# Schools of Thought: Leader Education and Policy Outcomes

Mark David Nieman* Maxwell B. Allamong†

**Abstract**

We develop a leader-specific theory to explain economic and political liberalization. We argue that leaders' policy decisions in office depend, in part, on their exposure to classical liberal values while at university, through the content of social science and humanities courses. Variation comes from two sources: across educational institution types, and within them via specialization. Educational institutions differ in terms of their autonomy from the state, which determines universities' quality in the social sciences and humanities, and the degree of hierarchy within the classroom (egalitarian vs. authoritarian), which reinforces/hinders students' ability to internalize course content. Within-institution variation comes from specialization: some specializations have a larger curriculum component that emphasizes classical liberal values. Using a novel dataset on country leaders' educational attainment and specialization, we show that leaders who attended autonomous and egalitarian universities—particularly those specializing in economics or law—are more likely to implement liberal reform across policy areas.[1]

**Keywords:** Leaders, Education, Classical liberal values, Economic liberalization, Political liberalization

*Assistant Professor in Political Science, University of Toronto, mark.nieman@utoronto.ca. Corresponding author.

†Post-doctoral Fellow, Duke University, m.allamong@duke.edu

1. Supplementary material for this article is available in the appendix in the online edition. Replication files are available in the JOP Data Archive on Dataverse (https://dataverse.harvard.edu/dataverse/jop). The empirical analysis has been successfully replicated by the JOP replication analyst.

What are the micro-foundations of economic and political liberalization? We develop and test a leader-specific theory to explain liberalization across a range of policy areas. We argue that country leaders' policy preferences and choices depend, in part, on their educational background. Specifically, these preferences are shaped by the leader's exposure to classical liberal values through the content of the courses they took while at university. The content of university curricula, and specifically the emphasis on classical liberal values, varies by a school's strength in the social sciences and humanities. To explain institutional variation in the strength of social science and humanities education, we align educational institutions along a two-dimensional typology. The first dimension—level of institutional autonomy from the state—determines a school's ability to develop excellence in the social sciences and humanities. The second dimension—degree of hierarchy within the classroom (egalitarian vs. authoritarian)—reinforces/hinders students' ability to internalize the content of classes offered in these fields.

A school's position on this typology determines the treatment size—the amount and quality of student exposure to classical liberal values, such as open markets, democratic governance, and respect for individual human rights. As we explain, autonomous and egalitarian institutions tend to have stronger social science and humanities departments, which translates into more extensive general education requirements. As a result, students that attend autonomous and egalitarian institutions are more likely to learn and internalize these values. Moreover, students that specialize in economics, law, and other social science and humanities fields at autonomous and egalitarian universities spend even more time engaging and evaluating classical liberal values. In contrast, students that attend state-controlled institutions with a hierarchical classroom culture are less likely to be exposed to these values through their class content, irrespective of major.

Our theory leads to several novel predictions. First, we explain (and show empirically) that autonomous and egalitarian universities, such as Anglo-American institutions[2], have a unique liberalizing effect, even in comparison to other Western universities (as the latter

2. The higher education literature refers to the "Anglo-American learning model" as a system common in the US, UK, Canada, Australia, and New Zealand (e.g., Currie et al. 2003; Marginson 2011, 2022; Pritchard 2006). It is characterized by a market-focused research-intensive approach that links research productivity to funding, incorporates faculty research into the classroom, commodifies student enrollment and alumni networks, and emphasizes competition among institutions (see, e.g., Marginson 2006).

are characterized by stronger dependence on the state). This prediction is distinct from previous research that has primarily focused on differences between Western and non-Western educational systems.

Second, we explicitly link policy preferences to a leader's field of study. In particular, we group fields of study into theoretically-relevant categories, based on their emphasis on classical liberal principles: economics, law, other social sciences, the humanities, as well as an "other majors" residual category. While economics has received the most scholarly attention, we find that leaders who majored in law are equally likely to implement liberal reform. Our theory leads us to expect, however, that these specialization effects only hold for autonomous and egalitarian universities. These results highlight significant heterogeneity across majors and underscore the importance of expanding the research focus beyond economics.

Third, we evaluate our theory against several competing explanations, such as those positing the effects of technical competencies or socialization. Theories focusing on acquired technical competencies expect liberalization in policies directly related to a leader's specialization (e.g., trade openness for economists), whereas socialization accounts expect homogeneous effects (e.g., leaders educated in democracies develop a preference for democratic values). In contrast, our theoretical mechanism—the transmission of classical liberal values through course content—posits variation across and within educational institutions.

Finally, we showcase the broad applicability of our theory by testing its predictions on a wide range of distinct policy areas: trade liberalization, judicial independence, financial openness, respect for human rights, and liberal democratization. The results are quite robust, with only minor variations from area to area. Beyond the current manuscript, the remarkable persistence of educational effects highlights the importance of this particular area of research. These results also emphasize the policy implications of different types of educational reform, especially if they alter the relationship between the educational institution and the state.

## Liberalization and Leader Life Experiences

Economic and political liberalization is often explained as the result of macro-level processes. Liberal reform are treated as a corollary of other domestic transformations, such as economic

development (Boix 2011; Mousseau 2003; Urbatsch 2013, 2016), political competition (Acemoglu and Robinson 2006; Lobell 1999), and regional or global diffusion (Chyzh 2016, 2017; Kadera, Crescenzi, and Shannon 2003; Simmons and Elkins 2004).

While institutional and social constraints are important, it is the country leaders who ultimately shape their country's economic and political reform. Leaders are key to a number of political and economic outcomes, such as conflict initiation (Chiozza and Goemans 2011; Saunders 2018), crisis bargaining (Lupton 2020; McManus 2021), economic performance (Jones and Olken 2005; Li, Xi, and Yao 2020), and international compliance (Colgan and Lucas 2017). Leader-specific attributes, such as prior life experience, influence their policy preferences and actions (Horowitz, Stam, and Ellis 2015; Carter and Smith 2020).

Previous research has linked policy actions to a number of leader-specific characteristics. Certain psychological traits, such as risk acceptance, are a key predictor of a leader's willingness to use military force (Keller and Foster 2012; Keller, Grant, and Foster 2020). Life experiences, such as military service, are linked with conflict onset (Horowitz and Stam 2014), greater oversight of military operations (Lupton 2017), and legislative agendas (Best and Vonnahme 2021). The interaction of gender, education, and career experiences explains the policy agenda of foreign ministry officials (Bashevkin 2018).

We focus on another type of leader life experience—their educational background. While previous work has linked leader education with policy outcomes (e.g., Besley, Montalvo, and Reynal-Querol 2011), the mechanisms for these effects are not well understood (for a recent review, see Krcmaric, Nelson, and Roberts 2020). Two key mechanisms proposed by the literature are socialization and technical expertise. The socialization mechanism holds that students internalize the norms and values of the society in which they are embedded (Atkinson 2010; Spilimbergo 2009). Much of this process takes place through informal interactions with peers and contacts (Pettigrew 1998; Martinez Machain 2021). As a result, a Western degree, for example, comes with a set of ready-formed policy preferences, as well as links to like-minded contacts at influential Western institutions (Gift and Krcmaric 2017).

