Intergenerational Mobility and Institutional Change
in 20th Century China

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Abstract

We study the connection between intergenerational economic mobility and institutional change in 20th century China. Using a model of elites' investment in their children, we show that elites may choose to reform institutions and reduce political rents for their children's generation if elites have an opportunity to invest in their children to take advantage of the reforms. The model predicts that the intergenerational transmission of wealth or education will change along with institutions; specifically, social mobility *decreases* even as economic institutions become more open – this is precisely why elites are willing to reform. We test this using cohorts born between 1930 and 1979, from a retrospective survey of urban Chinese. We find that a) the cross-sectional inequality of education has not changed since China's economy was opened, but b) intergenerational persistence of educational attainment increased markedly among Chinese completing their educations after the 1970s, and this is reflected in the persistence of income; and, c) Chinese Communist Party (CCP) membership was not more persistent among the post-reform generations, but the link between father's CCP membership and son's education and the link between father's income and son's education became markedly stronger.

1   Introduction

Economists increasingly agree that economic and political institutions play an important role in societies' economic performance.[1] Yet research on *how and why* institutions change is less developed, with political economists concentrating on models that emphasize the distribution of political power, and the transfer of power across groups leading to changes in policy. While these models describe important historical cases well (for example, the Glorious Revolution), institutional change does not always involve threats to elites' power or changes in political control.

Since 1979, China's economy has been transformed from a closed, state-run system with little economic growth into a dynamic economy full of successful private corporations, foreign investment, and massive income growth (see Figure 1). It is obvious that a necessary condition for this economic change was institutional reform: Deng Xiaoping led the Chinese Communist Party (CCP) to gradually accept, and eventually embrace, private enterprise and market exchange.[2]

Though there is a consensus on the importance of China's institutional reforms, they pose a puzzle for theories of institutional change that emphasize policy changes arising from conflicts over political power between elites and non-elites.[3] China's elites faced little direct threat when reforms began, and no transfer of political power led to the change in policy. The CCP was firmly in control of policymaking in China when reforms began in China's rural areas and the coastal special economic zones, and the Party remains in power today.[4]

We believe this puzzle can be resolved by considering an element of institutional change that is generally ignored: elites' adjustment of their *economic* investments, as opposed to their political ones. For instance, elites can invest in economic assets that yield high returns under a new institutional regime or, as we study in this paper, elites can invest in their children to give them an advantage in the new regime. Put simply, elites do not simply choose between having a large piece of a small economic pie and a small piece of a large pie, as many models of institutional

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[1]Proponents of this view include North and Thomas (1973), North and Weingast (1989), DeLong and Shleifer (1993), Acemoglu, Johnson, and Robinson (2001, 2005), and Greif (2006). Others emphasize the role of ideas and technology (Mokyr, 1990)), or behavioral norms (Clark, 2007).

[2]China's economic reforms and economic performance since 1979 have been widely discussed (for example, Naughton, 1995, and Brandt and Rawski, 2008).

[3]See, for example, Olson (1993) and Acemoglu and Robinson (2005).

[4]Changes in *which* elites determined policy certainly were important: the establishment of Deng Xiaoping at the top of the CCP was a crucial turning point in modern Chinese history. Jones and Olken (2005) point to the importance of individual leaders in changing economic institutions and outcomes.

change presume. Rather, by *jointly* investing in their children *and* reforming institutions, elites can ensure that their children get a bigger slice of the bigger pie available under reformed institutions.[5] While new institutions can make everyone better off, the children of the initially well-off can disproportionately benefit from institutional change: this means that institutional change may actually *decrease* social mobility.

Of course, for elites to increase their welfare by adjusting their investments (in their children or in new assets), institutional reform must be anticipated (if not controlled by the elites themselves), and must not involve the expropriation of elites. Thus, the Communist takeover of China, which did expropriate pre-1949 Chinese elites, can be seen as an entirely different sort of revolution. Those elites who remained did not maintain high political status and were economically disadvantaged.[6] Thus, one might expect very different relationships between social mobility and institutional reform depending on the process of reform: the Communist takeover of 1949 might look starkly different from the economic reforms of 1979.

We model the connection between intergenerational economic mobility and institutional change and empirically examine social mobility in China for cohorts born between 1930 and 1979; our focus is the case of China's economic reforms after 1979. We begin by presenting a model of elites' investment in their children's political status and education, and show that elites may choose to reform institutions and reduce political rents for their children's generation. This happens if elites have an opportunity to invest in their children's education to take advantage of the reforms, for instance when the returns to education increase. The model predicts that the intergenerational transmission of wealth or education will change along with institutions; specifically, social mobility *decreases* even as economic institutions become more open. This is precisely why elites are willing to reform: they are induced to support institutional change, but this is because they are differentially able to acquire assets (e.g., their children's human capital) that earn high returns under the post-reform institutions, thus reducing social mobility.

We test this prediction using cohorts from a retrospective survey of urban Chinese.[7] We find that the cross-sectional inequality of education has not changed since China's economy was opened, but

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[5]More generally, elites can invest in high-return assets that give them a bigger slice of the economic pie under reformed institutions. We focus on the case of intergenerational investments because the link between social mobility and institutional change is the focus of the paper.

[6]Walder and Hu (2009).

[7]The Chinese Urban Household Education and Employment Survey, 2004.

the intergenerational persistence of education increased markedly (and statistically significantly) among Chinese completing their educations after the 1970s – just as the returns to education increased. This is reflected in the persistence of income across generations. Interestingly, Communist Party membership was not significantly more persistent among the post-reform generations, but the link between father's CCP membership and son's education became stronger, as did the link between father's income and son's education.

These findings together suggest an important tradeoff presented by gradual institutional change. While China opened its economy, and certainly made the vast majority of the population better off, economic openness did not generate increased economic mobility – just the opposite.

In the remainder of the paper, we briefly review the distinct literatures on the political economy of institutional change and intergenerational mobility (in Section 2) to which we contribute, present a model linking intergenerational investments to institutional reform (in Section 3), and present patterns of economic inequality and social mobility in 20th century China (in Section 4). We close with a discussion of the generality of our model (in Section 5).

2   Review of existing literature

Our paper contributes to the literature on the political economy of institutional change. Most similar is work by Acemoglu and Robinson (2008), which models elites' investment in *de facto* political power to obtain economic institutions that are beneficial to them – even if the *de jure* political institutions have changed. Also related are papers that examine particular political mechanisms (creating an inefficient, corrupt bureaucracy or weakening the military) by which political elites can offset the redistribution that occurs after democratic reform (Acemoglu, Ticchi and Vindigni, 2007 and 2009). Our paper pursues a new direction, however, looking at how intergenerational transfers can be altered to offset the redistributive effects of institutional change.

