Social Mobility in the Long Run: An Analysis with Five Linked Generations in China, 1300 – 1900

Carol H. Shiue————————————

The extent of intergenerational mobility in society may affect the degree of inequality, and also its potential for growth and prosperity. Historical analysis has much to offer for increasing our understanding of social mobility. In this paper, I shift the focus of the existing literature to China and examine a number of key issues that are to date unresolved.

My study employs genealogical data from Tongcheng County, in Anhui province, China. The data covers information on about 10,000 unique men, their wives, and their children, for seven lineages of between fourteen to twenty generations. Among the more than 40,000 individuals in the sample, the earliest recorded birth is in the year 1298, and the last recorded death is in the year 1925. Because the data is from the clan genealogy, all relationships are observed and name matching is not an issue. While the advantage of genealogies for studying long-run processes where intergenerational links are important is apparent, they also have certain disadvantages compared to modern, administrative census data because they are voluntarily and retrospectively provided. As I have shown in Shiue (2015; NBER 19661), however, the external validity of the Tongcheng genealogies is high, suggesting that sample selection of various types are unlikely to play a major role.

The first issue is who in the family is important for determining a person's status. I extend recent work that examines the grandfather's effect on son status conditional on father status by adding generations four and five, showing that the positive correlation between grandfather and son status (conditional on father status) vanishes upon the inclusion of generations four and five, with which son status is also positively correlated. Consistent with some theoretical work on this issue—it appears that grandfather and earlier generations mostly helps characterize father 'quality'. However, there is strong evidence that the status of uncles matters to the son's status. This points to the potential importance of non-lineal, network effects on whose role for mobility to date we know very little.

The second issue is the characterization of long-run social mobility itself. In the case of a few rich families with exceptionally detailed biographies, we know more about how these families grew rich and what happened to them thereafter over several generations. However, for the large majority of the remaining distribution of families we know close to nothing on the evolution of their social mobility across generations. How many generations, for example, does it take to fall from intermediate to low status? Once at low status, how long does it take to escape this level? While the isolated cases of high-status families are no doubt interesting, these examples tell us very little on mobility in the population at large. My analysis is based on a sample of nearly 7,500 five-generation-linked observations, each covering around two hundred years. The sample includes both the very top (so-called *jinshi*) as well as the large majority of men (about seventy percent) without status. The sample permits the analysis of the mechanics of upward and downward mobility in a new way.

Third, my analysis contributes to understanding the role of social mobility for growth and inequality in its examination of the variation in mobility over a much longer time period than is currently feasible. I extend the existing literature on temporal variation far beyond the 19th and 20th century with a consistent sample of up to twenty generations -- from roughly the year 1300 to 1900. This allows me to assess the question of whether, for example, social mobility appears to be constant over time.

Temporary Protection and Technology Adoption: Evidence from the Napoleonic Blockade
Réka Juhász

A long-standing debate in economics is centered on the question of whether certain industries can become competitive in the long-run if they are given temporary trade protection. This paper estimates the causal effect of temporary trade protection on the development of an infant industry and the economy more generally. In particular, I study the effect of temporary trade protection on the development of the mechanized cotton-spinning industry across regions of the French Empire during and after the Napoleonic Blockade, which took place within the context of the Napoleonic Wars (1803-15).

Throughout these wars, the French Empire was exposed to a regionally differential and arguably exogenous shock to the cost of trading with Britain. Variation in the size of the trade cost shock allows me to identify the effect of trade protection on the mechanized cotton spinning industry. This was one of the fastest growing and most innovative sectors in the 19th century, playing a key role in the first Industrial Revolution. A number of features of the industry in early nineteenth century France make it particularly well-suited to examining the effects of infant industry protection. First, the technology, invented and developed in Britain in the late 18th century, was initially not adopted on a wide scale in France, a country with an initially similar cotton industry. By the beginning of the Napoleonic Wars, the French were not competitive in mechanized cotton spinning.

Second, the machines were cheap and depreciated fast meaning that the long-term results cannot be driven by the gradual depletion of a one-time investment. Finally, this was the first industry to mechanize and adopt modern, factory-based production methods. Differently to traditional cottage industry, modern production methods are generally thought to exhibit the types of increasing returns to scale inherent to infant industry mechanisms.