The technical expertise mechanism focuses on specific skills gained as part of a leader's education. Li, Xi, and Yao (2020), for example, argue that leaders trained in economics have a greater understanding of the complex economic systems in which they operate. These

technical skills may also serve as a signal of competency to external actors—particularly those with similar academic training—resulting in greater trust and making leaders more competitive for targeted assistance (Chwieroth 2007; Nelson 2014).

We build on and advance the existing research by developing a novel unifying theoretical perspective that derives leader preferences from the type of educational institution they attended. We focus on how exposure to classical liberal values while at university affects policy preferences. That is, rather than social contacts and interactions, we argue that course content itself is a driving factor in shaping the values that underlie policy decisions. By decoupling educational institutions from regime type or societal-level culture, our theory allows us to generate predictions as to the variation in outcomes within previously unexplored categories: for example, among institutions located within democracies or across Western states. Moreover, while students certainly learn technical skills from their specialization or field of study, we contend that the broader set of classical liberal values explains why and how liberalizing effects may spill over across policy areas. That is, our theory predicts that leaders whose specializations rely more heavily on classical liberal assumptions are more likely to liberalize policy outcomes outside of their technical training.

## How Education Shapes Worldviews

Our argument is based on a simple premise that students learn the content of the classes they take. The treatment variable is the emphasis on classical liberal values in the content of social science and humanities classes. Variation in the treatment comes from two sources: across institution types, and by specialization (within institution types). The cross-sectional variation in the treatment depends on the location of the institution within a two-dimensional typology (autonomy from the state and hierarchy in the classroom). At institutions that are well-ranked in social sciences and humanities, courses offered through these departments introduce a number of ethical and social issues—such as inequality, human rights, free market economics, and the value of democratic governance—that prime and shape students' policy preferences on these issues. Courses on individual liberties and open-markets, for example, help instill more favorable attitudes towards free trade and globalization (Hainmueller and

Hiscox 2006; Han and Zwieg 2010). Within-institution variation comes from specialization: some specializations, such as economics and law, have a larger curriculum component that emphasizes classical liberal values. Our theoretical innovation is that we propose a parsimonious explanation for why educational institutions vary in their liberalizing effect. We derive universities' ability to focus on some content rather than other from the external structural constraints imposed by the state and the internal structural constraints of the classroom.

## A Two-Dimensional Typology of Educational Models

A university's ability and effectiveness at transmitting classical liberal values to students depends on (1) the quality and content of the social science and humanities curriculum, and (2) whether the university provides an environment that is conducive to excelling in these areas of study. These two components are mutually-reinforcing: the former creates the opportunity for students to engage with certain types of content in the first place, while the latter facilitates this engagement. Both are necessary; neither is, on its own, sufficient.

First, while all schools have an incentive to excel in all areas of expertise, their ability to develop strengths in the social sciences and humanities is constrained, primarily, by their relationship with the state (autonomy vs. dependence). The degree of institutional autonomy from the state is a function of the institution's reliance on the state for funding/governance matters, and the degree of state oversight over the curriculum and research (Salmi 2011; Marginson 2011). Even in liberal regimes, the state's goal of training a market-ready labor-force and producing patent-ready research outputs are at odds with the institutional goal of building a world-class research facility (Pritchard 2006). Government officials expect immediate payoffs and balk at the vague and impractical objectives of knowledge for knowledge's sake. Their expectations of direct and easily measurable returns on public investments leads to a preference for technical and applied fields rather than the social sciences and humanities. The size, quality, and research productivity of arts, humanities, and social science departments are, however, a major part of institutional rankings—equated with prestige—which are key to attracting top talent, both among students and faculty.[3]

3. Two of the main institutional ranking systems—Quacquarelli Symonds and Times Higher Education—treat the arts and humanities and social sciences as two of five equally-weighted components.

As a result, institutions with greater autonomy from the state have an incentive to devote resources to developing strengths in the social sciences and humanities, even while continuing to emphasize STEM fields (Cummings 2014). Competitive at attracting top faculty and students, such institutions have larger social science and humanities departments that offer a more diverse selection of courses, and are able to contribute to teaching a more comprehensive general education curriculum (Salmi 2011).[4] In contrast, institutions with lower autonomy from the state have smaller social science and humanities departments with less extensive curricula and fewer general education requirements. Thus, students that attend institutions with high levels of autonomy from the state receive a broader and more detailed exposure to classical liberal concepts, such as free market economics, human rights, issues of inequality, and responsive and representative government, as well as related normative and ethical issues. A lack of institutional autonomy creates state-induced pressures to concentrate resources on STEM fields and disciplines/subfields with applied (rather that theoretical) focus and to reduce the general education curriculum (Cummings 2014; Marginson 2011). In illiberal regimes, these pressures often result in limits (through state directive or self-censorship) on social science curricula, especially on the content associated with the classical liberal values, e.g., courses on human rights or repression.

Second, students' ability to excel in different areas of study depends on the hierarchical structure of the instructor–student interactions inside and outside of the classroom (egalitarian vs. authoritarian). Ethical, social, and normative issues raised in social science and humanities courses require critical engagement on the part of students and are, therefore, not easily taught from the lectern. A distinct feature of egalitarianism is an emphasis on critical thinking, debate, and individualism, whereas hierarchy favors memorization (Egege and Kutieleh 2004).[5] The debate-style seminars found in upper-level courses at Anglo-American universities, for example, with instructors serving as moderators whose views, just like those of students, are open to critique, contrast with pedagogies of more hierarchical structures, such as the Soviet/Post-Soviet and East Asian models (Durkin 2008). Rather than treating

4. Even well-funded and highly prestigious universities struggle to keep their rankings and attract world-class faculty, unless they can guarantee the freedom to pursue research in one's chosen area. Sergei Guriev's abrupt departure from Russia's Higher Economics School in 2013 is a high-profile example.

5. Hierarchical institutions' emphasis on rote memorization may be more favorable to excellence in math, natural sciences, and some technical fields.

knowledge as absolute, students in more egalitarian systems are encouraged to critique and evaluate theories based on logical consistency and evidence (Kember 2001; Durkin 2008).

The structure of the instructor–student interactions is replicated outside of the classroom. Faculty at more egalitarian institutions are more often available to meet with students during office hours and university events (Huang 2014). Students at egalitarian institutions are more likely to be treated as university stakeholders within the university: they engage with political, economic, and social issues through university-sponsored student organizations and consult on issues of university governance (Ashwin and McVitty 2015; Logermann and Leišytė 2015). This additional contact and engagement reinforces classroom concepts.