Our work also contributes to the vast microeconometric literature on intergenerational mobility and the persistence of economic outcomes (see Black and Devereux, 2010, and Solon, 1999, for reviews). Our paper most closely follows recent work that has examined the correlations between parents' and children's incomes and endowments comparatively: across time (Aaronson and Mazumdar, 2005); across OECD countries (Karabarbounis et al., 2009); across both time and space

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(Ferrie, 2004, and Hertz et al., 2007); and even across pre-industrial societies (Borgerhoff Mulder, Bowles, Hertz et al., 2009).

Research on economic mobility in China has exploded in recent years, motivated by the increase in income inequality and economic growth induced by liberalization. Much of this work examines a single cross-section of children. For example, Gong, Leigh, and Meng (2010) find that intergenerational mobility is very low in urban China relative to other countries, using a 2004 cross-section, in contrast to Guo and Min (2008), who find a very high level of mobility using the same data (but not accounting for life-cycle effects).

Some prior research explicitly considers changes in social mobility in China across institutional regimes. Campbell and Lee (2008) examine social mobility before and after the Communist takeover, and find that social mobility was not affected by this dramatic institutional change. This work is, however, limited to a small, nonrepresentative sample of Chinese families.[8] Deng and Treiman (1997) examine mobility before and after the Cultural Revolution (1966–1976), and find that mobility was sharply increased during the Cultural Revolution period.[9] Wu and Treiman (2004) examine the rate of rural-to-urban transitions in *hukou* status (an important mechanism of mobility in contemporary China), and find little change following China's reforms. Walder and Hu (2009) provide evidence most closely related to our analysis, examining the composition of Chinese elites from 1949 to 1996. They find mixed results: CCP membership was relatively more open after reforms, and elite non-governmental positions were as open after reforms as they were before; on the other hand, elite governmental positions were transmitted more effectively across generations among Party elites.[10]

We present new evidence on social mobility in China over the long-run. Our data span three institutional regimes, allowing us to compare the transmission of educational attainment across generations for cohorts educated before the Communist takeover, for cohorts educated under the pre-reform CCP, and for those completing their educations after the reforms. Not only do we use new data, but we also propose a theoretical model to rationalize the changing intergenerational

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[8]In work we present below, we find contrasting results: social mobility among urban Chinese increased among cohorts educated under the pre-reform Communist institutions (though we do not take into account information on the extended family, as do Campbell and Lee).

[9]Below, we present results consistent with this finding.

[10]Walder and Hu also find that certain types of status transmission were sharply curtailed during the Cultural Revolution.

correlations, and test the predictions of the model using cohort-level analyses.

3 A model of intergenerational transmission of status and institutional reform

Here we present a very simple two-generation model that links intergenerational transfers to institutional reform.

- A parent cares about his own consumption (in period t) and his child's income (in period $t{+}1$).

- Income, for both parent and child, is earned from production as well as political rents.

  - Income from production is based on the individual's level of education and is subject to a tax.

  - Political rents come from the tax on production, and are proportional to an individual's political status. Thus, income from political rents is greater when tax rates are greater, and when one has higher political status.

- Parents choose their child's level of education – any of the parent's income that is not consumed is used for the child's human capital. Political status is costlessly, but imperfectly, transmitted from parent to child.[11]

- The tax rate applied to parents' production and the (possibly different) tax rate applied to children's production are both chosen by the parent with the highest political status. Both tax rates are set between 0 and $\bar{\tau} < 1$, inclusive.[12]

In general, parents are faced with the following problem (we return to the highest-status parent's choice of tax rates below):

$$\max_{c_{it}} U(c_{it}) + \beta U(Y_{it+1}) \tag{1}$$

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[11]We do not consider strategic complementarities in parents' choices of their children's human capital.

[12]We assume that all parents are informed of the tax rate applied to their production and the tax rate applied to their children's.

subject to:

$$Y_{it} = (1 - \tau_t)A_tH_{it} + \tau_t R_{it} \quad \text{``total income''} \tag{2}$$

$$A_t = gA_{t-1} \quad \text{``productivity growth''} \tag{3}$$

$$R_{it} = \rho R_{it-1} \quad \text{``status transmission''} \tag{4}$$

$$c_{it} + H_{it+1} = Y_{it} \quad \text{``budget constraint''} \tag{5}$$

Substituting into the parent's decision, we have:

$$\max U((1 - \tau_{it})(A_tH_{it}) + \tau_{it}R_{it} - H_{it+1}) + \beta U((1 - \tau_{t+1})gA_tH_{it+1} + \tau_{t+1}\rho R_{it}) \tag{6}$$

The first order condition for H_{it+1}, the parent's investment in his child's human capital, is:

$$U'((1 - \tau_t)(A_tH_{it}) + \tau_{it}R_{it} - H_{it+1}) = U'((1 - \tau_{t+1})gA_tH_{it+1} + \tau_{t+1}\rho R_{it})(\beta gA_t(1 - \tau_{t+1})) \tag{7}$$

Assume $U()$ is CRRA: $U(c_{it}) = \frac{c_{it}^{1-\sigma}}{1-\sigma}$. Then we have:

$$((1 - \tau_t)(A_tH_{it}) + \tau_{it}R_{it} - H_{it+1})^{-\sigma} = ((1 - \tau_{t+1})gA_tH_{it+1} + \tau_{t+1}\rho R_{it})^{-\sigma}(\beta gA_t(1 - \tau_{t+1})) \tag{8}$$

We can rearrange this to yield:

$$(1 - \tau_t)(A_tH_{it}) + \tau_{it}R_{it} - H_{it+1} = ((1 - \tau_{t+1})gA_tH_{it+1} + \tau_{t+1}\rho R_{it})(\beta gA_t(1 - \tau_{t+1}))^{\frac{-1}{\sigma}} \tag{9}$$

Solving for H_{it+1} gives:

$$H_{it+1} = \frac{(1 - \tau_{it})A_tH_{it} + \tau_{it}R_{it} - \tau_{t+1}\rho R_{it}(\beta gA_t(1 - \tau_{t+1}))^{\frac{-1}{\sigma}}}{\beta^{\frac{-1}{\sigma}}(gA_t(1 - \tau_{t+1}))^{\frac{\sigma-1}{\sigma}} + 1} \tag{10}$$

We view "institutional reform" as a shift to low tax rates – that is, a shift from earnings based on political rents to earnings based on human capital and production. From equation (10) we can derive comparative statics that indicate how the persistence of status (in this case, the persistence of educational attainment) changes as a result of *gradual* institutional change: institutional change in the form of lower tax rates on the child's generation, which allows the parent to adjust their

investment in their child's human capital.[13]

$$\frac{dH_{it+1}}{dH_{it}} = \frac{(1-\tau_t)A_t}{\beta^{\frac{-1}{\sigma}}(gA_t(1-\tau_{t+1}))^{\frac{\sigma-1}{\sigma}}+1} \tag{11}$$

Equation (11) specifies the transmission of human capital from the parent to the child. We can now see how this varies in response to the tax rate on the child:

$$\frac{d^2 H_{it+1}}{dH_{it}d\tau_{t+1}} = \frac{(\frac{\sigma-1}{\sigma})(1-\tau_t)A_t(\beta gA_t(1-\tau_{t+1}))^{\frac{-1}{\sigma}}}{(\beta^{\frac{-1}{\sigma}}(gA_t(1-\tau_{t+1}))^{\frac{\sigma-1}{\sigma}}+1)^2} \tag{12}$$

So, $\frac{d^2 H_{it+1}}{dH_{it}d\tau_{t+1}} \leq 0$ if $\sigma < 1$ (i.e., if households are sufficiently willing to substitute across periods).