I estimate the causal effect of temporary protection in two steps. First, I ask whether trade protection was an important driver of the adoption of mechanized cotton-spinning technology in the short-run, during the disruption to trade. This would be the case if protection rendered profitable previously unprofitable locations by increasing the price of competing imported British yarn. Using a difference-in-difference (DD) estimation strategy, I find that areas which received a larger trade cost shock during the Napoleonic Wars increased production capacity in mechanized cotton spinning to a larger extent than areas which received a smaller shock.

Second, I turn to examining effects in the long-run, after the disruption to trade ended. I find evidence of persistence in the location of mechanized cotton spinning throughout the 19th century. Having one more mechanized spindle in 1812 as a result of higher protection during the blockade increased mechanized spinning capacity by about 3 spindles in 1840, and 5-6 spindles in 1887. I also examine whether adoption of frontier technology in mechanized cotton spinning led to aggregate effects on the regional economy. I find that increased protection from British competition increased value added per capita in industry in 1860, through its effect on mechanized cotton spinning, but not later.

Is it who you are, where you work, or with whom you work that matter for earnings? Gender and peer effects among late nineteenth-century industrial workers

Joyce Burnette and Maria Stanfors

Does working with more productive peers increase productivity? And if so, do such peer effects lead to spillover effects in wages? Recent studies have shown the importance of co-workers for productivity in the contemporary labor market. We assess the impact of co-workers on men's and women's productivity and earnings in the past, exploiting matched employer-employee data from the Swedish cigar industry circa 1900. The data provides detailed information on individual characteristics for men and women holding the same jobs and also many characteristics of the firm; such information is rare but important. We are thereby able to control for factors both at the individual and workplace level, and also construct variables capturing co-worker characteristics. Our research aim is three-fold: was it who you were, where you worked or whom you worked with that mattered for earnings? To answer these questions, we estimate standard wage regressions. We first analyze the importance of individual characteristics for earnings, then control for firm-level characteristics, and finally add co-worker characteristics as variables measuring peer effects.

We begin with individual characteristics, which explain 71 percent of wage variation for men and 61 percent for women. Wages rose rapidly with experience during the first few years in the occupation, but soon reached a plateau. Firms characteristics also mattered, but in a gendered way. Both men and women earned more at firms in the three largest cities. Large firms paid men more but women less than small firms, and firms with higher income per worker paid men but not women higher wages. Firms with higher income per worker paid men, but not women, higher wages.

We find evidence that with whom you worked mattered for earnings, but only under certain circumstances. In the case studied, experienced co-workers seem to have improved training, but only when both the learner and the co-workers were female. Male wages were, if anything, lower in the presence of more experienced co-workers. Explanations for these patterns include different group dynamics according to gender, e.g., that there was some sort of female solidarity leading women to help other women (though no such solidarity among men). It is also possible that men didn't need the help of their experienced co-workers because they were receiving training in other ways. Our results suggest that the mechanism of peer effects worked through knowledge spillover and learning on the job rather than social pressure, since only low-experience women received a benefit from having more skilled peers.

Holding up the Empire
Xavier Duran and Marcelo Bucheli

Why did the United States subsidize American multinationals to enter into countries treated as informal colonies? Classic cases of American commercial imperialism suggest that imperial interventions protected U.S. multinationals' property, led to increasing share prices for these companies, and supported U.S. exports to the intervened countries (Dube et al. 2011; Berger et al. 2013). It is not clear, however, if the rationale for these imperial interventions was to improve U.S. welfare, or if it was the result of special interest group influence on the government to capture rents, or both. Nor it is clear how the redistributive political struggles these interventions originated at the empire were resolved.

We examine a paradigmatic case of American imperialism: the U.S. support for Panama's secession from Colombia in 1903, and the subsequent payment of $25 million in reparations to Colombia in 1921 that opened the oil fields in the Andean country to the Standard Oil Company of New Jersey (hereafter SONJ). The case represents a rare window to observe, within an empire, social decision making over an imperial intervention. Because the reparations decision was made by the U.S. Senate, we can examine voting patterns rather than documenting an opaque military intervention to destabilize Colombia's government.

We first examine American and Colombian sources. We find evidence suggesting that Colombia's government held-up SONJ, and induced it to lobby successfully the U.S. Senate in favor of a reparations treaty for Colombia.

Next we investigate how SONJ built the coalition to pass the treaty by estimating a senatorial voting decision equation. We find that senators from states with substantial oil production and refining (including SONJ states) voted to pass the treaty; senators likely to have sold their vote also joined to support the treaty; and socially conservative senators completed the coalition.

