhDs abroad.

With publications it is also not generally possible to divide authors into discrete birth cohorts. Authors at any time will mostly be in the age range 30-60, but some will be younger and older. So we can only relate these publication records to rough birth cohorts. The special case of the Cultural Revolution makes it easier. The 1930-1948 birth cohorts should have entered college 1948-1966, and the later birth cohort could not enter college until 1977 when the college entrance examination was restored. So we can be sure that the vast

**Table 7: Publications Sources, 1900-2010**

| Period | Publications Source | Years of publication | Indicated birth cohort | Number of observations |
|---|---|---|---|---|
| 1900-49 | Dachenglaojiu (大成老旧) dataset, publications of the Republican Era: www.dachengdata.com | 1910-1930 | 1870-1890 | 41,112 |
| | | 1940-1950 | 1890-1920 | 103,217 |
| 1977-2000 | CNKI dataset (first author only, EI source, only mainland China) | 1977-1983 | 1930-1948 | 46,780 |
| | | 1998-2000 | 1949-1970 | 96,069 |
| 2000-10 | Dataset of PhD dissertation from Chinese universities | 2010-2012 | 1975-1985 | 37,588 |

**Figure 19: Publication Rates by Surname and Implied bs**



majority of publications 1977-1983 were by the 1930-1948 birth cohorts, and the vast majority of those publishing in China in 1998-2000 completed their college education after 1981.

Figure 19 shows the relative representation of the late Qing elite surnames relative to the "regional 3" by estimated graduation period. For the first three cohorts, those who were educated under the Imperial and Republican eras, the implied rate of social mobility is very low. The estimated b for these observations is 0.83, implying a very strong inheritance of status. This is true for publications in Communist China, 1977-83, whose authors received high education before the Cultural Revolution.

But if we instead estimate the generational b to fit the last four cohorts the implied b is much lower, 0.60. In the Communist era, measured by publications, there has been a much more rapid downward mobility of the late Qing elite surnames. The rates of educational and occupational mobility implied by b of 0.60, however, are not low by the standards of such measures for parents and children in various modern societies. However, as noted, a problem with this measure in later years is that they do not include the highest status academics. The publications include only those in Chinese journals, not the highest prestige foreign journals. And the measure of PhDs excludes the substantial number of the most high status Chinese students who earned their PhDs abroad in the US, Australia, Canada, the UK and other countries.

**Political Elites**

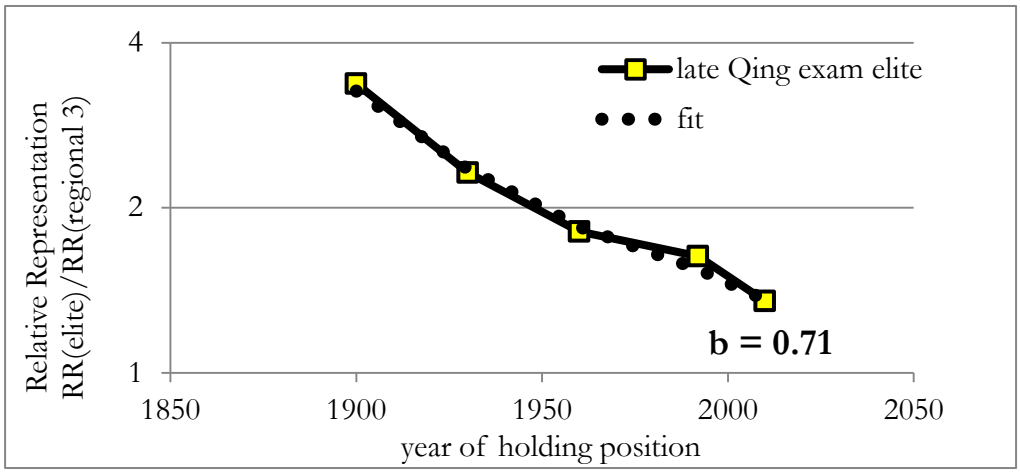
Another measure of status is participation in political elites. For the Republican era we have lists of civil and military officials in the years 1912-49. For the Communist era we have first members of NPC and CPPCC in the years 1949-88, then central government officials 1992 and 2010. Table 8 summarizes this data.