A decrease in the tax rate on children's production is associated with an increase in the transmission of parents' education to their children.[14] Thus, gradual institutional reform that shifts the economy away from incomes based on political rents is actually associated with *reduced* social mobility.

Having seen that parents' investments in response to gradual institutional reform generate reduced social mobility, we now ask whether and when such gradual reform would be chosen. Examining equation (6), it becomes evident that the highest-status parent[15] will choose institutional reform (they set $\tau_{t+1} = 0$) if:

$$\tau_{t+1} = 0 \iff gA_tH_{it+1} > \rho R_{it}^{max} \tag{13}$$

Suppose initial institutions are most "coercive": $\tau_t = \overline{\tau} < 1$. Then, the highest-status parent will choose $\tau_{t+1} = 0$ if his optimal choice of human capital for his child, $H_{it+1}(\tau_t = \overline{\tau}, \tau_{t+1} = 0)$, from equation (10), satisfies the right-hand side of equation (13).

Plugging $\tau_t = \overline{\tau}, \tau_{t+1} = 0$ into equation (10) yields:

$$H_{it+1}(\tau_t = \overline{\tau}, \tau_{t+1} = 0) = \frac{(1-\overline{\tau})A_tH_t^{max} + \overline{\tau}R_t^{max}}{\beta^{\frac{-1}{\sigma}}(gA_t)^{\frac{\sigma-1}{\sigma}}+1} \tag{14}$$

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[13]We emphasize the transmission of educational attainment as, in general, it is associated with high "status" and it is the measure used in our empirical analysis below.

[14]Higher political status, R_{it}, is also associated with greater levels of education for the child when the tax rate on the child's production falls. We omit this derivation for brevity.

[15]This parent is endowed with human capital H_t^{max} and political status R_t^{max}. Note that this parent does not necessarily have the highest level of human capital.

Plugging this into equation (13), and some algebra yields the following condition for choosing gradual reform:

$$\frac{\frac{(1-\overline{\tau})A_t H_t^{max}}{R_t^{max}} + \overline{\tau}}{\frac{1}{(\beta g A_t)^\sigma} + \frac{1}{g A_t}} > \rho \tag{15}$$

Thus, if equation (15) holds, even the highest status parent will prefer *gradual, endogenous institutional reform.* It is clear that this is more likely when political status transmission is more imperfect (ρ is lower); when productivity growth is greater (g is larger); and, when the parent cares more about the child (β is greater). Intuitively, the political rents and human capital of elite parents provide income to make investments that increase their children's share of the pie under the reformed institutions. High rates of productivity growth induce parents to lower tax rates for their children and invest in their children's human capital because they know that they can secure their children a larger piece of the economic pie through production rather than through political status transmission and high tax rates. As we saw above, this is reflected in greater persistence of educational attainment across generations – lower social mobility.

We next examine the link between gradual institutional reform and social mobility in the context of China's economic reforms beginning in the late 1970s.

4   Inequality and intergenerational mobility in 20th century China

We begin by briefly describing our dataset, then present long-run trends in cross-sectional inequality and status transmission within five-year cohorts. These cohort-level descriptive data show that institutional change in 20th century China was strongly associated with changes in inequality and social mobility. We finally more sharply test the predictions of our model regarding gradual institutional reform (in 1979) and social mobility.

4.1   Description of our data

Our data come from a retrospective survey of Chinese urban households, the "Chinese Urban Household Education and Employment Survey, 2004." Our analysis will focus on men who were household heads in 2004 (and so responded to the survey), as well as their fathers and sons (about

whom questions were asked in the survey). Because we can link household heads to their fathers and sons, we have information on father-son pairs in which the son was born in the distant past (old household heads), as well as pairs in which the son was born more recently (young household heads and the sons of middle-aged household heads). The variables of interest are the ages of the men we study, their educational attainment, their membership in the Chinese Communist Party, and their incomes. Summary statistics from our dataset are presented in Table 1.

4.2 Long-run trends in inequality and social mobility

Our data allow us to consider inequality and social mobility among cohorts of Chinese men born between 1930 and 1979.[16] 20th century China experienced dramatic institutional changes: China was ruled by an emperor through 1911, then was a republic (often engaged in internal and external war) through 1949, and has been ruled by the Communist Party from 1949 until today – until 1979 the economy was very much state-controlled, and since 1979, the economy has dramatically opened to private enterprise, markets, and foreign trade.[17] Tracing social mobility across 20th century China thus allows the comparison of mobility patterns across starkly different institutional regimes.

Our focus will be on educational attainment as a measure of each individual's economic "status." This has an advantage over income measured at a point in time (let alone at the same time for fathers and sons), as it is generally fixed by age 25 and so is very much a reflection of the institutional regime a man experienced until that age (or until an earlier age in the cohorts born in earlier years). Education is also correlated with lifetime earnings, which is what we would ideally like to measure.

To place our analysis of social mobility in context, we first examine the average educational attainment and the inequality of educational attainment within a five-year birth cohort, for cohorts born from 1930-1979. Thus, we plot average years of schooling and the Gini coefficient of years of schooling for the sons born from 1930-1934, for those born from 1935-1939, and so on (see Figure 2).

Figure 2 shows that the founding of the People's Republic (in 1949) was, in fact, associated with

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[16]Cohorts born earlier are extremely small in our sample and so do not contribute to the statistical analysis. Younger cohorts are both small and suffer from the disadvantage that their educational attainment may not be complete in 2004.

[17]The Chinese Communist Party has also undertaken more limited political reforms. For example, recent years have seen the introduction of more open elections for positions such as "village leader" in rural areas.

both a rise in average schooling levels and a decrease in the within-cohort inequality in schooling (we consider cohorts born before 1940 educated under the "pre-Mao" regime). Economic reforms in the late 1970s (the beginning of the "post-Mao" period) did not reverse these trends: education levels continued to rise, and the within-cohort inequality of educational attainment remained steady (we consider cohorts born from 1970 on as educated under the "post-Mao" regime).

