

THE INTERGENERATIONAL EFFECTS OF AUTHORITARIANISM*

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Abstract—We estimate the effects of authoritarian policies across generations using the arrival of the Pinochet dictatorship to Chile in 1973 as historical context. The dictatorship reduced higher education opportunities for new students across all universities. Using census data, we find that parents who reached college age shortly after 1973 experienced a sharp decline in college enrollment. Decades after democratization, we observe that their children are also less likely to enroll in higher education. The results imply large and persistent downstream effects of educational policies over more than half a century.

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I. Introduction

Can the impact of authoritarian policies be transmitted from parents to their children? If so, what are the mechanisms through which dictatorships might persistently affect societies? The link between an authoritarian past and the functioning of young democracies has long been hypothesized (e.g. O'Donnell and Schmitter 1986; Linz and Stepan 1996; Acemoglu and Robinson 2008; Albertus and Menaldo 2018). Yet the paths of influence have been more difficult to elucidate. We provide empirical answers to these questions by studying a contraction in access to college after the 1973 coup in Chile. Shortly after the coup, the Pinochet dictatorship (1973-1990) took control of all higher education institutions and promoted a large reduction in college seats. This capture of higher education and the elimination of democratic structures shares many features with other authoritarian regimes (Connelly and Grüttner, 2005), including the Soviet Union in 1922, Nazi Germany in 1933, and China during the Cultural Revolution (Waldinger, 2010, 2011; Roland and Yang, 2017; Li and Meng, 2022; Alesina et al., 2022). The shutdown of the Central European University by Hungarian strongman Viktor Orban in 2018 is a more recent example.

We show that individuals with parents directly exposed to fewer college opportunities are less likely to enroll in college today, 50 years after the policy was implemented and 30 years after Chile's return to democracy. Our analysis is centered around the military coup (September 11, 1973) that overthrew president Salvador Allende and put in power a junta led by Augusto Pinochet. Before the coup, college enrollment had been rapidly expanding in response to the growing demand for economic opportunities by the urban middle class. After the coup, universities were quickly targeted as part of the new regime's attempt to eradicate all sources of political opposition. Members of the military were appointed as rectors of all universities and many students and faculty were persecuted. However, the regime's handling of universities soon began to reflect the growing influence over policy of a group of market-friendly economists known as the Chicago Boys. Over the following years, the dictatorship steadily reduced subsidies to universities, which were largely reliant on government funding and were thus forced to downscale. This mostly took place through a reduction in openings for incoming students and led to a sharp fall in college enrollment. As a result of the deferred acceptance algorithm used for college admissions, the students barred from higher education were those with lower scores in the admissions exam, who disproportionately came from less affluent families.

To estimate the intergenerational transmission of the contraction of higher education, we study parents and children as revealed by household composition in the 2017 census. We first confirm that the sub-sample of census parents who reached college age after the coup exhibit a sharp and linear trend break in college enrollment between 1973 and 1981 which mimics the contraction of higher education in the same period. Importantly, this break is unique to the college contraction, as other macroeconomic variables such as GDP

changed non-linearly from 1973 to 1981.¹ After documenting the direct negative consequences for parents, we present evidence of downstream effects on their children. In particular, we find significantly lower college enrollment in the form of the same linear trend breaks among children with parents exogenously exposed to fewer college opportunities in their youth. In terms of magnitude, we estimate that when parents were exposed 30% fewer college openings, their children have three percentage points lower probability of enrolling in college from a base of 58 percent. This type of persistence of socioeconomic outcomes within families after critical junctures is similar to findings in other contexts (Guirkinger et al., 2021). Remarkably, all individuals we study in the 2017 census reached college age decades after the country returned to democracy. We further support these findings by showing that college enrollment is unaffected among individuals whose parents drop out of high school and thus were ineligible for enrollment in higher education.

How can a contraction of higher education have intergenerational consequences? Fewer college opportunities can have large direct economic impacts on those who did not enroll in college because of this policy. Indeed, Bautista et al. (2022) show that individuals in exposed cohorts experienced lower income, higher unemployment, and lower social mobility, all of which likely contributed to fewer educational opportunities for their children. This is particularly important in the case of Chile, a country which developed heavily market-oriented educational systems that strongly depend on the income-generating capacity of households (Figlio and Loeb, 2011). College experiences also affect a wide range of decisions related to family formation, such as who you marry and how many children you have (Goldin, 2021; Kirkebøen et al., 2022). We provide evidence in support of both family-related mechanisms, but we show that the higher probability of marrying someone with a college education is likely the most important. These results suggest that the contraction pushed by the Pinochet dictatorship affected marriage patterns, increased the number of children born, and thus probably changed parental investment on children (Becker and Lewis, 1973).

Changes in the socioeconomic and political environment, such as a college contraction after a coup, can also affect the beliefs of exposed individuals. The environment in which a person grows up has been shown to shape a wide range of beliefs (Alesina and Fuchs-Schündeln, 2007; Giuliano and Spilimbergo, 2014; Callen et al., 2014) which can be transmitted across generations (Guiso et al., 2006; Roland and Yang, 2017; Chen and Yang, 2019). Perhaps children of parents in the exposed cohorts inherited a different perception of the returns to effort or different information about the returns to higher education. For this mechanism to explain our findings, we need to observe a similar linear trend break in beliefs among parents after the 1973 coup. These persistent change in beliefs could have been transmitted from parents to children. Using data from the World Values Survey, we test and fail to find evidence for this mechanism of cultural transmission.

We contribute primarily to a rapidly growing empirical literature documenting the legacies of author-

¹This econometric strategy is similar to previous research exploiting how close to age 21 fathers were at the time of war, which has been used to document the intergenerational transmission of wartime service (Campante and Yanagizawa-Drott, 2016).

itarian regimes and the consequences for the functioning of young democracies. Previous research has documented how authoritarian policies and institutions have persistent effects and can change the distribution of political and economic power (Martínez Bravo et al., 2018; González et al., 2020, 2021). Our main contribution is to show the persistent effect of higher education policies on children college enrollment with an emphasis on mechanisms, both relatively overlooked by the previous literature. By doing so, we highlight that the negative consequences of college contractions might be larger than previously thought due to the connections between parental experiences and children’s higher education decisions. Relatedly, the link between the arrival of a dictatorship and educational policies also makes our paper speak to a literature studying political regimes and redistribution (Acemoglu et al., 2015). Education has garnered substantial attention in this literature, but most studies have focused on lower levels of education, with mixed findings (e.g. Mulligan et al. 2004; Harding and Stasavage 2013; Paglayan 2021). We contribute with quantitative evidence on the sizeable intergenerational impact of authoritarian higher education policies.

Our focus on parent-child pairs also makes this paper related to the literature documenting how socioeconomic outcomes persist within families over time. Previous research has shown evidence of persistent status across different time horizons and sub-populations across the world (Clark and Cummins, 2015; Barone and Mocetti, 2020; Ager et al., 2021; Abramitzky et al., 2021; Alesina et al., 2022), some with an emphasis on the relative role of mechanisms (de la Croix and Goñi, 2022). Estimates of the intergenerational transmission of human capital exist (Black and Devereux, 2011; Björklund and Salvanes, 2011), mostly focusing on parental education at lower levels by exploiting quasi-random variation in mandatory schooling (Black et al., 2005; Oreopoulos et al., 2006; Amin et al., 2015). Yet the transmission of higher education – a key contributor to economic growth, and elite training (Cantoni and Yuchtman, 2014; Zimmerman, 2019) – has been more difficult to document.² A notable exception is Suhonen and Karhunen (2019) who study how the impact of an expansion of universities in Finland transmits from parents to their children, with evidence of assortative mating as key mechanism. Another exception is Barrios-Fernández et al. (2022), who use a regression discontinuity design to show that children whose parents attended elite college programs in Chile are more likely to attend elite high schools and colleges. In contrast, we study a contraction of higher education pushed by an authoritarian regime with a focus on mechanisms of intergenerational persistence.