Figure 20 shows the relative representation of the late Qing Exam Elite surnames, relative to the "regional 3". This goes from 3.26 in late Qing, to 2.3 in

**Table 8: The Qing Exam Surnames among Political Elites**

| | Civil and military officials (1912-49) | Members of the NPC and CNPPC (1949-88) | Central officials (1990) | Central officials (2010) | Population Han only (2010) |
|---|---|---|---|---|---|
| | Share % | Share % | Share % | Share % | Share % |
| Elite Sample size | 31,194 | 16,320 | 10,962 | 11,636 | - |
| BIG 3 | 17.7 | 19.1 | 22.7 | 23.5 | 22.0 |
| Gu/Shen/ Qian | 1.40 | 1.59 | 1.71 | 1.71 | 0.85 |
| Late Qing Elite | 0.236 | 0.202 | 0.197 | 0.172 | 0.059 |

**Figure 20: Qing Elite Representation among Modern Political Elites**



the Republican era, and to 1.37 by 2010. The figure also shows the best fitting b for this elite, which fits well both for the Republican and Communist eras, is 0.71. Thus even in the Communist era there has been high persistence of the exam elite surnames among the modern political elite, even slightly more persistence than for education. This is surprising given that coming from an established elite background was a great political disability through much of the Communist period. The ability of this group to retain an above average representation in spite of the handicap many possessed in this dimension testifies to the strength of persistence in social position, even with such dramatic regime changes.

## Interpretation

How do our results for China compare to conventional intergenerational studies? There is debate over the rate of intergenerational mobility within the late Imperial period. Early studies of the exam system suggested substantial mobility, even within the Imperial era, when looking at the fathers and grandfathers of degree winners (Ho, 1964). In the early Qing only 50-60% of juren and jinshi had fathers or grandfathers who had attained that status, though by the middle and late Qing this had risen to 60-70%. If even half of all sons of *juren* attained *juren* status, and the process was Markov, then this would imply that the relative representation of elite surnames would drop by a half in each generation. We see above in figures 11-14 that the rate of decline of relative representation is much slower than this. The Ho study somehow is failing to predict the long run downward mobility rates of these elites.

However, as we explain above, looking at the correlation of fathers and sons on any single dimension of social status will produce estimates of the persistence of status that greatly underestimate the true persistence rates of more general measures of status, or the persistence of status even on a single dimension over many generations. While the son of a *juren* may be unlikely to attain *juren* status, he may with high probability inherit many other aspects of status such as wealth or occupation, so that his general social rank is similar to that of his father.

When kinship background is taking into account, scholars of China do find lower social mobility than when only parental status is considered. An important source here is the published *Collection of exam essays (*清代朱卷集成), which contains details of the kinship backgrounds of 8,000 exam passers. 87% of *juren* came from families containing *juren* or *jinshi* within the previous five generations (Zheng, 2006). This result suggests a very low mobility rate, consistent with our surname estimates.

The established estimates of b for Communist China vary greatly depending on the measure, the data and the methodology used. The urban intergenerational correlation of income is reported to be only 0.32-0.63 for the post-reform era (Gong, Lei, and Meng, 2010, Guo and Ming, 2008).[4] But these estimates are based on one dimension of status, and only two generations, and as argued above (and in Clark and Cummins, 2012) they will underestimate the persistence of status on more global measures.

Others report lower mobility rates in last ten years relative to 1977-1990 due to greater inequality in higher education and job attainment (Chen, Naidu and Yuchtman, 2010, Wu and Zhang, 2010). Walder and Hu (2009) report a different pattern of status inheritance among the old elites and the new elites. The descendants of the old elites (地富反坏右)-- landlords and businessmen before 1949 -- had to pursue professional careers instead of politics after 1949 because they were discriminated against in the Communist Party. Nonetheless, they maintained advantages in education attainment. Once the discrimination inside the Party was lifted after 1976, they performed much better in all occupations relative to descendants of Old poor (贫下中农), those whose forbears were tenants and workers before 1949 (and were given priority earlier in becoming party members). Liang and Lee (2012) study the occupational source of college

[4] Wu and Trieman (2007) argue that taking into account urban-rural inequality, the correlation should be even higher.

students of Peking University and Suzhou University, and find that share of students from lower class families increased greatly 1952-1966, but changed little thereafter.