A school's position within the state autonomy—classroom hierarchy space, therefore, determines the strength (e.g., size, research output, prestige, and funding) of its social sciences and humanities, and the students' ability to engage with the content of courses offered in these fields. The strength of the social science and humanities programs determines the breadth and content of the general education curriculum—a set of required courses usually taken in the first few years of attending university. At autonomous and egalitarian institutions, these courses introduce students to the core social and ethical issues, such as the value of a representative government, free markets, human rights, and equality. These issues are, moreover, discussed and debated, from the classical liberal perspective that emphasizes individualism, opportunity, fairness, and equality before the law. In contrast, at less autonomous and more hierarchical institutions, the general education curriculum is usually less expansive (fewer required classes) and often altogether omits many of these discussions, especially in illiberal regimes. This leads to the first hypothesis:

*Hypothesis 1: Leaders who attended more autonomous and egalitarian institutions are more likely to implement liberal reform.*

Our theory, and its first empirical implication, advance on the socialization argument by linking the outcome variable to the specific features of the educational institutions themselves, rather than the political regime of the countries, in which they operate. Doing so allows for deriving more nuanced predictions regarding the variation in outcomes, e.g., differences between leaders who attended Anglo-American and other Western universities—something that has not been previously posited or evaluated.

## Specialization

Our theoretical focus on exposure and internalization of classical liberal values logically extends to student specializations within universities. While all students at autonomous and egalitarian institutions are exposed to some degree of classical liberal values through their general education requirements, there is heterogeneity across fields of study. Students specializing in the social sciences or humanities receive greater exposure to classical liberal values, as these are the disciplines that most directly engage with the related content. Upper-level social science and humanities courses, in particular, provide in-depth, nuanced treatments of various economic and political models or policy trade-offs, supported by data-based evidence. The centering of individualism and political equality, inherent to most social science and humanities courses, also fosters respect for physical integrity rights and liberal democracy. A historical emphasis on negative freedoms is enshrined in legal and constitutional texts, that are often taught and debated as a part of liberal arts curriculum at autonomous and egalitarian universities. Even theories that are critical of liberal principles necessarily start by defining these principles, which gives them a privileged 'default' status.

Among the social sciences and humanities, two specializations, in particular, expose their students to the largest treatment of classical liberal values: economics and law. Economics and law place an especially high emphasis on first principles and logical consistency, even in comparison to other social science and humanities specializations. In contrast to other social science and humanities subjects, which are characterized by significant variation in core theoretical tenets, topical-focus, and methodological tool-kits, economics and law are characterized by a greater disciplinary agreement regarding core assumptions, the range of debate, and appropriate methods of inquiry. This heightened level of agreement allows each specialization to spend more time developing theories and best practices, and engaging with classroom material and concepts. Additionally, greater consistency regarding course prerequisites and sequence allows economics and law courses to more readily pick up where a previous course left off, resulting in more material being covered within upper-level courses.[6] As a result, students in these two fields are especially likely to internalize classical

6. In contrast, fields with less relative agreement, such as political science or sociology, vary more substantially in substantive topics covered—even within the same course, depending on instructor and institution—

liberal values and principles and incorporate them in their future policy-making.[7] By focusing on these two specializations, we are able to further delineate our theory of liberal value transmission based on course content.

The field of economics has received the most scholarly attention in terms of translating academic subject into policy action. For example, Weymouth and Macpherson (2012) find that the number of US-trained economists in a country is positively correlated with trade liberalization. Nelson (2014) shows that the number of US-educated economists in high-level economic policy positions within a government is correlated with more favorable terms on IMF-loans. Li, Xi, and Yao (2020) demonstrate that leaders trained in economics are more likely to liberalize their economies. One explanation for this attention on economics is its relative distinction from other social sciences. Unlike other social sciences, the field is characterized by heavy reliance on evaluating hypotheses using mathematical reasoning and statistical tools (Weymouth and Macpherson 2012) and a shared liberal policy perspective, at least among most Anglo-American universities (Nelson 2014).

The study of law also emphasizes broad understandings of legal theories and philosophies (David and Brierley 1978; Glenn 2007; Mitchell and Powell 2011). A focus on fundamental legal principles and frameworks, rather than specific case law, helps explain why individuals choose to study law at foreign universities rather than the countries where they plan to practice. An understanding of broad legal regimes is especially applicable for leaders, as they often engage in settings with changing economic and technological dynamics (Nieman and Thies 2019, 452–455). Previous research has also found a close link between core liberal principles and economic and political processes and outcomes (Sunstein 1997; Mousseau 2003; Mousseau and Mousseau 2008; Mitchell, Ring, and Spellman 2013). Similar to economics, law schools are characterized by cross-institutional conformity in terms of required courses and their sequence. This contrasts with other social science and humanities majors, which vary substantially across institutions within countries and globally.

and devote greater class-time to debates over basic assumptions and methodological/ontological approaches. Less consistent course prerequisites and sequence expectations in most social science and humanities specializations result in more class-time in upper-level courses being spent covering introductory material to ensure that all students have a sufficient base on which to build.

7. There are trade-offs in the degree of within-subject agreement. Significant agreement on assumptions, topics, and methods may result in a narrow focus with a rigid set of policy tools, while a low degree of agreement may facilitate diverse research and more adaptive policy recommendations.

Having received the largest treatment dose—the greatest exposure to the classical liberal values—leaders educated in economics and law should, on balance, have the strongest preference for liberal reform across a broad set of policy areas rather than only those narrowly related to their specialization. An anecdotal example of a leader who fits this mold is Botswana's President Seretse Khama, who studied at Balliol College at the University of Oxford before training in law at London's Inner Temple. In addition to implementing bureaucratic reform in merit hiring and reducing corruption, strengthening the rule of law, and overseeing significant improvements in democratic processes and human rights protections, Khama's government also liberalized trade and encouraged foreign investment. The above logic leads to our second hypotheses:

*Hypothesis 2: Leaders who specialized in the social sciences or humanities—and especially economics or law—at more autonomous and egalitarian institutions are more likely to implement liberal reform.*

By positing a mechanism for spillover beyond one's narrow field of specialization, our theory, and its second empirical implication, differ from the technical expertise argument, which expects no such effect.

## Research Design

We test our hypotheses using an original dataset that catalogs the higher education of leaders from non-OECD countries between 1946–2015. We look at the effect of education across a range of liberal policies, including trade and financial liberalization, judicial independence, human rights protections, and liberal democratic reform.

The unit of analysis is the leader-spell—the consecutive period of time that an individual leader is in office. This allows us to look at the change in liberal policies between the beginning and the end of a leader's tenure. If a leader holds office during multiple non-consecutive spells, each leader spell is coded as its own observation. National leaders are identified using the Archigos dataset (Goemans, Gleditsch, and Chiozza 2009). We limit analysis to leaders of non-OECD countries, since most OECD countries tend to score high—and exhibit very little variation—on each of the liberal policy indicators.