II. Historical background

Chile hosted eight universities in the 1960s, all of which were highly reliant on state funding. College enrollment grew from 25,000 (4.6%) students in 1960 to 146,000 (16.8%) by 1973 (panel (a) of Figure 1).

²Some studies estimate the transmission of higher education decisions across siblings (Altmejd et al., 2021; Aguirre and Matta, 2021) or the impact of parental college enrollment on children’s early-life outcomes, beliefs, and performance in lower schooling levels (Currie and Moretti, 2003; Maurin and McNally, 2008; Roland and Yang, 2017).

This was a period of mass expansion of higher education throughout Latin America which aimed at improving equality of opportunity and social mobility for the growing urban middle class (Brunner, 1984). Since 1967, all universities in the country have used centralized admissions based on a standardized admissions test. Under this system, applicants rank programs – i.e. college-degree pairs – while universities rank applicants based on a weighted average of their high school grades and their admission exam’s scores. Universities choose the weight awarded to each component and the number of openings per program. A deferred-acceptance algorithm then determines admissions.

Amid growing political polarization and worsening economic conditions, socialist president Salvador Allende, democratically elected in 1970, was overthrown by a military coup on September 11, 1973. A junta presided by General Augusto Pinochet assumed all executive and legislative powers and would go on to govern the country until 1990. Two weeks after the coup, the junta appointed members of the military as rectors of all universities claiming that “universities have become centers for Marxist indoctrination” and that “the extremist agitation and hate preaching that almost drove Chile down a tragic abyss originated in these universities” (Brunner, 2008, p.137). Several academic units and most student groups were shut down, political activity was forbidden and teaching materials were censored, as “the regime insisted on depoliticizing student movements and discouraging student self-government” (CIA, 1985).

The dictatorship’s initial focus on repression and political control soon begun to incorporate a technocratic concern about the efficiency of public spending (Echeverría, 1980; PIIE, 1984; Velasco, 1994). This was the result of the growing influence of a group of market-friendly economists known as *Chicago Boys*, who argued that public subsidies failed to provide incentives for thrift or effort (CEP, 1992; Valdés, 1995).³ Under their guidance, the Pinochet dictatorship embraced a more traditional concept of universities as centers of academic excellence and elite training. As early as 1974, the Ministry of Finance begun pushing for a reduction in subsidies to universities. The fact that these measures of fiscal austerity further helped to defuse the political threat posed by universities facilitated their implementation: “the regime’s penchant for political control meshed conveniently with its penchant for economic conservatism” (Levy, 1986, p.105).

Panel (b) in Figure 1 shows that the share of the education budget devoted to higher education steadily declined after 1974 and returned to its pre-Allende level of 30% by 1980. This was a large financial blow to universities because subsidies were their main source of funding. A push for higher tuition met with strong resistance and was abandoned, thus forcing universities to downscale their operations. Panel (c) shows that applicants exceeded openings throughout this period, meaning that supply was always the binding constraint on admissions. Openings rose in tandem with spending under Salvador Allende (1970-73), but fell and stagnated after the coup: there were 47,000 openings in 1973 but only 33,000 in 1980 (panel (c) in Figure

³The regime also connected their view on public funding with undesirable activism: “the mediocrity in higher education... [is] a source of frustration for students, who become a breeding ground for political agitation” (Brunner, 2008, p.147).

1). As a result of the contraction in the number of seats available, college enrollment sharply declined from 16.9% in 1973 to 10.5% in 1981 (panel (a) of Figure 1). Applicants with the lowest test scores were the ones who mechanically failed to gain admission as the number of openings fell.

A market-oriented reform in 1981 turned satellite campuses into independent institutions, further reduced subsidies, and opened the system to competition by new universities which were not eligible for government funding. The higher education system has been institutionally the same since the 1981 reform. Enrollment rates increased after 1981 to become one of the largest in the region, a trend mostly driven by private institutions. Perhaps the most important policy between 1981 and 2017 was the introduction of state-guaranteed loans in the early 2000s, which furthered increased college enrollment (Solis, 2017). In October 1988, a plebiscite was held to determine whether Pinochet would remain in power. The “NO” option won with 55% of votes and triggered the country’s democratic transition, with the first presidential election held in 1989 and Pinochet stepping down as president in March 1990.

III. Empirical framework

A. Census and sample selection

To connect college decisions today with parental socioeconomic environment fifty years ago, we use individual data from the 2017 census. We observe more than 17.5 million people organized in 5.6 million households. We proceed in four steps to construct of final estimating sample. Table A.1 shows sample characteristics after each step. First, we restrict attention to the 3.8 million people with ages 25-40 to ensure that college enrollment decisions have already been made. Second, we identify their parents using different combinations of within-household relationships. This detection method means that we only observe parents who live with their children. Importantly, results are similar if we focus on the youngest of these children (ages 25-30). The 1 million people living with their parents are younger, more likely to have enrolled in college, and more likely to be unemployed or studying. Third, given our interest in parents exposed to the contraction of higher education, we focus on individuals whose parents reported having graduated from high school and were thus eligible to attend college, decreasing the sample to 438,237 observations. And fourth, we only study decisions made by individuals whose parents reached college age between 1964 and 1981. We set the age of first year in college as 21, which corresponds to the average age of incoming students in 1970 (Figure A.1), but results are similar using other ages.

The final sample is composed by 233,136 individuals whose parents finished high school and reached college age around the 1973 coup. Throughout the analysis we call them “Children” and refer to the parent who they live with as “Parents.” Note that the people we study are 25-40 year old in 2017, which means that

the oldest ones reached age 21 in 1998, eight years after the end of the Pinochet dictatorship.

B. Empirical strategy

We estimate changes in college enrollment among children of parents who reached college age right before or after the 1973 military coup. More precisely, we estimate trend breaks in children’s college enrollment, conditional on their parents completing secondary education, by estimating the following model:

$$Y_{ic} = \beta_1 T_c + \beta_2 [T_c \times E_c] + \delta x_i + u_{ic} \quad (1)$$

where Y_{ic} is an outcome of children i whose parent belonged to cohort c . The cohort variable $T_c \in [-9, 9]$ indicates the year in which parents turned 21 years old relative to 1973. The indicator E_c takes the value of one for all parents in cohorts reaching 21 years old after 1973 and zero otherwise. The main specification captures a wide range of unobservable differences across children using the following fixed effects x_i : county-of-birth by gender, all combinations of parent-child genders, and child age. Counties are the smallest administrative unit in the country and the inclusion of x_i allows us to compare children who are of the same age, gender, and born in the same county but whose parents were barely exposed and non-exposed to the contraction. Finally, u_{ic} is an error term clustered at the level of children’s county-of-birth.⁴

The parameter β_1 measures the change in Y_{ic} for children whose parents reached college age before the coup (1964-1972). Given the expansion in college opportunities before 1973 we expect $\widehat{\beta}_1$ to reflect mostly positive economic trends in Y_{ic} . In contrast, β_2 measures the change in this trend for parents turning 21 years old in 1973-1981. The contraction of higher education leads us to expect the opposite sign in $\widehat{\beta}_2$. Our interest is on $\widehat{\beta}_2$ and we compare it to $\widehat{\beta}_1$ to measure the magnitude of the trend disruption. As we focus on contiguous cohorts of high school graduates, we interpret β_2 as the reduced form impact on children of fewer college opportunities for their parents. To interpret the trend break as arising primarily from the college contraction we need two sets of assumptions. First, that the trend in the period 1964-1972 among the outcomes we examine would have continued in the period 1973-1981 in the absence of a coup. We verify the plausibility of this assumption by checking the robustness of results to different time windows around 1973. Second, we need changes different from college seats after 1973 (e.g. economic downturn, inflation) to affect contiguous cohorts of high school graduated parents similarly. For example, we need to assume that high school graduates who were 23 and 21 years old experienced *non-college* changes similarly in 1974. The following section provides a battery of empirical exercises that support this interpretation.