Finally, we quantify the welfare implications of the U.S. Senate decision. We find that SONJ minimum profits were $53 million. The U.S. social savings were likely higher than the reparations the American government paid to Colombia, and most of these savings were captured by refiners while the average American ended up less well-off.

We contribute to the literature on American imperialism in three ways. First, we find that Maurer's (2013) empire trap hypothesis (a multinational exploits collective action failure to acquire the empire's protection through an imperial intervention at the expense of the average American) fits nicely our evidence. After SONJ lobbying, the U.S. Senate decided to intervene and benefited oil refiners at the expense of the average American. Second, our evidence suggests the trap mechanism is more complex than Maurer's proposed collective action failure. Political ideology does influence U.S. imperial intervention decisions. Furthermore, although governments of informal colonies can hold up multinationals and leverage negotiated outcomes with the companies, as highlighted by Maurer, they can also induce a multinational to act to influence its own empire's policy to favor the colony. Third, our evidence also suggests that although the trap makes the average American less well-off, the U.S. can still end up better-off on aggregate.

SHRINK THEORY: THE NATURE OF LONG RUN AND SHORT RUN ECONOMIC PERFORMANCE

Stephen Broadberry and John Wallis

Understanding long run economic performance is a fundamental concern of economists, economic historians and social scientists more generally. In the last few decades, new data on economic performance period suggests that economies vary as least as much in how they "shrink" as in how they "grow." Despite these findings, we still focus on growth rather than shrinking. There has been little research into why poor societies shrink so often or by how much. Economic historians have not investigated the possibility that improved long run economic performance since the eighteenth century could have been due to less shrinking rather than faster growing. We show that economic historians, growth economists and development specialists must explain a reduction in the rate of shrinking rather than an increase in the rate of growing if they hope to explain long run economic performance.

Long run economic performance, measured by the rate of change of per capita GDP over periods of forty years, is the aggregation of short run annual changes and combines 4 factors: (1) the frequency with which an economy grows; (2) the rate at which it grows when growing (the growing rate); (3) the frequency with which an economy shrinks and (4) the rate at which it grows when shrinking (the shrinking rate). Thus:

Long-run economic performance = growing rate * growing frequency
+ shrinking rate * shrinking frequency

The key empirical findings reported here are: (1) In most of the world since 1950, and historically for today's countries where data are available back to the thirteenth century, growing rates and shrinking rates have been high and variable. (2) When long run economic performance has improved, it has typically been because the frequency and rate of shrinking have both declined, rather than because the growing rate has increased. (3) As long run economic performance has improved over time, the short run rate of growing has normally declined rather than increased, but the frequency of growing has increased.

To explain improved long run economic performance we therefore need a theory of shrinking as much as a theory of growing. The neoclassical growth model is not well suited to explain why an economy would shrink by 5 to 10% per year over sustained periods. We offer an alternative framework based on institutions and the enforcement of agreements. We distinguish between "impersonal" rules and "identity" rules. In identity rule societies, disputes are decided in court in favour of the more powerful elite. Elites are identified by their place in the social hierarchy, and they can be arrayed in an "elite matrix." Because elite identities (rankings) are continuously in flux, there is a fundamental source of uncertainty about rule enforcement, and reductions in the number of "rule based" elite relationships leads to economic shrinking. These types of uncertainty and fluctuations do not matter for impersonal rule societies, where enforcement is not tied to identity, but is crucial for economic performance in identity rule societies. Long run development thus requires a transition from a world of identity rules to a world of impersonal rules.

The Enduring Effects of American Indian Boarding Schools———————————

Matthew T. Gregg

I examine the effect of American Indian off-reservation boarding schools on the economic development on Indian reservations today. To explore this issue, I use enrollment data from 1911 to 1932 to construct the historical proportion of students who attended boarding schools for 179 Indian reservations. To address endogeneity concerns, I exploit cross-sectional variation in exogenous schooling costs: namely, the distance to the nearest off-reservation school interacted with whether the school remained open during this era. Using two modern censuses, I find that for every 10 percentage point increase in the historical proportion of boarding students, contemporary high school graduation rates on reservations increase by roughly 5.6 percentage points, poverty rates fall by 8.2 percentage points, and the reservation share of veterans increases by 4.4 percentage points. The historical boarding school effect is driven in large part by the intergenerational transmission of human capital. These findings taken together contradict most conventional wisdom on this topic.

Keywords: Education; Human Capital; Assimilation; Development; American Indians.