## Leader Education Background

Our dataset records the higher-educational experience of 981 national leaders between 1946–2015. Data were collected using a variety of online databases and text sources.[8] We code information regarding (1) educational institution—name, country location, and type (education, military, other)—and (2) area of specialization.[9]

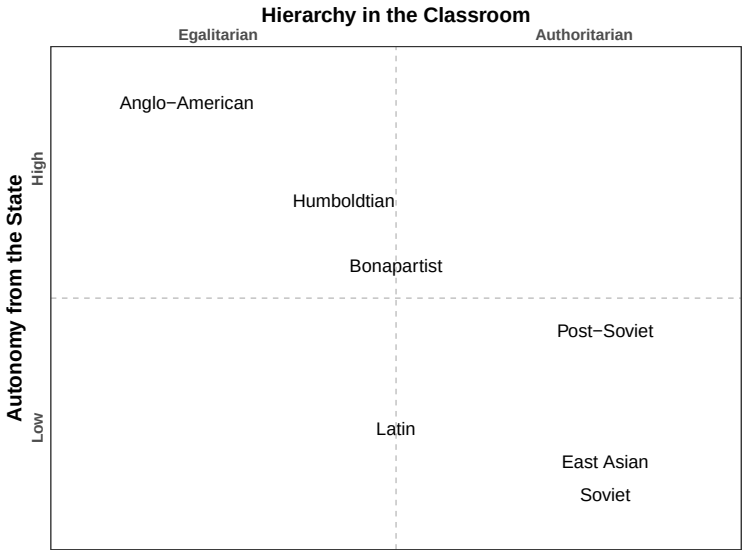
We classify universities into broad education models: Anglo-American, Bonapartist, East Asian, Humboldtian, Latin, Soviet, and post-Soviet. We draw on the higher education literature to align educational models in a two-dimensional space that corresponds to the two theoretical dimensions (autonomy from the state and hierarchy in the classroom), as shown in Figure 1. In the top left corner of Figure 1—high autonomy and egalitarian classroom—is the Anglo-American model. In the middle of the figure—relatively high autonomy and roughly in the middle between an egalitarian and authoritarian classroom—are the Humboldtian and Bonaparist models. At the bottom center of the figure—low autonomy and moderately egalitarian classroom—is the Latin model. In the middle right—relatively low autonomy and authoritarian classroom—is the Post-Soviet model. Finally, in the bottom right—low autonomy and highly authoritarian—are the East Asian and Soviet models.

Compared to others models, the Anglo-American model is characterized by greater autonomy from the state in terms of the course offerings and academic freedom afforded to faculty. Academic programs do not require approval by the state, but are approved by institutional managers (Huang 2014, 55). With some exceptions, faculty have general discretion over the classes they teach as well as their specific content. Drawing on the Changing Academic Profession survey, Huang (2014, 51) finds that, in contrast with other institutions, faculty at Anglo-American universities tend to have a greater role in development of curricula and course materials, and are more likely to address normative and ethical issues in their teaching. Instructor–student interactions at such institutions are characterized by a high degree of egalitarianism: faculty are likely to meet and interact with students outside of

8. More information about the data and the data collection process can be found in the Online Appendix.

9. We code *military schools* as those that focus on strategy/tactics training for officers. We expect that military schools, which tend to have shorter programs and often lack the educational curriculum of traditional academic institutions, do not transmit classical liberal values (see Online Appendix for a list of military schools). Thus, we exclude them from our coding of education models; our results are robust to this decision (see Online Appendix). We do include *military school* as a student specialization when testing hypothesis 2.

Figure 1: Two Dimensions of Tertiary Education Models.




class, employ more diversified instructional methods, and evaluate students on independent research and critical thinking as opposed to rote memorization (Huang 2014, 51–56).

The two most common European models are the Humboldtian (common to Central, Eastern, and Northern Europe) and Bonapartist (France and Mediterranean Europe). These models feature a mix of university autonomy and classroom hierarchy.[10] The Humboldtian model is defined by a tension between the traditionally valued academic freedom and a corporatist identity stemming from an input-oriented, state-run bureaucracy that is focused on national outlook (Pritchard 2006). Strong state financial support comes in exchange for little differentiation across universities in terms of prestige and student quality, with universities having little role in student selection (Pritchard 2006).

The Bonapartist model is similar to the Humboldtian model in that it is primarily state-funded, governed by a state-corporatist management structure, and characterized by equality across institutions. Bonapartist institutions, however, place greater focus on teaching and application than Humboldtian ones (Marginson 2006, 2011; Cummings 2014), at least outside the *grandes écoles*. Traditionally, Bonapartist institutions followed a vertical disciplinary

10. This mix is reflected in liberal arts course offerings. As noted by in a Quacquarelli Symonds report, while liberal arts degrees and courses are offered at the vast majority of US universities, this is not the case in Europe: less than half of continental European countries have dedicated liberal arts degree programs, with only three—Germany, Netherlands, and Italy—having more than one such institution (Haidar 2021).

logic, with major decisions regarding curricula or faculty promotion taken at the state or discipline level, with little input from the university (Musselin 2004). These institutions also tend to be more overtly politicized in their management (Marginson 2011, 594).

The bottom right of the figure consists of the more hierarchical models. The Latin model—common in Latin America and former French colonies—is a variant of the Bonapartist model. Its primary distinguishing features are low autonomy from the state and a stronger focus on application vs. research (Marginson 2006; Cummings 2014). Many faculty at these institutions have full-time employment outside of the university (Cummings 2014).

The East Asian model is characterized by strong state control, which results in a focus on applied research and a pursuit of state-determined policy goals (Marginson 2011). These institutions exhibit a high degree of hierarchy, from classroom interactions to a centralized admission process (Marginson 2011). Instruction is delivered primarily via lecture with a focus on memorization and practically-oriented knowledge (Durkin 2008; Huang 2014); students have few opportunities to interact with their instructors outside of the classroom (Huang 2014, 51–56). Academic programs, curricula, and course materials are developed and evaluated by the government, with very limited input from faculty (Huang 2014).

Lastly, the Soviet university model was centrally organized and financed, with significant government intervention, a national curriculum, and an emphasis on vocational, practical training, and applied research (Smolentseva, Huisman, and Froumin 2018). The post-Soviet era saw the creation of a non-state educational sector (private schools), national standardized entry tests, and a decrease in government funding and intervention, though intervention has increased since the mid-2000s (Smolentseva, Huisman, and Froumin 2018).