We next turn to patterns of social mobility over time. For each five-year birth cohort, we regress the years of schooling of son i on a measure of his father's socioeconomic status – years of schooling or a dummy variable indicating membership in the CCP – and quadratic functions of son's age and father's age:

$$school_i = \beta_1 * fatherstatus_i + \beta_2 * age_i + \beta_3 * age_i^2 + \beta_4 * fatherage_i + \beta_5 * fatherage_i^2 + \epsilon_i \qquad (16)$$

The coefficient on father's education indicates the intergenerational transmission of educational attainment from father to son among sons born in a particular cohort, educated under a particular institutional regime. The coefficient on the dummy variable indicating father's CCP membership indicates differential educational attainment among the sons of CCP members born in a particular cohort, educated under a particular institutional regime.

Figures 3 (years of schooling) and 4 (CCP membership) plot coefficients on the father's status variables for each five-year birth cohort along with their 95% confidence intervals.[18] Both pictures indicate that high father's "status" – higher edcuation and CCP membership – was transmitted to a child's education less well under the "Maoist" regime than before (i.e., coefficients on father's status are lower). That is, among cohorts born between 1940 and 1970, mobility was high relative to those cohorts born prior to 1940. Yet, one sees that the pattern changes for those cohorts born after 1970: these sons, who completed their educations following the economic reforms, experienced *less* mobility than those sons born between 1940 and 1970 (coefficients on father's status are greater).

An alternative analysis looks directly at the incomes of fathers and sons. This is, in some sense, the outcome of interest, though using incomes of fathers and sons to measure social mobility is fraught with problems (see Solon, 1999). In this analysis, we regress son's income in 2004 on his father's last earned income, again, for five-year birth cohorts.[19]

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[18]Standard errors here and throughout the paper are clustered at the household level.

[19]If a father is still working in 2004, we use his 2004 income. As above, we include quadratic functions of son's age

Figure 5 plots coefficients on father's income for the five-year birth cohorts. Here we see that the transmission of "status" (income) is fairly steady following the establishment of the People's Republic (we lack sufficient income data to describe the "pre-Mao" cohorts); as above, we see an increase in the transmission of status following China's economic reforms. The next section examines the reduced social mobility among sons born after 1970 more closely.

4.3 Social mobility across institutional regimes

Our model predicts that the sort of gradual institutional change chosen by the Chinese Communist Party in the late 1970s should be associated with *increased* transmission of social status to children entering the labor force under the new institutional regime. Importantly, the increased transmission of status should be through channels that are relatively more productive under the new institutions.

Figures 2–5 suggest that the persistence of educational attainment, as well as other measures of the persistence of status across generations, increased following China's economic reforms. To more rigorously examine this pattern, we classify our sample of sons into three groups: those educated before the founding of the People's Republic (i.e., sons born between 1930 and 1939); those educated under the Communist system prior to the economic reforms (born between 1940 and 1969); and those educated after the economic reforms had begun (born between 1970 and 1979). We can then test whether the transmission of a father's educational status to his son differed across these groups of sons by estimating the following equation using all three groups:

$$school_{it} = \beta_1 premao_t * fschool_i + \beta_2 postmao_t * fschool_i + \beta_3 premao_t + \beta_4 postmao_t + \beta_5 fschool_i + \beta_6 X_{it} + \epsilon_{it} \quad (17)$$

The dependent variable is the son's educational attainment, and the explanatory variables of interest are the interactions between father's educational attainment and the "regime" under which the son was educated. As above, we control for quadratic functions of son's age and father's age (X_{it}). We omit the "Maoist" regime interaction, so the pre-Mao and post-Mao interaction terms can be interpreted as the *differential* transmission of father's educational attainment to his son under the relevant regime – a positive coefficient implies greater transmission and thus less mobility.

We present our estimates of equation (17) in Table 2. In column (1), we present results based on all fathers and sons, which indicate that social mobility was significantly lower among sons

and father's age as controls.

educated after China's reforms. Note that this is likely *not* simply due to measurement error driving down the estimated transmission coefficients among cohorts born earlier: transmission of status is estimated to have been *greater* among the "pre-Mao" cohorts as well. In column (2), we examine only those ("native") sons whose *hukou* (residency) was established by age 2 (to avoid confounding our estimates with differential migration into cities across cohorts). Again we find that a father's education is much more strongly associated with his son's after China's economic reforms.

Next, we consider alternative measures of a father's status, and test whether these measures are also more strongly associated with his son's educational attainment after the reforms. We thus estimate equation (17), but substitute a dummy variable indicating a father's membership in the CCP for father's education. In Table 2, column (3), we present the result using all sons, and again find evidence that fathers were able to transmit their status more effectively after reforms: in the "post-Mao" period, father's CCP status is more strongly associated with his son's level of education (though not quite statistically significantly so). Considering only native sons, one finds similar results (see Table 2, column (4)).

Finally, we use a father's final income as a measure of his status. Again, we find that status transmission was significantly greater following reforms (see the coefficient on the "post-Mao" interaction in Table 2, column (5)). The same holds when we limit the sample to those sons who were native to the city in which they live (Table 2, column (6)).

4.4 Additional evidence on social mobility following economic reform

The evidence in Table 2 strongly supports the main prediction of our model; China's gradual economic reform beginning in the late 1970s saw reduced social mobility: elites were able to differentially increase their investments in their children's educations. Here we examine the data more closely to test several other implications of our model.

First, in the model, an elite parent transmits his "status" to his child following institutional reform in order to increase his child's slice of the economic pie. It is therefore important to check that social mobility, using *income* as a measure of a child's status, decreased following China's reforms.[20]

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[20]Again, this is subject to all of the caveats regarding the use of a single observation of income as a measure of

We thus estimate the following model:

$$income_{it} = \beta_1 premao_t * fincome_i + \beta_2 postmao_t * fincome_i + \beta_3 premao_t + \beta_4 postmao_t + \beta_5 fincome_i + \beta_6 X_{it} + \epsilon_{it} \quad (18)$$

This is simply equation (17), but using father and son's incomes, rather than educational attainment as a measure of status.[21] In Table 3, column (1), we present the results of estimating equation (18) using all sons. We find that income was transmitted significantly more effectively following institutional reform. When we limit the sample to native sons, in Table 3, column (2), we find the same result.

Our model emphasizes a shift among elites toward investing in productive assets (in this case, their children's human capital), rather than in political status. Although Communist Party membership in China may be a valuable economic asset, our model suggests that status transmission should be biased toward educational investments, rather than investments in children's political status.[22] Thus, we estimate model (18), but use a dummy variable indicating son's CCP membership as the outcome variable, and a dummy variable indicating father's CCP membership as the measure of father's status.