⁴The statistical significance of results is the same if we account for correlation of the error term within parental cohorts using the Wild cluster bootstrap procedure (Cameron et al., 2008). For simplicity, we only report clustered standard errors.

IV. Intergenerational effects of the contraction

A. Direct effects on parents

Panel (a) in Figure 2 presents cohort-level college enrollment trends among high school graduates around 1973. Panel (b) presents the same trends but now among children of parents who reached college age between 1964 and 1981. Both figures show an increase in college entry in the years when parents turned college age before the coup (1964-1972), followed by a contraction afterwards (1973-1981). The percentages are larger in the former panel as they focus on individuals directly exposed to the policy. The solid lines in both panels capture the trends before and after 1973, while the dashed line represents our estimate of the counterfactual trend for the post-coup period. Among parents, the cohort enrollment rate increased by 4 percentage points (pp) between 1964 and 1972 and decreased by 12 pp between 1973 and 1981. These trends are *not* driven by a decrease in education spending as a whole nor by a reduction in high school graduation, i.e. the contraction is specific to higher education (Bautista et al., 2022).

To calculate the magnitude of the break among parents, panel A in Table 1 presents estimates of equation (1) using outcomes for parents. Column 1 includes county-by-gender fixed effects and show that college enrollment increased by 0.6 pp for each new cohort reaching college age before the coup. In contrast, this trend *decreased* by 2.1 pp per cohort for those reaching the same age in the period 1973-1981. The difference between the two coefficients indicates a net enrollment trend of -1.5 pp per cohort after the coup. Column 2 includes gender fixed effects, column 3 adds child age fixed effects, and estimates remain similar. Columns 4 and 5 control for the relationship to the household head and an indicator for parents whose child graduated from high school respectively, and the results remain robust. Column 3 is our preferred specification as the latter two columns include controls which could be affected by the contraction. Having documented the direct impact on parents, what were the consequences of this authoritarian policy for the following generation?

B. Downstream effects on children

Panel B in Table 1 presents estimates of equation (1). Column 1 shows increasing college enrollment of 0.4 pp among children with parents reaching college age before the coup. This trend reverses among children with parents in the exposed cohorts and becomes -0.1 pp per year, suggesting a connection between parental exposure to the contraction and the college enrollment of the children. The progressive inclusion of gender and child age in columns 2 and 3 does not affect our estimates.⁵ Controlling for age is important

⁵Table A.2 provides results by gender. Estimates are slightly larger for mothers, a result consistent with the stronger impact of the contraction on women (Bautista et al., 2022) and with evidence on the importance of mother's schooling (Amin et al., 2015).

because children with parents in the exposed cohorts are likely to be younger, which could downward-bias the estimate of the intergenerational effect if younger people benefit from a positive secular trend in college enrollment after democratization. Indeed, after controlling for child age the pre-coup trend becomes negligible and insignificant, while the per-cohort decline after the coup increases from -0.5 pp to -0.7 pp. Column 4 adds indicators for different relations to the household head and results remain the same. Column 5 controls for whether the child completed secondary education. As expected, this control absorbs some of the variation in college enrollment, but its inclusion only leads to a small reduction in the trend break.⁶

If results are explained by parental exposure to fewer college opportunities, and not by other changes brought by the dictatorship, then we should *not* observe the previous patterns among children of high school dropouts. Even in the absence of the authoritarian contraction, high school dropouts did not have the opportunity to enroll in college because high school graduation was a prerequisite. Table 2 applies the same econometric strategy to the sample of children of high school dropouts. In particular, we now look at children of parents who reached college age in the same years but who missed one or two years of secondary education to graduate from high school. Columns 1 and 3 shows the absence of a trend break in college enrollment among children in this group. Moreover, columns 2 and 4 stack these samples to the original sample of the 233,136 children of high school graduates. Although the difference across estimates is marginally insignificant (p -value 0.14), the trend break is only statistically and economically significant among the sample of children of high school graduates. These additional results support the importance of direct exposure to fewer college opportunities.

C. Concerns and robustness checks

An important concern related to the causal interpretation of results is the possibility that the extrapolated trend might be a poor approximation of the counterfactual. In the absence of the 1973 coup, the trend in college enrollment by cohort might have changed anyways. Importantly, the trend extrapolation should approximate the counterfactual better as we zoom in to a narrower window around 1973. Reassuringly, Figure A.2 shows that the results are hardly affected if we consider fewer (or more) parental cohorts, though we are constrained in how much we can zoom in as we need sufficient observations to estimate the cohort trends. Another concern relates to the possibility that some cohorts of children experienced other shocks which changed their college decisions. For instance, some of them were even born under the dictatorship. Fortunately, Table A.4 shows that the impact on children is similar if we focus on other cohorts of children,

⁶Table A.3 shows a smaller trend break in completion of each year of high school. When combined with a null coefficient on completion of primary school, these estimates suggest the contraction affected high school dropout decisions of the children.

including those ages 25-30 who were born after 1990, the year in which Chile returned to democracy.⁷

Is the linear approximation in equation (1) a good representation of the break in cohort trends after 1973? Figure 2 provides non-parametric estimates of this equation. Panel (c) shows point estimates and 95% confidence intervals for parental college enrollment. As in our main analysis above, there is an upward trend in college enrollment before the coup and a large linear contraction after 1973. Panel (d) shows the corresponding decline in the children's probability of attending college. The linear shape revealed in panel (c) is crucial for the interpretation of results because it mimics the downward trend in higher education spending and enrollment at the yearly level in the 1973-1981 period. In contrast, other important macroeconomic variables such as GDP per capita evolved non-linearly in the same period, with marked differences between the 1973-1976 and 1977-1981 periods. Therefore, the linear decay in parental college enrollment provides further support for the interpretation of results as arising from the authoritarian higher education policy.

V. Mechanisms of intergenerational persistence

How can a college contraction pushed by an authoritarian regime have intergenerational consequences? We argue that there are broadly two sets of mechanisms. First, fewer college opportunities can have downstream effects directly through parental college enrollment. Going to college has significant economic (e.g. wage, employment) and social (e.g. marriage, fertility) consequences which affect the following generation. Second, turning college age during turbulent times can shape your beliefs about the world (e.g. returns to effort) permanently and indirectly shape the ones of your children.

A. *College enrollment and income effects*

Fewer college opportunities can have large economic impacts. College offers the possibility to transit from blue- to white-collar jobs, stability in the labor market, and higher income. Studying the same historical episode in Chile, Bautista et al. (2022) show that individuals exposed to the contraction of higher education after 1973 experienced these negative economic effects. The authors exploit repeated surveys to compare people who reached college age before and after 1973 but are of the same age at the time of the survey. The results indicate that college-aged individuals exposed to 30% fewer college openings are associated with a 2 pp higher probability of having a low-skill blue-collar occupation (e.g. street vendor), are 2 pp less likely to be part of the labor force, 1 pp more likely to be unemployed, and have 4% lower income.⁸

⁷One might also worry that 21 years old might poorly characterize the age of college entry and thus the definition of cohorts exposed to the contraction. Table A.5 show that the results are similar if we consider 19 or 20 years old as the age of college entry.