JEL Codes: I20, I25, J15, N31, Z1

Monetary versus Macroprudential Policies: U.K. Bank Rate and Credit Policy Tools in the Era of The Radcliffe Report

David Aikman, Oliver Bush, and Alan M. Taylor

We have entered a world of conjoined monetary and macroprudential policies. But can they work in tandem, and with what effects? As this policy cocktail has not been seen in decades, empirical evidence is virtually non-existent. We set out to fix this shortcoming. The Radcliffe Report (1959), notoriously skeptical about the efficacy of monetary policy, embodied views which led to the U.K. to a three decade-long experiment of using credit policies alongside changes in the policy rate. These non-price tools are similar to policies now being considered by macroprudential policymakers. We describe these tools and how they were used by the Bank of England. We craft a largely hand-collected dataset and develop a novel identification strategy, factor- augmented local projections (FALPs), to investigate the effects of both monetary and credit policies.

We find that, contrary to the views of Radcliffe Committee members, the impact of changes in the policy rate on activity and prices was of the same direction and of similar order of magnitude as found for later periods in the UK and USA. Our results call into question policymakers' reliance on credit policies to stabilise output, inflation and the trade balance. In contrast, our results suggest that policies that act directly on lending may be more suitable than monetary policy for financial stability policymakers.

Moving to opportunity: Railroads, Migrations and Economic Mobility
Santiago Pèrez

Regional inequalities explain a substantial fraction of inequality within countries. Hence, if parents and their children tend to live in the same regions, part of the association between their economic outcomes will be driven by geography. The strength of this influence will in turn depend on the cost of geographic mobility within a country. In this paper, I exploit the expansion of the railroad network to the interior of the country in 19th century Argentina to study the relationship between migration costs, migrations and economic mobility. I take advantage of newly collected data linking males across the 1869 and 1895 national censuses of population of Argentina. These data allow me to observe an individual location in 1869 and 1895, as well as the economic outcomes of fathers (in 1869) and their sons in adulthood (in 1895).

I first provide descriptive evidence on geographic and economic mobility. I find that geographic mobility was substantial in this time period: 55% of the sons in my linked sample resided on a different department relative to their father and close to 20% resided on a different province. The country also exhibited relatively high levels of economic mobility. Comparing my data to similarly constructed data for the US and UK, I find that Argentina had levels of intergenerational mobility that were slightly below those of the US but considerably above those of the UK.

After characterizing geographic and economic mobility, I study the extent to which the two were influenced by railroads. I deal with the potential endogeneity of railroad placement using an instrumental variables approach. In particular, I instrument railroad access with access to a hypothetical network that connects province capitals with natural harbors in a cost-minimizing way, a similar strategy as in Faber (2013) and Morten and Oliveira (2015).

Using this strategy, I provide two complementary pieces of evidence that suggest a role for railroads in facilitating geographic mobility. First, individuals who in 1869 resided in districts connected to the railroad network were more likely to move long distance. Second, gross migration flows across departments depended negatively on bilateral travel costs.

The core of my analysis will look at the effect of railroad construction on economic mobility. If inequality in economic outcomes is partly driven by geography, then barriers to geographic mobility are also likely to hurt economic mobility: when the cost of moving is high, the children of parents in disadvantaged regions will be more likely to grow up and work as adults in the same (disadvantaged) region. I test this hypothesis by looking at how the decrease in migration costs brought by railroad construction affected the association between the economic status of parents and their children. In particular, reductions in migrations costs should lead to upward mobility among individuals residing in disadvantaged localities. This set of results will be available soon.

Did capital requirements in the early 20th century United States promote bank stability?

Michael Gou

Capital requirements are a fundamental regulation designed to promote bank stability. The structure of the national banking system in the early 20th century United States provides an appropriate regression discontinuity design to study the impact of capital requirements on bank stability. In this study, a sharp regression discontinuity design is exploited to estimate the impact of capital requirements on bank capital, leverage, and suspension rates. Banks subject to higher capital requirements hold on average between 13 to 19% more capital resulting in larger banks. These results are largely being driven by banks operating at the lower end of the capital distribution. By observing the quantile treatment effects, I find that capital requirements increase a bank's capital of up to 28% for banks operating in the lower 10th percentile of the capital distribution. However, banks subject to higher capital requirements did not experience less leverage and lower suspension rates. Capital requirements in the early 20th century were not effective in promoting bank stability.