We present results in Table 3, column (3) for all sons. We do *not* find the same increase in transmission of CCP status that we saw for education and income: the post-Mao period sees reduced social mobility, but not reduced mobility into the Communist Party. This is consistent with the model: elites differentially invested in assets that earned significantly higher returns under the new institutions – their children's educations.

Finally, the model emphasizes elites investing in their children's education because it yields a high return. Thus far, we have shown that the intergenerational transmission of educational attainment and the intergenerational transmission of income increased following institutional reform. But, we have not shown that education earned an especially high return following reforms.

To estimate the return to education across time, we use fathers' last earned income ("*endincome*"), and regress it on years of schooling for different "retirement cohorts." In practice, we interact a father's years of schooling with a dummy variable indicating the regime during which

socioeconomic status.

[21]To be precise, we use each son's total income in 2004 and each father's final income or income in 2004.

[22]Li et al. (2007) find that the returns to Communist Party membership are large, but are likely due to members' ability and background, as within-twin pair (fixed effect) estimates of the return to membership are not significantly different from zero.

he retired: "pre-reform" (retired between 1950 and 1979, inclusive) or "post-reform" (retired after 1979). Thus, using fathers who retired between 1950 and 2004, we estimate the following:

$$fatherendincome_{it} = \beta_1 postreform_t * fschooling_i + \beta_2 postreform_t + \beta_3 fschooling_i + \beta_4 X_{it} + \epsilon_{it} \quad (19)$$

As the prereform interaction is omitted, we can interpret the coefficient on the interaction between father's years of schooling and the post-reform retirement coefficient as (an imperfect estimate of) the differential return to a year of schooling following reforms. X_{it} is either a quadratic function of father's age (the baseline), or a quartic.

In Table 4, column (1), we present baseline estimates of (19), which indicate that the return to education was significantly higher in the "post-reform" period. In Table 4 columns (2) and (3), we add additional controls for father's age (up to a quartic) and then drop these controls entirely; we continue to find a much higher return to education in the post-reform period. Finally, in column (4) we consider only the fathers of the "native" sons in our sample; again, we see that they earned higher returns to their schooling following reforms.

Together, the results in Tables 2-4 are consistent with elites investing in their children's human capital as China experienced its institutional change, and the consequent increasing returns to education. Elites transferred both educational status and high earnings to their children, thus reducing social mobility.

5   Conclusion

Not all institutional transitions are precipitated by conflicts between elites and non-elites, nor do changes in political power necessarily precede changes in economic institutions. China's Communist revolution and takeover in 1949 replaced an old elite with a new elite, generating social mobility alongside the new institutions. In contrast, the Communist Party's economic reforms beginning in 1979 maintained the power of a ruling elite and actually reduced social mobility.

We have presented a model that explicitly links social mobility and intergenerational investments to institutional change: our model predicts that, when institutional change is anticipated (and does not involve expropriation), elites will invest in assets that yield high returns under the new

regime – the human capital of their children is an important example – and maintain (or even improve) their positions. The empirical evidence we have presented shows that, indeed, urban Chinese parents' education, political status, and income were transmitted more effectively to their children's educational status just as reforms were undertaken (and the returns to education rose).

China's 1979 reforms are not the only case of elites adjusting their economic behavior to take advantage of institutional reforms. Similar patterns appear in other transition economies, for example, Bulgaria and Vietnam.[23] Historically, other examples exist as well: in Central America, the economic activities undertaken by a fairly stable group elites have changed dramatically over time. In Guatemala, for example, the rise of coffee production occurred along with the rise of the Liberal Party and the elimination of the trade monopoly, the *Consulado de Comercio*, in the late 19th century. The new Liberal regime was anything but liberal toward workers on coffee plantations, and the Guatemalan elite was largely unchanged (and eventually was made much better off). Other potential examples include the contemporary Arab World, Eastern Europe following the transition from Communism, post-colonial Africa, and contemporary Cuba.

These cases indicate that creating better institutions involves a trade-off: voluntary institutional reform is possible, but it requires a guarantee to elites that they – or, importantly, their children – will be better off under the new regime. Thus, economic openness can mean *less* social mobility. This trade-off is important for understanding the theory of institutional change, and also its practical consequences.

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[23]Hertz et al. (2007) and Hertz, Meurs, and Selcuk (2007).

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Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.
Data on Sons			
Year of birth	9849	1957.41	10.60
Years of schooling	9800	11.19	3.19
log(total income)	9359	9.53	0.69
CCP member dummy	9841	0.40	0.49
native	9849	0.65	0.48
Data on Fathers			
Father's year of birth	9284	1935.02	13.58
Father's years of schooling	8004	6.18	4.15
Father's log(final earned income)	4569	8.02	1.34
Father's CCP membership dummy	9120	0.30	0.46

Note: Data come from the 2004 Chinese Urban Household Education and Employment Survey. Summary statistics are for sons born between 1930 and 1979, inclusive, and their fathers. Years of schooling and income are winsorized to limit the influence of outliers. A son is considered a native if he was registered in his current location by age 2.

Table 2: Father's "status" and son's educational attainment across institutional regimes

|	I.	II.	III.	IV.	V.	VI.
	Outcome: Son's years of schooling					
Premao*father's education	0.063	0.130*				
	[0.054]	[0.076]				
Postmao*father's education	0.054**	0.047*				
	[0.024]	[0.028]				
Premao*father's CCP status			0.885	3.280***		
			[0.588]	[0.720]		
Postmao*father's CCP status			0.255	0.246		
			[0.190]	[0.213]		
Premao*father's income					-1.503***	-1.061
					[0.433]	[0.735]
Postmao*father's income					0.279***	0.261**
					[0.106]	[0.112]
Obs.	7983	5567	9083	6336	4559	3534
Measure of father's status:	Educational attainment		CCP membership		Income	
Sample of sons:	All	Natives only	All	Natives only	All	Natives only

Note: Regression coefficients indicate intergenerational transmission of status relative to the omitted "mao" group (cohorts of sons born between 1940 and 1969, inclusive). All regressions control for son's age (quadratic) and father's age (quadratic). Standard errors clustered by household in brackets. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 3: Father's "status" and son's income and CCP membership across institutional regimes

	Outcome: Son's income		Outcome: Son's CCP membership	
	I.	II.	III.	IV.
Premao*father's income	-0.105	-0.114		
	[0.068]	[.136]		
Postmao*father's income	0.084***	0.081***		
	[0.031]	[0.031]		
Premao*father's CCP status			-0.035	-0.071
			[0.078]	[0.111]
Postmao*father's CCP status			0.008	0.016
			[0.029]	[0.035]
Obs.	4422	3437	9106	6347
Measure of father's status:	Income		CCP membership	
Sample of sons:	All	Natives only	All	Natives only