⁸These estimates constitute Intention-to-Treat (ITT) estimates. As such, some individuals in the exposed cohorts likely suffered negative economic consequences even if they would not have attended college in the absence of the 1973 coup.

Negative economic consequences from fewer college opportunities are likely to be important anywhere, but we argue that they are particularly key in the case of Chile. In 1981, a large reform package incentivized the steady development of one of the most market-oriented educational systems in the world (Figlio and Loeb, 2011; Cuesta et al., 2020). As a consequence, the market for primary, secondary, and tertiary education has been led by relatively higher-quality private institutions who charge monthly fees and families aspire to get into. In this context, the income-generating capacity of households is particularly important for the following generation to have access to a high-quality primary and secondary education. Crucially, enrollment in higher education depends heavily on school quality, both directly through performance relative to peers (i.e. high school dropout, rankings) and indirectly through performance in standardized tests.

B. Assortative mating and fertility

College experiences also affect a wide range of family-related decisions. Most prominently, higher education has been shown to change who you marry and how many children you have (Goldin, 2021; Kirkeboen et al., 2022). The college educated are more likely to get married to other college educated, a phenomenon known as assortative mating. Kaufmann et al. (2021) finds this type of evidence for the case of Chile. These findings are important because any impact of the contraction in parental college enrollment is likely to be amplified by the college enrollment of the spouse. For example, if the college education of one parent allows the family to invest more in their children, then the college education of two parents can have an even larger impact. Similarly, research has shown that the college-educated have fewer children (Goldin, 2021). This change in fertility implies that a child will receive more resources if their parents have a college education, even holding household income constant (Becker and Lewis, 1973).

To test for the role of assortative mating and fertility, we use the same econometric strategy but replace the dependent variable to family-related outcomes. Panel A in Table 3 presents results. Column 1 shows that parents in exposed cohorts exhibit a downward trend break in the probability of having a spouse. Column 2 reveals a large negative trend break in the probability that one's spouse attended college.⁹ The latter estimate is significantly larger, both in absolute values (0.8 versus 0.3 pp per year) and relative to the baselines (65 and 20%). These results are consistent with assortative mating and add to previous studies emphasizing this mechanism (Suhonen and Karhunen, 2019). Columns 3-5 study fertility outcomes, which are only reported for women. Column 3 shows a large negative trend in fertility among pre-coup cohorts which weakens significantly after the coup. Six years of exposure to the contraction translate into 0.1 fewer children, suggesting a negative association between women's college enrollment and fertility as in previous

⁹Note that we lose 4% of the sample in column 1 because we cannot identify spouses of those who are not household heads. Column 2 further restricts econometric attention to the sub-sample of parents with a spouse, i.e. 65% of the sample in column 1.

literature (Goldin et al., 2006). Column 4 fails to find post-coup deviations in the number of children alive, but mother's age at time of first birth is lower among post-coup cohorts, although the number is economically small. Overall, these results suggest that the higher education policy promoted by Pinochet affected marriage patterns and increased the number of children born. As a consequence, this policy is likely to have changed parental investment in children (Becker and Lewis, 1973).

C. Parental beliefs

The sharp contraction of higher education could have also changed the beliefs of young people, regardless of their enrollment decisions. These beliefs can persist and be transmitted to the following generation after becoming a parent (Wilhelm et al., 2008; Roland and Yang, 2017). For example, when compared to older cohorts, individuals who turned college age after a turbulent political and cultural environment (such as after the 1973 coup), could believe that college education is less important than joining the labor market. Similarly, having experienced the military takeover of universities after 1973, future parents could have developed lower levels of trust in higher education institutions. Decades later, their children could have skipped college as a consequence of inherited parental beliefs. If this cultural mechanism can explain the linear decay in college enrollment among the following generation, we should observe a similar trend break in parental beliefs among cohorts reaching college age after 1973 when compared to slightly older parents.

To test for a trend break in parental beliefs, we use the same econometric strategy but now applied to household survey data from the World Values Survey (Inglehart et al., 2022). A total of 6,700 individuals have responded this survey between 1989 and 2022 in Chile, with a little more than 1,000 people in each of six waves. These data has been used by previous researchers to measure differences in beliefs and trust, among others (e.g. Guiso et al. 2003, 2009). Operationally, we again focus on the sub-sample of parents who completed high school education between 1964 and 1981. These restrictions lead to a final estimating sample of 904 individuals when we study survey questions repeated across all waves, but fewer observations when using other questions. The smaller sample prevents us from fully saturating the econometric model with fixed effects, so we interpret these results as relatively more suggestive empirical evidence.

Panel B of Table 3 presents results. Column 1 replicates the direct impact of the contraction on parents: cohorts reaching college age after the coup exhibit a linear decay in college enrollment between 1973 and 1981. Importantly, the 95 percent confidence interval contains the estimates in Table 1, thus the magnitude is similar to the census analysis. Column 2 shows a small growing concern about child education – 1 pp every two years after 1973 from a base of 63% – but these estimates are not different from zero. Column 3 shows that parents who reached college age after 1973 have the same level of trust in higher education institutions than pre-coup cohorts. Moreover, we are able to statistically reject a negative impact of 5 pp

from a base of 63%. The last two columns show little changes in parental beliefs about the importance of children's hard work (column 4) and the returns to hard work in general (column 5). We can reject changes larger than 2-3 pp in these beliefs each year after the coup from baselines of 25% and 59% respectively. Figure A.3 presents all of these estimates graphically. Overall, we find little evidence of a trend break in parental beliefs after the 1973 coup.

VI. Conclusion

Can authoritarian policies have intergenerational effects? The contraction in college opportunities promoted by the Pinochet dictatorship in Chile exemplifies how dictatorial policies can have persistent effects. Children with parents who were exposed to restricted college access are less likely to enroll in college themselves. The impact of this contraction is large and persists across decades, even after critical junctures such as the country's democratization. Our estimates suggest that the returns to college expansions might be significantly larger than previously thought as positive returns for one generation cause positive spillovers in the following one. Similarly, even temporary restrictions in access to higher education can be more costly than current estimates suggest due to the possibility of spillovers within families. Finally, inspired by previous literature, we explored and provided tentative evidence of detrimental economic consequences, assortative mating, and fertility as potential mechanisms, with limited evidence for the role of parental beliefs.

The persistent effects of authoritarian policies within families over a fifty year period also speaks to the relative role of nature (e.g. genetics) versus nurture (e.g. investments) in driving the socioeconomic paths of individuals (Holmlund et al., 2011). A branch of the previous literature has suggested that our fate could be strongly tied to the status of our parents and even grandparents (Clark, 2014). Under this view, the potential socioeconomic impact of policies is inevitable constrained (although not determined) by historical circumstances in individuals' family lineage. We have documented that policies implemented fifty years ago can have large consequences on the socioeconomic paths of individuals, affect life-changing decisions (college, marriage, work), and then affect the fate of their children. As such, our evidence lessens the modern importance of nature as driver of economic outcomes.