Given these differences, we assign educational models to one of three mutually exclusive groups: *Anglo-American*, *Other Western* (Humboldtian and Bonapartist), and *Hierarchical* (Latin, Post-Soviet, East Asian, and Soviet). We treat educational models as a state-level variable because, though higher education is globalizing, universities are ultimately constrained by the state in which they operate (Currie et al. 2003; Marginson 2022). We code institutions in the US, UK, Canada, Australia, and New Zealand as *Anglo-American*, as universities in these countries are similar in terms of autonomy from the state and the structure of instructor–student interactions (Marginson 2006, 2011). Our measure of *Other Western*

Table 1: Leader Educational Background

| | Abroad | | Domestic† | | |
|---|---|---|---|---|---|
| Education Model | University | Military | University | Military | Total |
| Anglo-American | 204 | 34 | – | – | 238 |
| Other Western | 61 | 19 | – | – | 80 |
| Hierarchical | 99 | 17 | 273 | 54 | 443 |
| No Post-secondary | – | – | – | – | 220 |

†*Note:* $N = 981$. There are no domestic Anglo-American and Other Western entries, as all states in these categories are OECD members.

includes institutions that follow the Humboldtian and Bonapartist learning models. This category includes schools in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Norway, the Netherlands, Portugal, Spain, Sweden, and Switzerland. Finally, universities with low levels of autonomy from the state and/or hierarchical instructor–student interactions are classified as *Hierarchical*.[11]

Table 1 provides descriptive data for leaders attending universities or military schools in states following Anglo-American, other Western, or Hierarchical education models, as well as figures for those without any post-secondary education.[12] Among all leaders with a university education (i.e., excluding military), 32% (204/637) studied at Anglo-American universities. Focusing only on those that studied abroad (excluding military), 56% (204/364) studied at Anglo-American universities.

Table 2 demonstrates the geographical coverage for each educational model. It cross-tabulates leader frequencies by the educational model of the institution attended (*Anglo-American*, *Other Western*, *Hierarchical*, and *None*), and the leaders' home geographical region (Americas, Asia, Eastern Europe, Middle East/North Africa, Oceania, and Sub-Saharan Africa). Important for our analysis, we see that leaders from all regions of the world attend Anglo-American universities. While there is some variation—Eastern Europe has the lowest rate of leaders educated at Anglo-American schools (20 out of 158 leaders, 13%) and Oceania has the highest (11 out of 28 leaders, 39%)—the proportion of Anglo-American-educated leaders is relatively stable across regions.

11. It also includes universities from states with educational models that do not fit into the above categories.

12. The distribution of non-OECD leaders trained by country features a small number of countries with a high frequency and a long tail of countries with few or no leaders. In decreasing order: US (123), UK (104), France (53), Russia (30), India (19), Bosnia (12), Guatemala (12), Uruguay (12), Brazil (11), Ecuador (11), Romania (11), and Thailand (11), with all other countries training 10 or fewer leaders.

Table 2: Regional Distribution of Leader Education Background

| | Americas | Asia | E. Europe | MENA | Oceania | S-S Africa | Total |
|---|---|---|---|---|---|---|---|
| Anglo-American | 80 (5) | 49 (5) | 20 (1) | 25 (12) | 11 (1) | 53 (10) | 238 (34) |
| Australia | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 2 (1) | 0 (0) | 2 (1) |
| Canada | 1 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 1 (0) | 2 (0) |
| New Zealand | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 7 (0) | 0 (0) | 7 (0) |
| UK | 22 (2) | 21 (3) | 8 (0) | 16 (9) | 2 (0) | 35 (8) | 104 (22) |
| US | 57 (3) | 28 (2) | 12 (1) | 9 (3) | 0 (0) | 17 (2) | 123 (11) |
| Other Western | 15 (1) | 5 (0) | 2 (0) | 6 (1) | 0 (0) | 52 (17) | 80 (19) |
| Hierarchical | 136 (30) | 90 (12) | 119 (3) | 35 (16) | 6 (0) | 57 (10) | 443 (71) |
| None | 32 | 46 | 17 | 36 | 11 | 78 | 220 |
| Total | 263 | 190 | 158 | 102 | 28 | 240 | 981 |

*Note:* Frequencies combine university and military education. Military education in parentheses.

The table disaggregates these data for each of the five countries that follow the Anglo-American education model. The vast majority of leaders educated under this model attended schools in the US or UK; out of the 238 leaders educated at Anglo-American institutions, all but 11 were in the US or UK. The US is the more frequent destination for would-be leaders from the Americas, Asia, and Eastern Europe, while the UK is the more common destination for leaders from the Middle East, North Africa, and sub-Saharan Africa. Institutions in New Zealand are the third-most frequent destination.

Next, we create variables indicating a leader's specialization. We classify specialization into five categories: economics, law, other social sciences, humanities, and other majors.[13] There are 109 leaders who specialized in economics and 179 leaders that majored in *Law*. Together, *economics* and *law* are the two most common majors for non-OECD leaders.

*Other social science* combines political science, international relations, public policy, public administration, psychology, sociology, and a number of related disciplines. These fields tend to be more heterogeneous in their theoretical and methodological application than economics and law. *Humanities* combines several subjects, such as philosophy, history, literature, journalism, along with a handful of others. While stressing specific norms and values, the humanities differ from the social sciences in both theoretical and methodological approach. Lastly, we code all other majors as *other*. Our theory offers little reason to expect

13. Leaders with more than one major, or who earned an advanced degree in a different major than their BA, are coded by their "most liberalizing" degree and subject. E.g., Tanzania's Nyerere, who earned an undergraduate degree in education from Makerere College, Uganda, and an MA in economics and history from Edinburgh, UK, is coded as having an Anglo-American education with a specialization in economics.

Table 3: Leader Specialization at University

| Education Model | Economics | Law | Other Soc Sci | Humanities | Other | Total |
|---|---|---|---|---|---|---|
| Anglo-American | 37 | 44 | 48 | 11 | 64 | 204 |
| Non-Anglo-American | 72 | 135 | 40 | 42 | 120 | 409 |

*Note:* Subject studied data are missing for 24 non-Anglo-American leaders.

significant differences among STEM, medicine, education, or other majors.

Table 3 reports the distribution of leader specializations by institution type. To maximize frequencies within subjects, we compare divide universities into Anglo-American and non-Anglo-American institutions.[14]

## Liberal Policy Implementation

We measure the dependent variable—implementation of liberal reform—in five distinct policy areas: trade liberalization, the rule of law, financial openness, human rights protections, and liberal democracy. Our dependent variables are measured as a first difference, by subtracting the relevant indicator at the beginning from that at the end of the leader's tenure. By looking at multiple policy areas, we are able to examine whether the effect of educational model and specialization on liberal reform is heterogeneous or applies equally across issue types.[15]

*Trade liberalization* measures whether a leader opened domestic markets and significantly reduced trade restrictions. We use data from Wacziarg and Welch (2008), which treat states as closed if they meet any of the following conditions: "(1) average tariff rates of 40% or more, (2) nontariff barriers covering 40% or more of trade, (3) a black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s, (4) a state monopoly on major exports, or (5) a socialist economic system" (190). Trade liberalization is coded as 1 if none of these conditions are met, and 0 otherwise, and are available between 1950–2001. Our sample includes only leaders whose countries were closed when they took office.[16]

14. *Other Western* does not, on its own, include enough cases within each subject to recover reliable estimates. Our theory, as well as the results presented below in Table 4, support dichotomizing education models into two groups, as only the Anglo-American model is consistently distinct from the others.