The Responsiveness of Inventing: Evidence from a Patent Fee Reform
Alice Kuegler

Do financial incentives induce inventors to innovate more? I exploit a large reduction in the patent fee in the United Kingdom in 1884 to distinguish between its effect on increased efforts to invent, and a decrease in patent quality due to a lower quality threshold. To analyse the impact on innovation I create a detailed new dataset of 54,000 British inventors with renewal information for each patent. The resulting data includes detailed information on the names and addresses of British inventors who applied for UK patents from 1879-1888 and obtained patent grants. I compile renewal information on each of these patents to construct a measure of patent quality. A second quality measure is obtained by identifying British patents that subsequently also received patent protection in the United States. Both of these quality measures capture patent value because inventors only pay renewal fees or file for an additional US patent if the expected benefit exceeds the cost of doing so. The patent reform in 1884 reduced fees by 84 percent from a high initial level, and this fee reduction lead to a longer-run percentage increase in overall British patents of 141 percent. High-quality renewed patents increased by over 100 percent, with an elasticity of 1.25.

A framework is provided for understanding the effects of the patent fee change on inventing effort exerted and on the quality of inventions patented. A lower patent fee raises efforts and investments in inventing due to higher payoffs. At the same time, the fee reduction leads to negative quality selection because of the resulting fall in the quality threshold for patented ideas. I approximate the relative importance of increased effort by comparing the high-quality share of the overall patenting increase to the pre-reform share. The share of new patents due to increased effort accounts for three quarters of the share of high-quality patents before the fee reduction. I identify these longer-run effects by exploiting the discontinuity arising from the fee reduction in January 1884. In the short run, the quality of patents increases just before the fee falls while patent numbers decline, and excess bunching of patents in the months after the reform amounts to over 250 percent. This short-run effect on quality shows that patent quality is not simply a function of the total number of granted patents. Inventors know about the quality of their ideas and choose the optimal date for patenting and effort accordingly. The short-run response is identified from the observed excess bunching over a counterfactual density of patenting.

To test for the presence of credit constraints I generate two asset proxies, and find a larger innovation response for inventors with lower assets. The first asset measure captures the probabilistic share of inventor surnames at the county level among high-asset individuals that were probated at death, and a second asset measure is based on the employment of servants in inventor households. The results of this paper indicate efficiency gains from decreasing the cost of inventing and in addition, from relaxing credit constraints.

BONES, BACTERIA AND BREAK POINTS: THE HETEROGENEOUS SPATIAL EFFECTS OF THE BLACK DEATH AND LONG-RUN GROWTH

Remi Jedwab, Noel Johnson, and Mark Koyama

The Black Death is the largest demographic shock ever seen in mankind and killed about 40\% of Europe's population between 1347-1353. Historical studies suggest that this mortality shock played a major role in shifting Europe onto a path to sustained economic growth. Using a novel dataset that provides information on spatial variation in plague mortality at the city level, as well as a range of controls and various identification strategies, we explore the short-run and long-run causal impact of the Black Death on city growth. We find evidence for aggregate convergence. On average, Europe's cities recovered their pre-Black Death population within two centuries. However, there was considerable heterogeneity in the response to the shock, hence local divergence. The Black Death led to an urban reset: cities with better geographical and non-geographical endowments did relatively well, while other cities collapsed. In particular, our results emphasize the importance of trading networks in explaining urban recovery. Furthermore, the Black Death led to the creation of new cities in areas that were relatively less urbanized before it hit. Our analysis thus suggests that the Black Death may have permanently affected the spatial distribution and aggregate level of economic activity, potentially contributing to long-run growth in Europe

State Capacity and Public Goods: Institutional Change, Human Capital, and Growth in Early Modern Germany

Jeremiah E. Dittmar and Ralf R. Meisenzahl

What are the origins and consequences of the state as a provider of public goods? We study legal reforms that established mass public education and increased state capacity in German cities during the 1500s. These fundamental changes in public goods provision occurred where ideological competition during the Protestant Reformation interacted with popular politics at the local level. We document that cities that formalized public goods provision in the 1500s began differentially producing and attracting upper tail human capital and grew to be significantly larger in the long-run. We study plague outbreaks in a narrow time period as exogenous shocks to local politics and find support for a causal interpretation of the relationship between public goods institutions, human capital, and growth. More broadly, we provide evidence on the origins of state capacity directly targeting welfare improvement.

Keywords: State Capacity, Institutions, Growth, Education, Human Capital, Persistence.

JEL Codes: I25, N13, O11, O43