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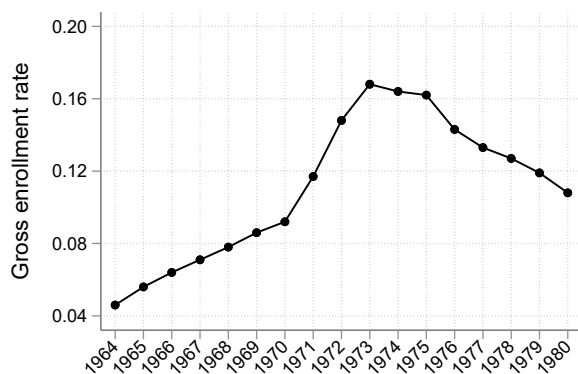
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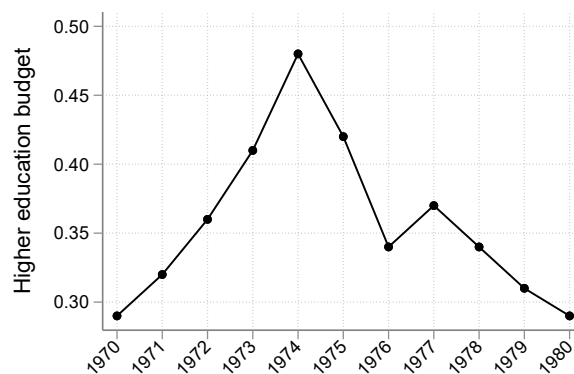
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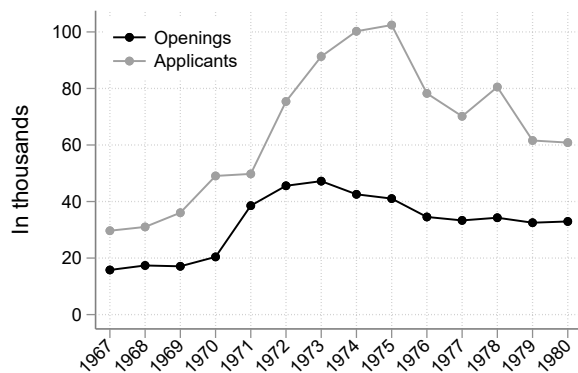
Figure 1: Higher education and economic growth



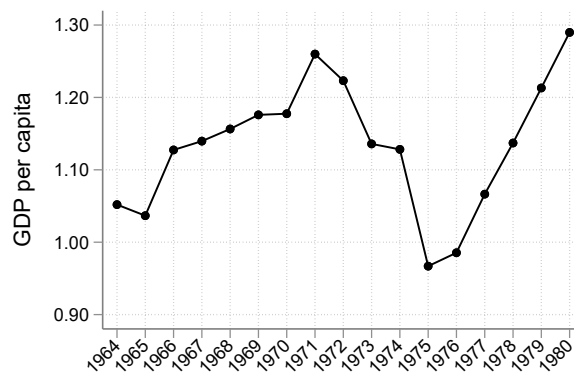
(a) Gross enrollment rate by year



(b) Funding



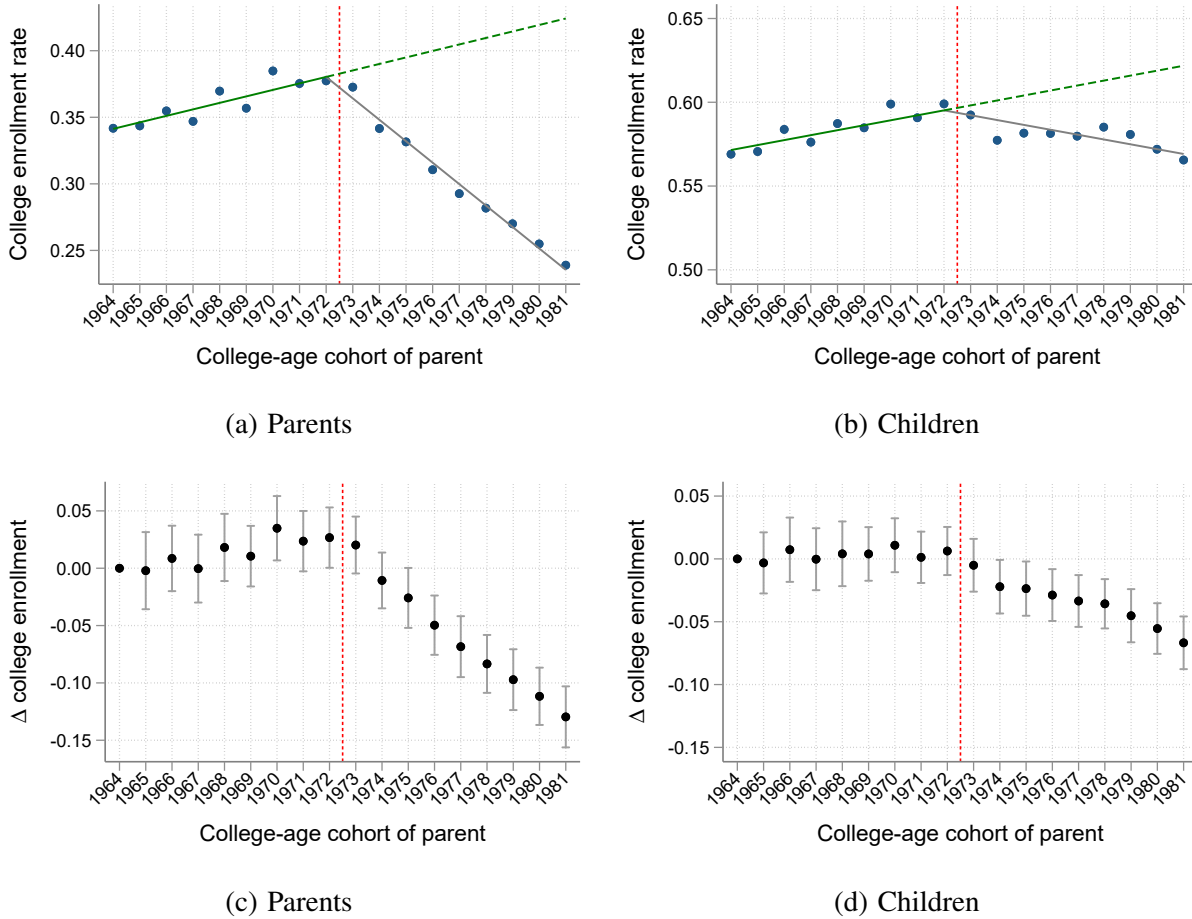
(c) Applicants and openings



(d) GDP per capita

Notes: Panel (a) shows the gross enrollment rate in higher education as a share of the 20-24 year-old population. Panel (b) shows the share of the national government's education budget devoted to higher education. Panel (c) shows the yearly number of college applicants and openings since the start of the centralized college admissions in 1967. Panel (d) presents Chile's GDP per capita in millions of 1996 Chilean pesos. Sources: PIIE (1984); Universidad de Chile (2011); Díaz et al. (2016).

Figure 2: Changes in college enrollment across generations



Notes: All panels use the sample of 233,136 parents/children from the 2017 census. Panel (a) display the share of parents per college age cohort (x -axis, 1964-1981) who reported at least one year of higher education in the 2017 census. Panel (b) reports the same number but among children of exposed and non-exposed cohorts. Vertical lines indicate the year of the military coup. The solid green line corresponds to the best linear fit for cohorts reaching college age before 1973. The dashed green line shows the linear extrapolation for subsequent cohorts. The solid grey line corresponds to the best linear fit for cohorts reaching college age in 1973 or afterwards. The bottom two panels present the non-parametric analogues and thus the y -axis now measures changes in college enrollment per college age cohort. Panel (c) shows point estimates and 95% confidence intervals from a regression of parent's college enrollment on parent cohort dummies. Panel (d) repeats the exercise using children's college enrollment as outcome. Controls include county of birth by gender, parent's gender by (child) gender, and child age. Standard errors clustered by county of birth.