Note: Regression coefficients indicate intergenerational transmission of status relative to the omitted "mao" group (cohorts of sons born between 1940 and 1969, inclusive). All regressions control for son's age (quadratic) and father's age (quadratic). Standard errors clustered by household in brackets. * p<0.1, ** p<0.05, *** p<0.01

Table 4: The return to education across institutional regimes;
evidence from fathers' earnings at time of retirement

|	*Outcome: Father's earnings*			
	I.	II.	III.	IV.
Postreform*father's schooling	0.056***	0.037**	0.059***	0.073***
	[0.014]	[0.014]	[0.014]	[0.018]
Postreform	0.818***	0.724***	1.043	0.751***
	[0.102]	[0.100]	[0.096]	[0.120]
Father's schooling	0.023*	0.035***	0.030**	0.011
	[0.013]	[0.013]	[0.013]	[0.017]
Obs.	3872	3872	3872	3011
Controls for father's age:	Quadratic	Quartic	None	Quadratic
Sample of fathers:	All	All	All	Fathers of Natives

Note: Interaction coefficient indicates the return to a year of schooling relative to the omitted "pre-reform" group (cohorts of fathers retiring between 1950 and 1979, inclusive). Standard errors clustered by household in brackets. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Figure 1: Real GDP per capita
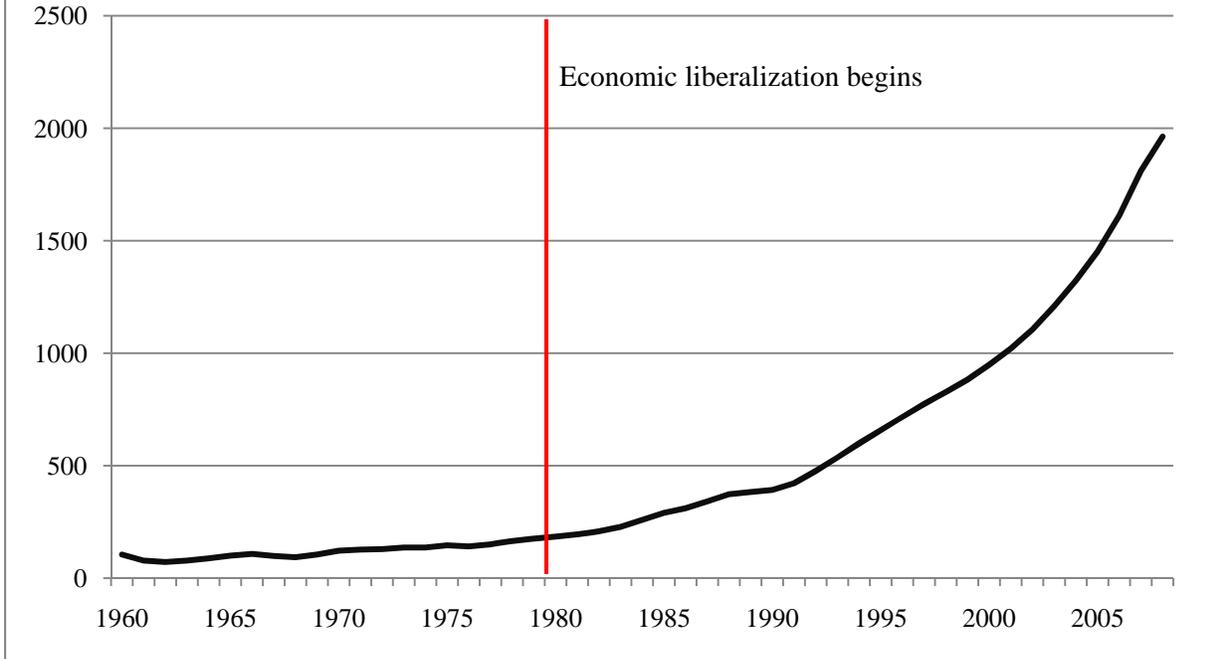
Source: World Development Indicators.

Figure 2: Educational attainment and inequality by five-year birth cohort

Mean years of schooling

**Gini of educational attainment**
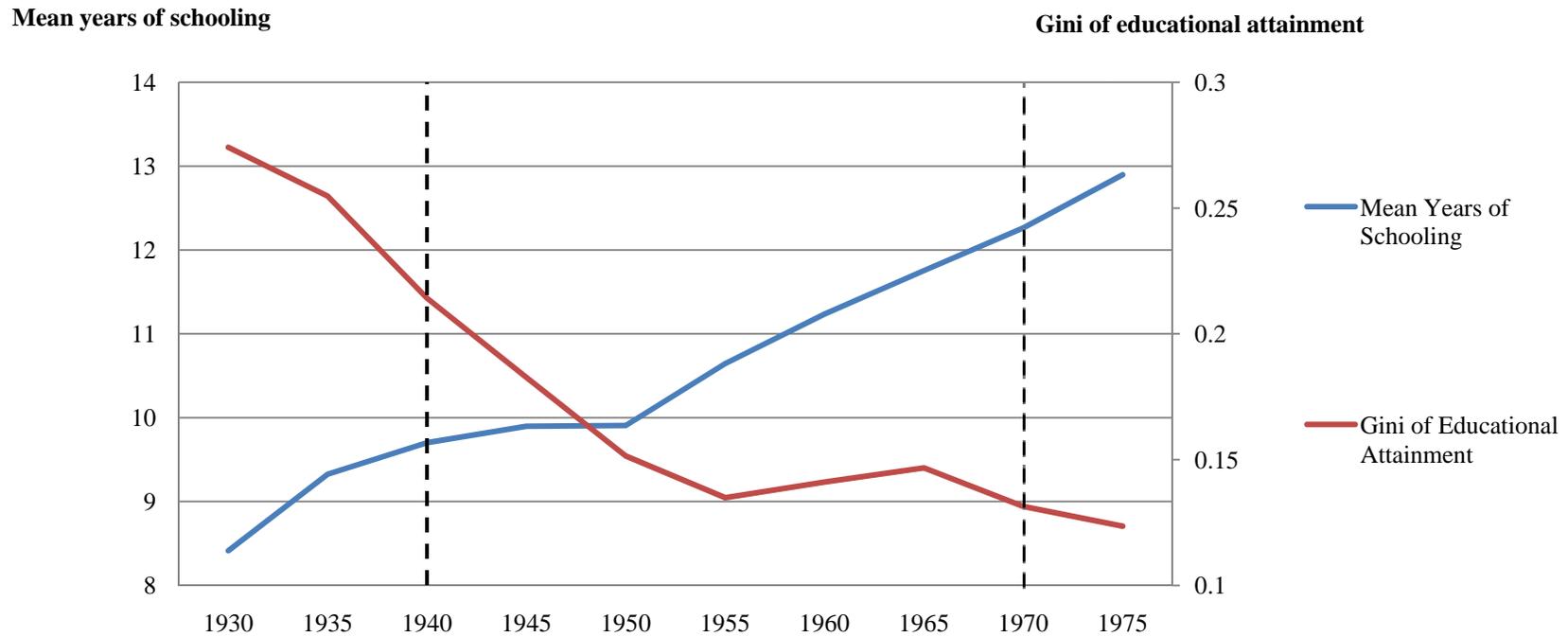
Note: Graph shows the mean years of schooling among urban sons born in each five-year birth cohort between 1930 and 1979, as well as the inequality of years of schooling within each five-year birth cohort (measured by the Gini coefficient). Dashed lines indicate cohorts educated under the "pre-Mao," "Maoist" and "post-Mao" regimes.