15. Correlations are weak to moderate across these variables in the sample (see Online Appendix).

16. Trade liberalization is often a quick process with few reversals—only seven between 1950–2001—making a binary indicator more appropriate and informative than a continuous measure (Wacziarg and Welch 2008).

We operationalize judicial reform as the strength of the rule of law, measured as the degree of *de facto* judicial independence using data from Linzer and Staton (2015). Linzer and Staton use a measurement model to estimate a state's latent level of judicial independence based on several indicators of direct and indirect judicial independence from 1948–2012. *Rule of law* is measured on an interval between 0–1.

*Financial openness* measures the restrictiveness of a state's financial sector. Financial openness data are obtained from Chinn and Ito (2006), who create a continuous measure of the intensity of a state's capital controls based on reports from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*. The measure ranges from -1.92 to 2.33, with greater values indicating greater openness. The data are available for 1970–2015.

*Human rights* relate to a state's level of physical integrity rights protections. Human rights are measured using data from Fariss (2014). Fariss uses a measurement model to estimate latent human rights protections over time, accounting for changing standards in accountability. The data are measured on an interval, ranging between -3.76 and 5.14, and are available from 1946–2015.

Democratic reform are operationalized using the *liberal democracy* score from the *Varieties of Democracy* (V-Dem) project (Pemstein et al. 2020). *Liberal democracy* is a measure of the degree of state protection of negative political rights, and is constructed from an index weighing various indicators of electoral processes and government constraints. The resulting measure is scaled between 0–1 and is available from 1946–2015.

## Control Variables

We include several statistical control variables. We control for state-level economic factors, such as *Economic development*, measured as logged GDP/capita, using data from Gleditsch (2002), and whether a state is an *Oil producer*, measured as a binary variable equal to 1 if oil exceeds $\frac{1}{3}$ of total exports, extending data from Gibler and Miller (2014). We also account for domestic institutional and demographic factors. We measure *Executive constraints* using the liberal component index from V-Dem (Pemstein et al. 2020).[17] *Ethnic fractionalization*

17. *Executive constraints* is a component of the *Rule of law* and *Liberal democracy* measures and is excluded from those models.

is measured using data from Drazanova (2020) and Gibler and Miller (2014), while logged *Population* figures come from Gleditsch (2002). We include two indicator variables to account for historical and external influences: *Former British colony* and defense pact with the US (*US ally*), obtained from Hensel (2014) and Leeds et al. (2002), respectively. Each is taken the year before the leader entered office to rule out reverse causation.[18] Finally, we include, *Time in office*, an individual-level measure for the length of a leader's tenure (in years).[19]

# Results

We evaluate our first hypothesis by estimating two sets of models for each of the five outcomes: a model with the full set of control variables, and a model with regional and decade fixed effects that excludes the largely time-invariant control variables.[20] The omitted reference category in all of the models are leaders with no university education.

Table 4 presents the results. Consistent with hypothesis 1, only the Anglo-American model is associated with a consistent liberalizing effect across all outcomes: the coefficient on *Anglo-American education* is positive and statistically significant in all models. Neither *Other Western* nor *Hierarchical* institutions have consistent effects across all outcomes. *Other Western Education* is positive and statistically significant at $p < 0.05$ (two-tailed) in models 9 and 10, at $p < 0.1$ (one-tailed) in models 3 and 7, and, somewhat surprisingly, negative and statistically significant at $p < .1$ (one-tailed) in the two *Financial Openness* models (5 and 6). *Hierarchical Education* is positive and statistically significant at $p < 0.05$ (two-tailed) in model 9 and 10, and at $p < 0.1$ (one-tailed) in models 1, 3, and 4.

To further evaluate hypothesis 1, and to distinguish across education models, we conduct a series of post-estimation Wald tests. These tests indicate that the coefficient on the *Anglo-American education* is significantly different (and larger) than *Hierarchical* in all models, except for model 9.[21] The coefficient on the *Anglo-American education* is signifi-

18. For new states, we follow Gift and Krcmaric (2017) and use values from the year of independence.

19. *Time in office* is reset if a leader serves multiple times. Varying its functional form did not affect results.

20. The fixed effects specification greatly increases each estimated model's sample size, as leader-spells with missing values on one or more control variable remain in the sample.

21. The two coefficients are significantly different at $p < 0.05$ (two-tailed test) in models 1, 3, 4, and 8, at $p < 0.1$ (two-tailed) in models 2 and 5, and $p < .1$ (one-tailed) in models 6, 7, and 10.

Table 4: Tertiary Educational Model and Political Outcomes.

| | *Dependent variable:* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trade Liberalization | | Rule of Law | | Financial Openness | | Human Rights | | Liberal Democracy | |
| | *Logistic* | | *OLS* | | *OLS* | | *OLS* | | *OLS* | |
| | School Type | Fixed Effects | School Type | Fixed Effects | School Type | Fixed Effects | School Type | Fixed Effects | School Type | Fixed Effects |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Anglo-American Education | 1.750** | 1.609** | 0.032** | 0.033** | 0.225** | 0.152+ | 0.161** | 0.095* | 0.055** | 0.049** |
| | (0.579) | (0.600) | (0.010) | (0.011) | (0.108) | (0.098) | (0.065) | (0.057) | (0.011) | (0.010) |
| Other Western Education | 0.754 | 0.541 | 0.018+ | 0.012 | −0.195+ | −0.168+ | 0.143+ | 0.093 | 0.087** | 0.068** |
| | (0.663) | (0.710) | (0.011) | (0.012) | (0.131) | (0.116) | (0.088) | (0.090) | (0.019) | (0.017) |
| Hierarchical Education | 0.658+ | 0.561 | 0.013+ | 0.011+ | 0.077 | 0.026 | 0.071 | −0.027 | 0.044** | 0.037** |
| | (0.497) | (0.532) | (0.008) | (0.008) | (0.095) | (0.091) | (0.056) | (0.051) | (0.010) | (0.009) |
| Economic Development | 0.017 | | 0.012** | | 0.042 | | 0.073** | | 0.012** | |
| | (0.242) | | (0.004) | | (0.050) | | (0.026) | | (0.004) | |
| Oil Producer | −0.504 | | −0.022+ | | −0.061 | | −0.159* | | −0.019* | |
| | (0.559) | | (0.015) | | (0.124) | | (0.082) | | (0.010) | |
| Executive Constraints | 2.069** | | | | 0.231+ | | 0.426** | | | |
| | (0.968) | | | | (0.163) | | (0.114) | | | |
| Former British Colony | −0.661+ | | 0.003 | | −0.141* | | −0.086* | | −0.001 | |
| | (0.486) | | (0.010) | | (0.081) | | (0.049) | | (0.007) | |
| US Ally | 0.008 | | 0.011* | | 0.117+ | | −0.117** | | 0.002 | |
| | (0.482) | | (0.007) | | (0.085) | | (0.050) | | (0.007) | |
| Ethnic Fractionalization | −0.108 | | −0.012 | | −0.212+ | | −0.133+ | | 0.009 | |
| | (0.726) | | (0.016) | | (0.155) | | (0.092) | | (0.011) | |
| Population | 0.062 | | −0.003* | | −0.025 | | −0.093** | | −0.004* | |
| | (0.140) | | (0.002) | | (0.022) | | (0.017) | | (0.002) | |
| Time in Office | 0.035 | | 0.0005 | | 0.019* | | 0.0002 | | −0.001+ | |
| | (0.028) | | (0.001) | | (0.010) | | (0.004) | | (0.001) | |
| DV Entering Office | | | −0.109** | −0.095** | −0.220** | −0.197** | −0.254** | −0.145** | −0.178** | −0.166** |
| | | | (0.021) | (0.018) | (0.029) | (0.026) | (0.031) | (0.018) | (0.027) | (0.024) |
| Constant | −3.962* | −2.649** | −0.013 | −0.013 | −0.247 | −0.090 | 0.036 | −0.193** | −0.025 | 0.053** |
| | (2.283) | (0.770) | (0.037) | (0.035) | (0.470) | (0.131) | (0.264) | (0.097) | (0.039) | (0.025) |
| Observations | 240 | 242 | 730 | 745 | 588 | 671 | 850 | 973 | 847 | 958 |
| $R^2$ | | | 0.075 | 0.110 | 0.132 | 0.130 | 0.129 | 0.119 | 0.123 | 0.146 |
| Log Likelihood | -95.912 | -80.302 | | | | | | | | |