Table 1: Intergenerational estimates of the contraction of higher education

	(1)	(2)	(3)	(4)	(5)
Panel A	Dep variable: Indicator for parents who attended college				
Parental cohort trend	0.006*** (0.0008)	0.006*** (0.0008)	0.004*** (0.0008)	0.004*** (0.0008)	0.004*** (0.0008)
× After 1973 coup	-0.021*** (0.0012)	-0.021*** (0.0012)	-0.022*** (0.0012)	-0.022*** (0.0012)	-0.021*** (0.0012)
Panel B	Dep variable: Indicator for college enrollment				
Parental cohort trend	0.004*** (0.0009)	0.004*** (0.0009)	-0.000 (0.0009)	-0.000 (0.0009)	-0.001 (0.0008)
× After 1973 coup	-0.005*** (0.0013)	-0.005*** (0.0013)	-0.007*** (0.0012)	-0.007*** (0.0012)	-0.006*** (0.0011)
Individuals	233,136	233,136	233,136	233,136	233,136
<i>Fixed effects:</i>					
County of birth by gender	Yes	Yes	Yes	Yes	Yes
Parent gender by child gender	No	Yes	Yes	Yes	Yes
Child age	No	No	Yes	Yes	Yes
Relation to household head	No	No	No	Yes	Yes
Child is high school graduate	No	No	No	No	Yes
R ² (panel A)	0.085	0.087	0.094	0.095	0.099
R ² (panel B)	0.044	0.045	0.063	0.063	0.132
Avg. dependent variable (panel A)	0.309	0.309	0.309	0.309	0.309
Avg. dependent variable (panel B)	0.582	0.582	0.582	0.582	0.582

Notes: The dependent variable is stated in the header of each panel. The sample of individuals includes all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent born between 1943 and 1960 and who reported full secondary education. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

Table 2: Children of high school dropouts

Dependent variable: Indicator for college enrollment				
Sample:	Dropouts defined as: 1-2 years left of high school		Dropouts defined as: 1 year left of high school	
	Dropouts	Dropouts and high school graduates	Dropouts	Dropouts and high school graduates
	(1)	(2)	(3)	(4)
Parental cohort trend <i>high school dropouts</i>	-0.005*** (0.0018)	-0.005*** (0.0018)	-0.004 (0.0029)	-0.004** (0.0029)
× After 1973 coup	0.000 (0.0023)	0.000 (0.0023)	-0.001 (0.0038)	-0.001 (0.0038)
Parental cohort trend <i>high school graduates</i>		-0.000 (0.0009)		-0.000 (0.0009)
× After 1973 coup		-0.007*** (0.0012)		-0.007*** (0.0012)
Individuals	31,834	264,967	12,020	245,153
<i>Fixed effects by dropouts/graduates:</i>				
County of birth by gender	Yes	Yes	Yes	Yes
Parent gender by child gender	Yes	Yes	Yes	Yes
Child age	Yes	Yes	Yes	Yes
R ²	0.052	0.095	0.078	0.076
Avg. dependent variable	0.293	0.547	0.314	0.568

Notes: The dependent variable is an indicator for individuals who attended college for at least one year. The sample of individuals includes all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent born between 1943 and 1960 and who reported having less than 2 (column 1) or 1 (column 3) year missing to graduate from high school. Columns 2 and 4 stack the sample of 233,136 individuals with a parent who graduated from high school. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Mechanisms of intergenerational persistence

Panel A: Census	Dependent variable is one of the following:				
	Assortative mating		Fertility (only reported for women)		
	Has spouse	Spouse has any college	Total children	Share alive	Age at birth of first child
	(1)	(2)	(3)	(4)	(5)
Cohort trend	0.005*** (0.0007)	0.001 (0.0008)	-0.027*** (0.0054)	0.001*** (0.0002)	-0.621*** (0.0111)
× After 1973 coup	-0.003*** (0.0009)	-0.008*** (0.0011)	0.015** (0.0063)	-0.000 (0.0003)	-0.033** (0.0149)
Panel B: World Values Survey					
	Preferences and beliefs				
	Respondent attended college	Worried about child education	Has confidence in higher education	Hard work is important among children	Hard work brings success
Cohort trend	0.018** (0.0073)	0.020 (0.0179)	-0.008 (0.0166)	0.001 (0.0080)	0.003 (0.0105)
× After 1973 coup	-0.028** (0.0111)	0.005 (0.0270)	0.010 (0.0256)	-0.008 (0.0120)	-0.007 (0.0157)
Individuals (panel A)	224,148	144,290	96,505	96,505	96,505
Individuals (panel B)	832	190	190	832	591
Average dependent variable (panel A)	0.651	0.196	2.778	0.979	30.47
Average dependent variable (panel B)	0.192	0.626	0.626	0.250	0.591

Notes: The dependent variable is measured for individuals directly exposed to the contraction of higher education and it is stated in the header of each column. Samples in panel A include all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent who was born between 1943 and 1960 and reported full secondary education. Samples in panel B include all survey respondents with at least secondary education completed. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses in panel A and robust to heteroskedasticity in panel B. Statistical significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

ONLINE APPENDIX

The Intergenerational Transmission of Authoritarianism

María Angélica Bautista, Felipe González, Luis Martínez, Pablo Muñoz, and Mounu Prem

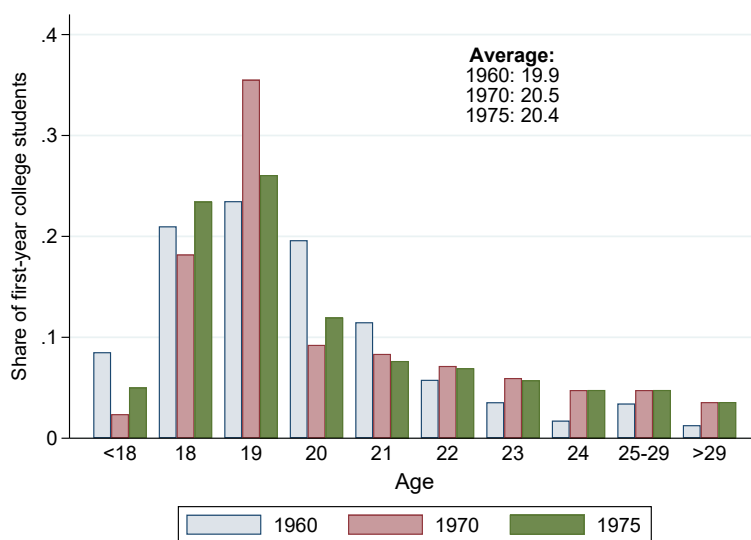
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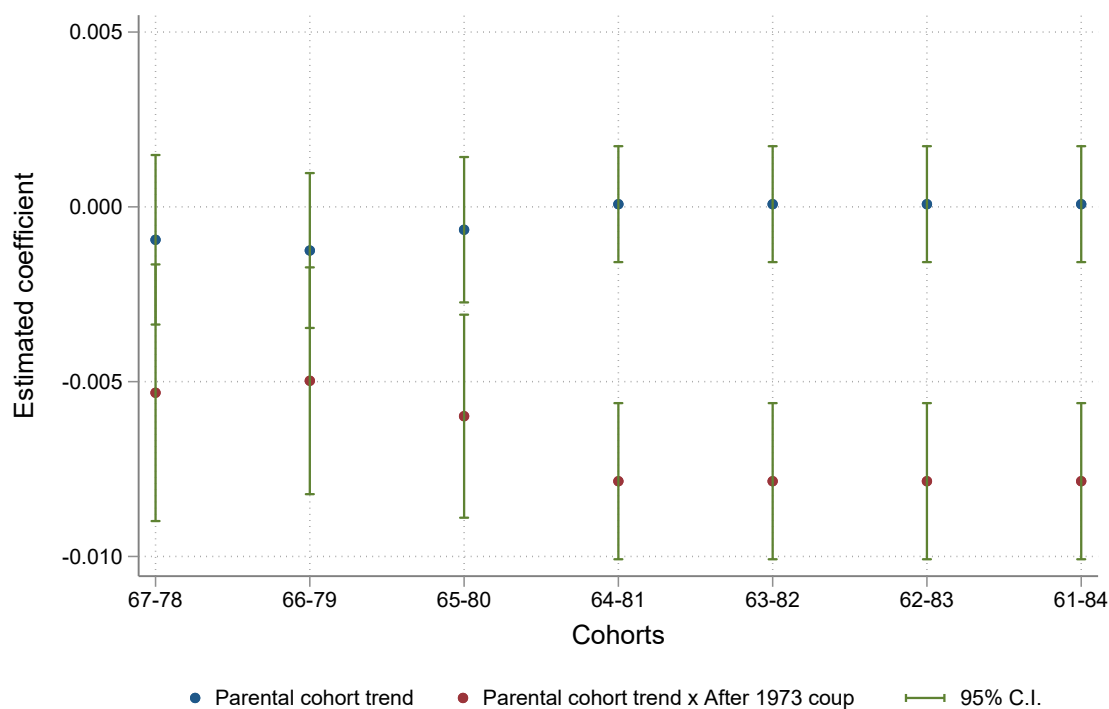
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Figure A.1: Descriptive statistics – Age distribution of first-year college students