In sum, tracking relative status of surname cohorts can allow us to acess social mobility over multiple generations and evaluate the impacts of policy changes. The Qing Exam elite survived through the Republican Era (1912-1949) and Communist Era (1949-). The Qing elite surnames are still overrepresented in modern elite populations. Rates of social mobility did seem to increase with the advent of the Communist era. But mobility rates since 1949 estimated for surname groupings remain low compared to most modern estimates of individual social mobility rates.

Some scholars have interpreted this slow mobility and persistence of elites into the present as revealing the importance of kin networks, and extended family strategies (Campbell and Lee, 2011, 2012). Given the nature of the provincial exam (the pass rate is 0.33-0.5%), it was unlikely that a nuclear family could produce *Juren* or *Jinshi* over consecutive generations. For any individual child luck was as important as talent in determining success in the exams (Elman, 1992). The best strategy, then, for the heads of kinships was to pool resources and create public goods within kingships, or club goods (exclusive of other kingships).

First, kinships allotted a portion of kin land as "land for education" (学田), with the rent going to special funds for education and exam preparation. Children from poor families could get financial support from other families within the kinship. Second, they picked a select few of the most talented children within the kinship, hired them the best teachers, built lineage-based schools (族学), and had these chosen children take the exams as often as possible. Other children were allocated to various alternative occupations for risk diversification.

Success in the exams did not only bring glory to the chosen candidates their common ancestor, but also protection for the property rights of the entire kinship. As they obtained more land and wealth, they had more resource to invest in education. In all, the relative status of kinships was more stable over generations than that of individual families (Hymes, 1986). For "outsider" kinships, it may take one or two generations to become rich and literate, and get into the lower gentry class (*Shengyuan*, 生员/秀才, the lowest degree, 0.4-0.7% of male population in the late Qing). But it took several generations for a commoner family to produce *Juren* and *Jinshi* (5% and 1% of *shengyuan*, respectively). That is why it always took hundreds of years for an elite kinship to regress to mediocrity.

When the exam elite had to abandon traditional education in the last decade of the Qing, they did not hesitate to go abroad to acquire modern education. Children of elite kinships were privately tutored, and then sent to expensive middle schools and universities to take modern education. Elites were more inclined to live in cities (absentee landlords) and had less incentive to invest in kinship exclusive public goods in their villages of origin. Nonetheless, wealth and talent became more important to decide one's success than kinship backgrounds. So we expect that exam elites persist into Republican era, but modern elites came from various kinship backgrounds (Ye, 2007). That means a modest increase in social mobility. Our empirical findings support this view.

Another possible interpretation, however, is that the persistence of kin groups among the elite is exactly the same phenomena that is found in other societies, and has little to do with the peculiar importance of kin networks in Chinese society. Table 9, for example, shows the b values estimated for wealth, education and occupation in England and Sweden over the last 160 years. These average b values are high, in the order of 0.7-0.8. Yet this not because of the importance of kin networks in English and Swedish society, but because the b estimated from surnames measures a different thing than the b estimated from individuals. The surname b is a measure of the rate of long run social mobility of overall social status for families, while is slower than the one-generation rate of

**Table 9: b Values for England and Sweden from Surnames**

| Period | England Wealth at death | England Education | Sweden Education | Sweden Doctors |
|---|---|---|---|---|
| 1850-99 | 0.71 | 0.78-0.81 | 0.75-0.82 | - |
| 1900-49 | 0.71-0.86 | 0.78-0.81 | 0.85 | 0.70 |
| 1950-2012 | 0.61-0.68 | 0.78-0.81 | 0.66 | 0.70 |

Sources: Clark and Cummins, 2012, Clark, 2012.

mobility on individual aspects of status that the traditional mobility studies measure. That is why surname mobility rates in Sweden or England, where nuclear families dominated and kin networks beyond these were unimportant, are almost as slow as those of Imperial and Republican China. It thus remains to be determined whether it was kin networks, or just the nature of statistical processes, that produces the strong persistence of surname elites in China.

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**Exam elite names and places of origin (lower Yangzi):** (1) *Zhejiang juren list obtained from Chronicle of Zhejiang Jiang, Chapter of who's who (*民国浙江通志-选举志*); (2) Jiangsu juren list obtained from Chronicle of Jiangsu, Chapter of who's who* (江苏省志-选举志).