*Note:* **p<0.05,*p<0.1, two-tailed; +p<0.1, one-tailed. Standard errors clustered by country.

cantly different (and larger) than the coefficient on *Other Western* in most of the models for the economic outcomes (1, 2, 4, 5, and 6).[22] The coefficient on the *Other Western* is actually greater ($p < .1$, two-tailed) than that on the *Anglo-American education* in model 9 (the liberal democratization outcome). The coefficients on *Other Western Education* and *Hierarchical* are significantly different from each other for the *financial openness* and *democratization* outcomes, but not for any of the other three outcomes.[23]

These results highlight that the effect of Anglo-American institutions is qualitatively different from other educational models, including other Western institutions, and is especially pronounced for economic policies. Notably, the identified differences in effect size between Anglo-American and other Western provides support for our theory, yet contradict the socialization account, which implies no such difference in effects.

Another result that stands out is that all college-educated leaders, irrespective of the education model, are more likely to implement liberal democratic reform than leaders with no college education: the coefficients on all education models are positive and statistically significant ($p < 0.05$, two-tailed) in both models for liberal democratization. This result suggests that higher education itself makes democratization more likely.

Next, we evaluate the effect of leader subject specialization on liberal policy reform, conditioned by Anglo-American (AA) and non-Anglo-American (non-AA) institutions, in Table 5. The reference category in all models are leaders with no tertiary education. It is evident that studying economics at Anglo-American institutions is associated with a liberalizing effect across policy outcomes.[24] While previous work has found that an Anglo-American economics education is linked with more liberal economic policies, our theory and analysis also highlights its association with improved human rights and democratic reform.

We also find that leaders who studied law at Anglo-American institutions are consistently more likely to implement liberal reform: post-estimation Wald tests show that the coefficients on *AA Economics* and *AA Law* are statistically indistinguishable across models. This result is novel in two ways. First, prior research has focused primarily on the effects

22. The two coefficients are significantly different at $p < 0.05$ (two-tailed test) in models 5 and 6, and at $p < .1$ (one-tailed) in models 1, 2, and 4.

23. The two coefficients are statistically different at $p < 0.05$ (two-tailed) in model 9, $p < 0.1$ (two-tailed) in model 5, and at $p < 0.1$ (one-tailed) in models 6 and 10.

24. *Financial liberalization* is only significant ($p < .1$, one-tailed) in one of the two models.

of economics training, largely ignoring that other disciplines may exert similar liberalizing effects. Given that legal training is the most common specialization in our sample, this result is also substantively meaningful. Second, these results help separate competing mechanisms related to education training: the similarity in outcomes for leaders with economics and law degrees suggests that it is the amount of exposure to broad liberal values, rather than acquisition of subject-specific technical competencies, that leads to policy reform.

The results for Anglo-American social science and humanities majors are more mixed. Leaders who studied social sciences are associated with increases in the liberal democracy level of their country. Leaders educated in humanities are more likely to improve rule of law and liberal democracy, compared to leaders with no tertiary education. Other (neither humanities nor social sciences) Anglo-American majors are also more likely to implement liberal reform in trade, rule of law, human rights, and democratic reform. Finally, Anglo-American academic subjects are jointly significant in models 1–4, 7, and 9–10.

As expected, leaders who studied at non-Anglo-American institutions are not consistently associated with liberal outcomes. There are two exceptions. First, leaders from non-Anglo-American institutions are associated with increases in liberal democracy, regardless of specialization, compared to leaders with no tertiary education. Second, leaders with legal degrees from non-Anglo-American institutions are more likely to implement trade liberalization and improvements to the rule of law than leaders with no university education, though this effect is smaller than that on *AA Law*. That legal training from both Anglo-American and non-Anglo-American institutions affects trade liberalization and rule of law, albeit with differing intensities, suggests that law's focus on logical consistency and rule-based applications is distinct from other specializations. These specific aspects stressed across the three main legal traditions (common, civil, Islamic) align with classical liberal values, implying that, while ad hoc, the results for *non-AA law* are consistent with our specialization argument.

Finally, leaders that attended military schools (irrespective of location) are not consistently statistically distinguishable from leaders with no tertiary education. Leaders with non-Anglo-American military backgrounds are, however, more likely to roll back liberal democracy. In fact, this is the only category of specialization associated with a *negative* and statistically significant coefficient on any of the five policy outcomes. The null effect

Table 5: Tertiary Educational Model, Subject Studied, and Political Outcomes.