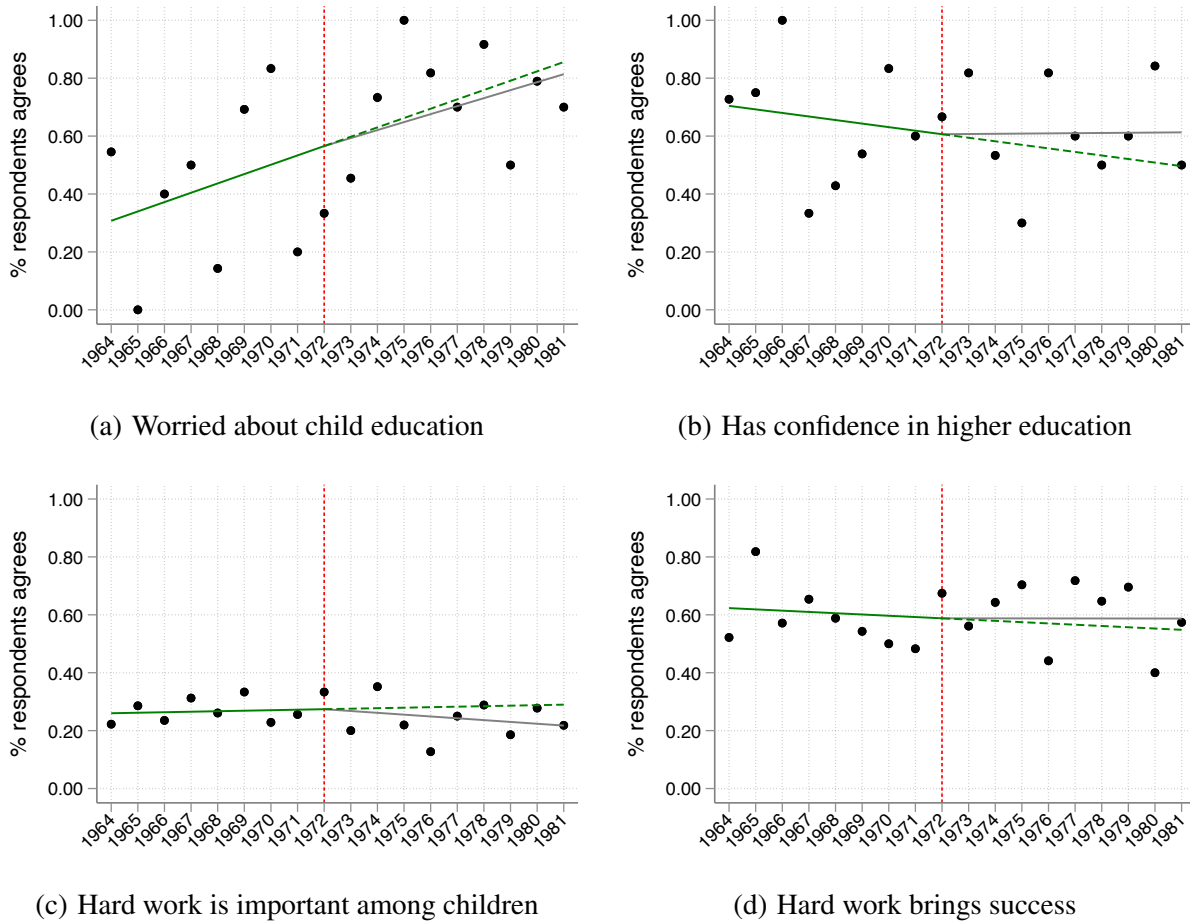
Notes: Information for 1960 comes from the 1960 population census (INE, 1965). The sources for 1970 and 1975 are Schiefelbein (1976) and Echeverría (1982), based on administrative records and the 1970 population census. Data for 1970 corresponds to the entire tertiary sector, i.e. including post-secondary vocational institutions. For the average, we set age at 17, 25 and 30 for the < 18, 25 – 29 and > 29 age groups respectively, which likely leads to an underestimate of the age of first-year college students.

Figure A.2: Robustness of results – Different windows around 1973



Notes: Each figure replicates the main result in the paper (Table 1, column 3) using different windows of years (x -axis). Vertical lines represent 95 percent confidence intervals. The sample always includes all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent who reached age 21 in the relevant years and who reported full secondary education. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached 21 years of age, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth.

Figure A.3: Additional results – World Values Survey



Notes: All figures focus on the population of individuals who responded questions related to education in the World Value Survey Time Series (1981-2020). Panel (a) displays the share of people who answered to be “very much” or “a great deal” worried about not being able to give one’s children a good education. Panel (b) performs the same analysis but focuses on the share of respondents who reported to have “quite a lot” or “a great deal” of confidence in universities, respectively. Panels (c) and (d) replicate the analysis but now using as dependent variable the share of respondents who reported to agree “quite a lot” or “a great deal” with the statement that hard work is important for children (panel c) and brings success (panel d), respectively. Vertical lines indicate the year of the military coup. The solid green line corresponds to the best linear fit for cohorts reaching college age before 1973. The dashed green line shows the linear extrapolation for subsequent cohorts. The solid grey line corresponds to the best linear fit for cohorts reaching college age in 1973 or afterwards. Notice that WVS time-series shows how the values of Chile have been changing over time - rather than how the values of a selected group of people (panel) have been changing over their life.