**Republican era elite names (national):** (1) *High Ranked civil and military leaders: Republican era* (published book) 中华民国职官志; (2) *Name list of college faculties (1941-1944).*

**Republican era elite names and places of origin (lower Yangzi) (1900-1949): alumni books and university yearbooks,** University students in Japan (1906), Peking University (1905-1948) , Tsinghua University (1911-1937), Nanyang University (1898-1925), Central University (Nanjing University) (1916-1936, 1945-1947), Zhejiang University (1918-1947), Wuhan University (1922-1935), Yanjing University (1924-1928), Datong University (1923-1935, 1940-1948), (1906 年留日学生，京师大学堂/北京大学，清华大学，南洋公学/交通大学，南高/东南/中央大学，求是高等/浙江大学，武汉大学，燕京大学，大同大学).

**Communist era elite (national): (1) government official** *High Ranked civil and military leaders: Communist era (1949-1988)* 中华人民共和国职官志 **(2)** *1992 and 2006 yellow book of China government agencies* (published reference book); (3) 2006 census on 1,400,000 China enterprises (from which we selected those with assets of ￥100 millions and above, 130,000 chairman of board).

**Communist era elite (lower Yangzi):**

**Notable People of Zhejiang Province (1900-1970)**

*http://www.zjda.gov.cn/zjda/module/search/SearchAction.do?method=search&strTypeCode=0008;*

**Search Engine for Nanjing University incoming students (1952-2011),**

*http://dawww.nju.edu.cn/pub/?id=1*

**Dead soldiers' surnames, 1933-49:** county chronicles published in 1980s-1990s, chapter of who's who: honored soldiers (各县县志，人物志，革命烈士英名录).

**Population, ethnicity, and Educational attainment of 1500 most common surnames (national)**; regional distribution of selected (successful) surnames: purchased from China's National Identification Information Center （全国公民身份证信息服务中心）, whose data came from China's household registration (*hukou*) which covers the entire population.

**Appendix: Rare Elite Surnames, National**

| | Population 2010 | Lower Yangzi prefecture of jinshi /other provinces | Qing jinshi | Officials 1912-49 | Top rich 2006 | People with graduate degree per 10,000 | Professors top 10 universities 2012 |
|---|---|---|---|---|---|---|---|
| big three | 270.5 m. | All over China | 4,845 | 1702 | 22,934 | 26.9 | 4,924 |
| | | Regional three | | | | | |
| Gu 顾 | 2,675,692 | 苏州, 无锡, 杭州,南通, 嘉兴, 扬州/ 江西, 河南, 河北, 贵州,广西,云南 | 75 | 88 | 643 | 29.0 | 112 |
| Shen 沈 | 5,305,442 | 嘉兴,湖州,杭州,绍兴,宁波,南通,苏州,常州,镇江,上海/ 河南,河北,广东,福建,安徽 | 41 | 201 | 1186 | 26.8 | 184 |
| Qian 钱 | 2,446,177 | 嘉兴,湖州,绍兴,常州,苏州,南通,扬州,上海/ 云南,河南,贵州,河北 | 36 | 106 | 580 | 29.1 | 97 |
| | | Elite surnames | | | | | |
| 裘 | 135,594 | 宁波, 绍兴/江西 | 4 | 14 | 51 | 33.8 | 6 |
| 诸 | 118,161 | 杭州, 嘉兴, 绍兴 | 2 | 4 | 51 | 32.0 | 6 |
| 茅 | 99,073 | 镇江, 扬州 | 2 | 7 | 39 | 36.2 | 7 |
| 竺 | 67,163 | 宁波 | 2 | 6 | 26 | 33.1 | 8 |
| 濮 | 61,612 | 南京 /安徽 | 8 | 4 | 22 | 30.8 | 5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 巢 | 50,917 | 常州 | 1 | 1 | 12 | 30.2 | 2 |
| 钮 | 75,654 | 湖州, 嘉兴, 上海 | 3 | 8 | 12 | 29.7 | 6 |
| 笪 | 23,054 | 镇江 | 1 | 1 | 6 | 37.3 | 1 |
| 宓 | 22,668 | 宁波 | 1 | 3 | 11 | 45.0 | 1 |
| 恽 | 17,476 | 常州 /北京 | 7 | 5 | 15 | 50.4 | 2 |
| 端木 | 13,303 | 南京 | 2 | 2 | 8 | 38.3 | 1 |
| 萨 | 9,048 | 福州 | 5 | 6 | 1 | 47.7 | 2 |
| 忻 | 25,432 | 宁波 | 1 | 1 | 15 | 57.8 | 4 |