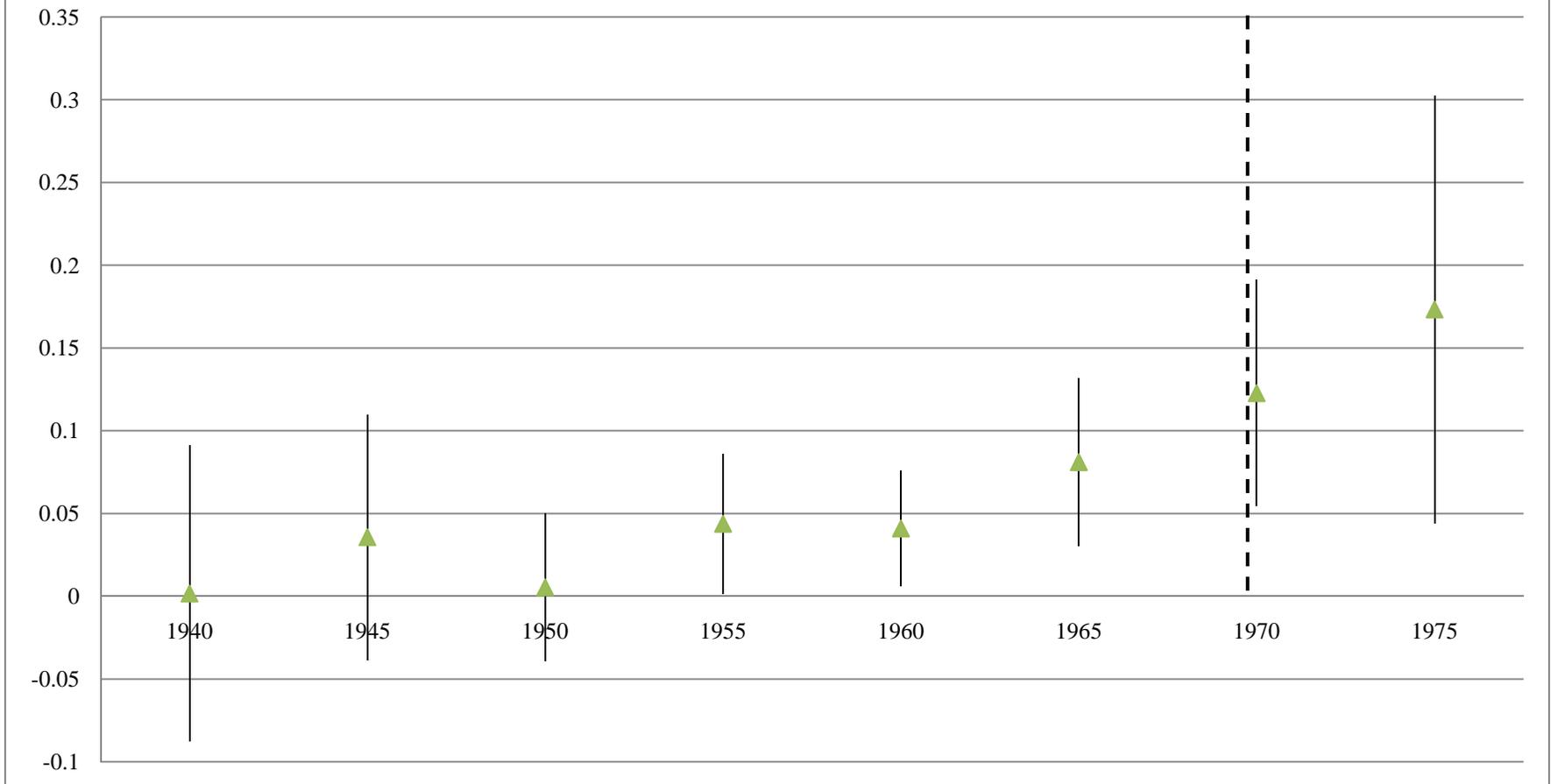**Figure 3: Transmission of educational attainment by five-year birth cohort**
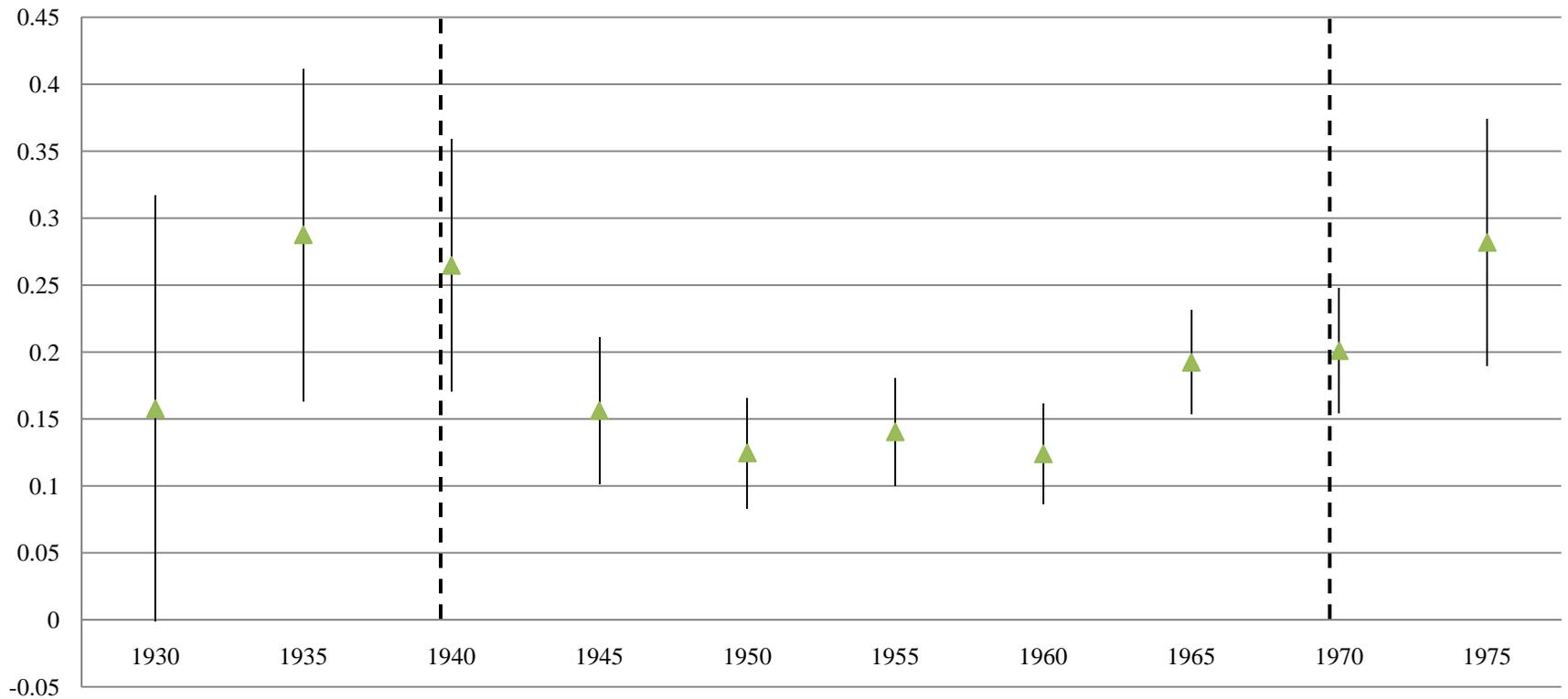
Note: Figure plots estimates from separate regressions for each five-year birth cohort of son's years of schooling on father's years of schooling (the coefficients on which are plotted) and quadratic age controls for father and son. Bars indicate 95% confidence intervals based on standard errors clustered at the household level. Dashed lines indicate cohorts of sons educated under the "pre-Mao," "Maoist" and "post-Mao" regimes.