Table A.1: Descriptive statistics – Sample selection

	Sample I: All 25-40 years old	Sample II: I + linked to parent	Sample III: II + parent w/ full secondary	Sample IV: III + parent age 21 ∈ [1964, 1981]
	(1)	(2)	(3)	(4)
Age	32.09 (4.61)	30.51 (4.48)	29.59 (4.14)	31.06 (4.39)
Female	0.50 (0.50)	0.48 (0.50)	0.49 (0.50)	0.49 (0.50)
Primary completed	0.95 (0.22)	0.96 (0.20)	0.99 (0.09)	0.99 (0.10)
Secondary completed	0.80 (0.40)	0.83 (0.38)	0.94 (0.24)	0.94 (0.23)
College enrollment	0.31 (0.46)	0.35 (0.48)	0.55 (0.50)	0.58 (0.49)
Household size	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)
Household head	0.35 (0.48)	0.05 (0.22)	0.04 (0.20)	0.05 (0.22)
Spouse of household head	0.24 (0.43)	0.02 (0.14)	0.02 (0.12)	0.02 (0.14)
Child of household head	0.26 (0.44)	0.90 (0.30)	0.92 (0.27)	0.91 (0.28)
In labor force	0.81 (0.39)	0.81 (0.39)	0.81 (0.40)	0.83 (0.38)
Unemployed	0.07 (0.26)	0.12 (0.33)	0.13 (0.34)	0.13 (0.33)
Currently Studying	0.12 (0.33)	0.17 (0.37)	0.23 (0.42)	0.19 (0.39)
Individuals	3,840,429	1,019,693	438,238	234,334

Notes: This table shows averages and standard deviations (in parenthesis) for the socioeconomic covariate described in the header. Column 1 shows values for the full sample of people with ages 25-40 in the 2017 population census. Column 2 shows the same statistics for the subsample that cohabits with a parent, irrespective of any characteristics of the parent. Column 3 further restricts the sample by only including parents who graduated from high school. Finally, column 4 (our estimating sample) restricts attention to the sample of individuals with parents born between 1943 and 1960.

Table A.2: Additional results – Heterogeneity by gender of parents and children

Sample:	Dependent variable: Indicator for college enrollment			
	Child		Parent	
	Female	Male	Female	Male
	(1)	(2)	(3)	(4)
Parental cohort trend	-0.000 (0.0010)	-0.000 (0.0012)	0.000 (0.0014)	-0.001 (0.0009)
× After 1973 coup	-0.006*** (0.0014)	-0.008*** (0.0015)	-0.008*** (0.0019)	-0.006*** (0.0013)
Individuals	114,021	119,112	94,594	138,507
<i>Fixed effects:</i>				
County of birth	Yes	Yes	No	No
County of birth by gender	No	No	Yes	Yes
Parent gender by child gender	Yes	Yes	No	No
Child age	Yes	Yes	Yes	Yes
R ²	0.052	0.065	0.061	0.068
Avg. dependent variable	0.615	0.549	0.563	0.594

Notes: The dependent variable is an indicator for individuals who attended at least one year to college. Sample includes all respondents in the 2017 census between the ages of 25 and 40 that we can connect to at least one parent born between 1943 and 1960 and who reported having graduated from high school. Each column further restricts the sample by gender of parent or child as indicated in the header. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

Table A.3: Additional results – Dropout decisions in primary and secondary school

Dependent variable:		Primary education								Secondary education			
		1st	2nd	3rd	4th	5th	6th	7th	8th	1st	2nd	3rd	4th
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Parental cohort trend		0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0002)	0.000* (0.0002)	0.001** (0.0003)	0.001*** (0.0003)	0.001** (0.0004)	0.001 (0.0004)
× After 1973 coup		-0.000 (0.0002)	-0.000 (0.0002)	-0.000 (0.0002)	-0.000 (0.0002)	0.000 (0.0002)	0.000 (0.0002)	-0.000 (0.0002)	-0.000 (0.0002)	-0.001* (0.0003)	-0.001*** (0.0004)	-0.002*** (0.0005)	-0.002*** (0.0005)
II:	Individuals	233,133	233,133	233,133	233,133	233,133	233,133	233,133	233,133	233,133	233,133	233,133	233,133
<i>Fixed effects:</i>													
County of birth by gender		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent gender by child gender		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Child age		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ²		0.005	0.005	0.005	0.005	0.006	0.006	0.007	0.007	0.010	0.011	0.013	0.015
Avg. dependent variable		0.996	0.996	0.996	0.995	0.994	0.993	0.992	0.991	0.981	0.976	0.961	0.950

Notes: The dependent variable is an indicator for last year of completed education, from 1st year of primary (column 1) up to last year of high school (column 12). Sample includes all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent born between 1943 and 1960 who reported full secondary education. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

Table A.4: Robustness of results – Different windows for the age of children

Ages of individuals included:	Dependent variable: Indicator for college enrollment				
	20-40	30-40	25-35	25-45	25-30
	(1)	(2)	(3)	(4)	(5)
Parental cohort trend	-0.000 (0.0009)	0.001 (0.0011)	0.003*** (0.0010)	-0.000 (0.0009)	0.004*** (0.0013)
× After 1973 coup	-0.007*** (0.0012)	-0.013*** (0.0016)	-0.009*** (0.0013)	-0.007*** (0.0012)	-0.006*** (0.0016)
Individuals	233,133	131,149	187,167	233,133	118,913
<i>Fixed effects:</i>					
County of birth by gender	Yes	Yes	Yes	Yes	Yes
Parent gender by child gender	Yes	Yes	Yes	Yes	Yes
Child age	Yes	Yes	Yes	Yes	Yes
R ²	0.063	0.056	0.055	0.063	0.053
Avg. dependent variable	0.582	0.533	0.608	0.582	0.639

Notes: The dependent variable is an indicator for individuals who attended at least one year to college. The estimating sample in the paper includes all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent born between 1943 and 1960 who reported full secondary education. Alternative samples are described in the header of each column. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

Table A.5: Robustness of results – College age is 19 years old

	(1)	(2)	(3)	(4)	(5)
Panel A	Dep variable: Indicator for parents who attended college				
Parental cohort trend	0.001 (0.0006)	0.001* (0.0006)	-0.002*** (0.0005)	-0.002*** (0.0005)	-0.002*** (0.0005)
× After 1973 coup	-0.017*** (0.0009)	-0.017*** (0.0009)	-0.018*** (0.0009)	-0.018*** (0.0009)	-0.017*** (0.0009)
Panel B	Dep variable: Indicator for college enrollment				
Parental cohort trend	0.002*** (0.0007)	0.003*** (0.0007)	-0.002*** (0.0006)	-0.002*** (0.0006)	-0.002*** (0.0005)
× After 1973 coup	-0.005*** (0.0011)	-0.005*** (0.0011)	-0.006*** (0.0010)	-0.006*** (0.0010)	-0.005*** (0.0009)
Individuals	259,826	259,826	259,826	259,826	259,826
<i>Fixed effects:</i>					
County of birth by gender	Yes	Yes	Yes	Yes	Yes
Parent gender by child gender	No	Yes	Yes	Yes	Yes
Child age	No	No	Yes	Yes	Yes
Relation to household head	No	No	No	Yes	Yes
Full secondary	No	No	No	No	Yes
R ² (panel A)	0.086	0.088	0.096	0.097	0.101
R ² (panel B)	0.044	0.045	0.062	0.063	0.131
Avg. dependent variable (panel A)	0.301	0.301	0.301	0.301	0.301
Avg. dependent variable (panel B)	0.579	0.579	0.579	0.579	0.579

Notes: The dependent variable is stated in the header of each panel. Sample includes all respondents in the 2017 census between the ages of 25 and 40 who we can connect to at least one parent that was born between 1943 and 1960 who reported full secondary education. “Parental cohort trend” is a continuous variable indicating the year at which the parent reached age 21, normalized to zero in 1972. “After 1973 coup” is an indicator for parents who reached age 21 on or after 1973. Standard errors clustered by county of birth in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1