## *Appendix: Lower Yangzi Elite Surname-Place of Origin Combinations*

| area | prefecture | county | 1645-1690 elite | 1780-1810 elite | 1870-1900 elite |
|---|---|---|---|---|---|
| 江南 | 苏州 | 吴县长洲元和 | 韩，申，缪，管，彭，宋，范，汪 | 潘，石，戴，毛，席，陶，郭，宋，彭， | 潘，彭，程，曹，范，汪，查，陶，孔，贝 |
| | | 常熟昭文 | 翁，蒋，曾，汪，归，赵 | 屈，瞿，言，席 | 庞，翁，曾，归，浦，季 |
| | | 吴江震泽 | 叶，汝 | 费 | 庞，汝，柳 |
| | | 太仓 | | 毕 | |
| | 常州 | 武进阳湖 | 庄，龚，恽，屠，须，瞿， | 盛，卜，吕，陶，庄，龚， | 程，费，瞿，董，恽，姜，汪 |
| | | 宜兴荆溪 | 路，万，储 | 潘，路，任， | 潘，任，崔 |
| | | 江阴 | 章，季，金，惠 | 缪 | 章，沙，祝 |
| | | 无锡金匮 | 鲍，安，侯，施，秦，嵇 | 邹，华，侯，秦 | 孙，薛，陶，裘，过 |
| | 镇江 | 丹徒 | 欧阳，何，卞，符，荆，樊 | 茅，柳，戴 | 茅，鲍，唐 |
| | | 丹阳 | 贺，荆 | 吉 | |
| | | 溧阳 | 费，任，潘 | 狄，彭，强 | 狄 |
| | | 金坛 | 冯，于，史，曹 | 虞 | |
| 浙北 | 杭州 | 钱塘仁和 | 汪，翁，查 | 许，汪，翁，翟，项，阎， | 许，汪，濮，樊，夏，武，钟 |
| | | 富阳 | 裘 | | |
| | | 萧山 | 任，来 | 瞿，钟，蔡 | 施，韩，林，汤 |
| | | 海宁 | 查，郭，羊，祝 | 许，祝，查， | 查，都，蒋 |
| | 绍兴 | 山阴会稽 | 阮，茹，祁，姜，鲁 | 童，商，茹，平，姜，杜， | 马，何，冯，杜，石 |
| | | 诸暨 | 余，钱 | | 斯 |
| | | 上虞 | | | 经，钱 |
| | | 余姚 | 史，诸 | 吕，邵 | 翁 |
| | 嘉兴 | 嘉兴秀水 | 屠，谭，盛，吕，范，虞，曹 | 汪，虞，何，怀 | 郑，殷，褚 |
| | | 嘉善 | 丁，孙，支，魏 | 周，孙，浦 | 郁，夏 |
| | | 海盐 | 俞，萧，曹 | 顾，吾 | 富，任 |
| | | 平湖 | 屠，胡，冯 | 屈，奚 | 戈，屈，奚 |
| | | 桐乡石门 | 钟，唐，劳 | 冯，皇甫，蔡 | 周，蔡 |
| | 湖州 | 乌程归安 | 闵，凌，戴 | 章，闵，凌， | 钮，梁 |
| | | 德清 | 蔡，车，戴，嵇 | 谈，冯 | 俞，傅 |
| | | 长兴 | 臧，叶，丁，蒋 | 臧，孙 | |
| | 宁波 | 鄞县 | 左，万，戎，倪，管，范， | 卢，范，郭，竺 | 袁，范，童，忻，水 |
| | | 镇海 | 谢 | 谢 | 谢，郑，盛，方，虞 |
| | | 慈溪 | 秦，冯，姜，向 | 冯，任，董 | 叶，宓，魏，冯， |
| | | 奉化 | 邬 | | 孙 |