Figure 4: Father's CCP membership and son's education by five-year birth cohort
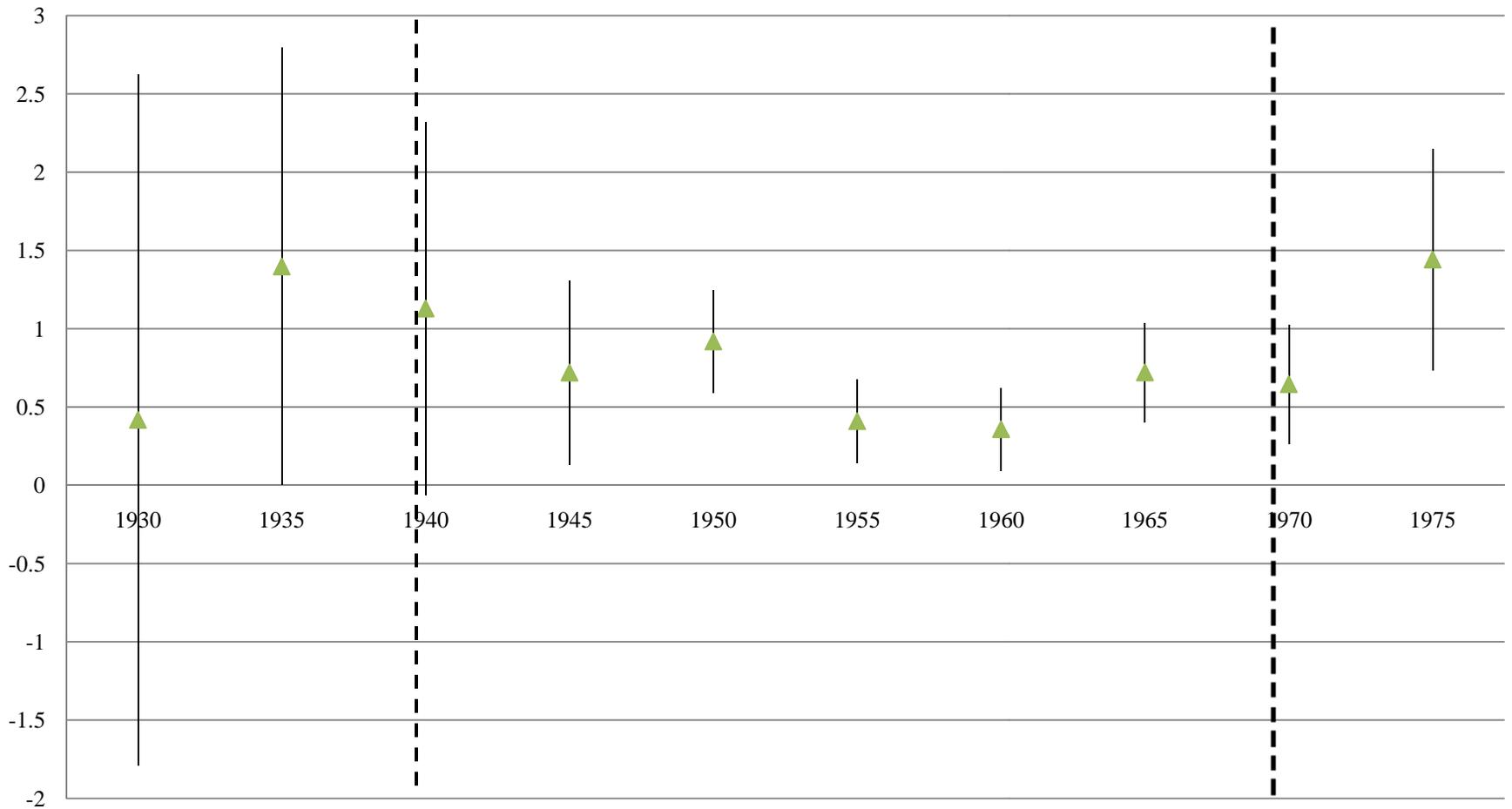
Note: Figure plots estimates from separate regressions for each five-year birth cohort of son's years of schooling on father's CCP membership (the coefficients on which are plotted) and quadratic age controls for father and son. Bars indicate 95% confidence intervals based on standard errors clustered at the household level. Dashed lines indicate cohorts of sons educated under the "pre-Mao," "Maoist" and "post-Mao" regimes.

Figure 5: Intergenerational transmission of income by five-year birth cohort

Note: Figure plots estimates from separate regressions for each five-year birth cohort of son's log income in 2004 on the log of father's last earned income (the coefficients on which are plotted) and quadratic age controls for father and son. Bars indicate 95% confidence intervals based on standard errors clustered at the household level. Dashed line indicates cohorts of sons educated under the Maoist" and "post-Mao" regimes.