| | *Dependent variable:* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trade Liberalization | | Rule of Law | | Financial Openness | | Human Rights | | Liberal Democracy | |
| | *logistic* | | *OLS* | | *OLS* | | *OLS* | | *OLS* | |
| | Subject | Fixed Effects | Subject | Fixed Effects | Subject | Fixed Effects | Subject | Fixed Effects | Subject | Fixed Effects |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| AA Economics | 2.794* | 3.990** | 0.046** | 0.044** | 0.215 | 0.249+ | 0.228** | 0.144+ | 0.059** | 0.046** |
| | (1.441) | (1.011) | (0.018) | (0.018) | (0.198) | (0.171) | (0.111) | (0.105) | (0.022) | (0.020) |
| AA Law | 2.567** | 3.495** | 0.039** | 0.047** | 0.215 | 0.124 | 0.149* | 0.164** | 0.064** | 0.068** |
| | (0.966) | (1.284) | (0.017) | (0.018) | (0.232) | (0.187) | (0.084) | (0.072) | (0.014) | (0.015) |
| AA Social Science | 1.320 | 0.924 | 0.007 | 0.003 | 0.213 | 0.239+ | 0.038 | −0.011 | 0.048** | 0.039** |
| | (1.065) | (1.322) | (0.017) | (0.015) | (0.167) | (0.153) | (0.084) | (0.072) | (0.017) | (0.013) |
| AA Humanities | 1.785 | 2.205** | 0.073** | 0.076** | 0.111 | 0.059 | −0.043 | −0.049 | 0.054+ | 0.057+ |
| | (1.511) | (0.998) | (0.024) | (0.025) | (0.302) | (0.309) | (0.136) | (0.112) | (0.041) | (0.037) |
| AA Other Majors | 1.894** | 2.138** | 0.040** | 0.037** | 0.264+ | 0.165 | 0.268** | 0.175** | 0.032** | 0.020* |
| | (0.733) | (0.879) | (0.014) | (0.014) | (0.173) | (0.138) | (0.090) | (0.075) | (0.011) | (0.011) |
| AA Military School | 0.948 | 0.248 | 0.007 | −0.002 | 0.177 | 0.141 | 0.080 | 0.058 | 0.021 | 0.008 |
| | (0.987) | (1.780) | (0.021) | (0.017) | (0.138) | (0.116) | (0.140) | (0.173) | (0.017) | (0.015) |
| Non-AA Economics | 1.060 | 1.163+ | 0.020 | 0.017 | −0.013 | −0.085 | 0.091 | −0.024 | 0.052** | 0.039** |
| | (0.833) | (0.868) | (0.018) | (0.019) | (0.151) | (0.128) | (0.089) | (0.088) | (0.014) | (0.013) |
| Non-AA Law | 1.208* | 1.878** | 0.019* | 0.017* | 0.061 | 0.091 | 0.087 | 0.065 | 0.057** | 0.047** |
| | (0.638) | (0.630) | (0.010) | (0.010) | (0.121) | (0.101) | (0.070) | (0.060) | (0.013) | (0.012) |
| Non-AA Social Science | 0.555 | 0.257 | 0.015+ | 0.010 | 0.030 | 0.055 | 0.110 | 0.012 | 0.038** | 0.028** |
| | (1.093) | (1.198) | (0.012) | (0.011) | (0.166) | (0.130) | (0.114) | (0.094) | (0.012) | (0.012) |
| Non-AA Humanities | 0.124 | −0.344 | 0.010 | 0.005 | 0.068 | 0.027 | 0.185* | 0.060 | 0.033** | 0.033** |
| | (1.267) | (1.474) | (0.011) | (0.010) | (0.140) | (0.125) | (0.112) | (0.098) | (0.013) | (0.017) |
| Non-AA Other Majors | 0.763 | 0.556 | 0.021** | 0.015+ | 0.036 | 0.046 | 0.046 | −0.038 | 0.031** | 0.023** |
| | (0.738) | (0.916) | (0.011) | (0.010) | (0.093) | (0.085) | (0.069) | (0.065) | (0.012) | (0.011) |
| Non-AA Military School | 0.577 | 1.718* | 0.015 | 0.015+ | −0.064 | 0.095 | −0.016 | 0.016 | −0.037** | −0.038** |
| | (0.750) | (0.906) | (0.013) | (0.011) | (0.166) | (0.158) | (0.097) | (0.082) | (0.014) | (0.013) |
| Economic Development | −0.007 | | 0.011** | | 0.051 | | 0.067** | | 0.008* | |
| | (0.249) | | (0.005) | | (0.053) | | (0.026) | | (0.004) | |
| Oil Producer | −0.499 | | −0.020+ | | −0.074 | | −0.159* | | −0.017* | |
| | (0.617) | | (0.015) | | (0.126) | | (0.082) | | (0.010) | |
| Executive Constraints | 2.071** | | | | 0.239+ | | 0.438** | | | |
| | (0.996) | | | | (0.173) | | (0.112) | | | |
| Former British Colony | −0.746+ | | 0.004 | | −0.140+ | | −0.089* | | −0.006 | |
| | (0.566) | | (0.010) | | (0.085) | | (0.050) | | (0.007) | |
| US Ally | −0.201 | | 0.009+ | | 0.114+ | | −0.121** | | 0.003 | |
| | (0.500) | | (0.007) | | (0.087) | | (0.052) | | (0.008) | |
| Ethnic Fractionalization | −0.134 | | −0.010 | | −0.246+ | | −0.121+ | | 0.007 | |
| | (0.767) | | (0.016) | | (0.153) | | (0.091) | | (0.011) | |
| Population | 0.050 | | −0.004** | | −0.023 | | −0.093** | | −0.004* | |
| | (0.148) | | (0.002) | | (0.023) | | (0.017) | | (0.002) | |
| Time in Office | 0.027 | | 0.0004 | | 0.019* | | 0.0004 | | −0.001 | |
| | (0.027) | | (0.001) | | (0.010) | | (0.004) | | (0.001) | |
| DV Entering Office | | | −0.108** | −0.096** | −0.218** | −0.198** | −0.254** | −0.142** | −0.180** | −0.177** |
| | | | (0.020) | (0.018) | (0.031) | (0.026) | (0.031) | (0.018) | (0.028) | (0.025) |
| Constant | −3.744+ | −3.748** | −0.012 | −0.016 | −0.320 | −0.140 | 0.068 | −0.231** | 0.023 | 0.065** |
| | (2.384) | (0.966) | (0.038) | (0.036) | (0.483) | (0.128) | (0.257) | (0.100) | (0.042) | (0.026) |
| Observations | 240 | 242 | 730 | 745 | 588 | 671 | 850 | 973 | 847 | 958 |
| $R^2$ | | | 0.085 | 0.122 | 0.130 | 0.132 | 0.135 | 0.123 | 0.133 | 0.162 |
| Log Likelihood | -94.299 | -74.429 | | | | | | | | |

*Note:* **p<0.05,*p<0.1, two-tailed; +p<0.1, one-tailed. Standard errors clustered by country.

associated with *AA Military school*, while consistent with our theory, does run counter to the expectations of socialization theories. Military educators often take great effort to socialize foreign cadets and incorporate them into the host's communities and ways of life, in effort to build life-long connections and influence future leader's foreign policy leanings (Martinez Machain 2021, 317). That military education appears to exert little impact on leaders' domestic policy actions suggests that the key factor for the transmission of classical liberal values is course content, rather than interactions with peers and community contacts.

In addition to supporting our hypotheses, the results are substantively meaningful. The probability that a leader educated at an Anglo-American institution liberalized trade was .35, compared to .17 for another Western institution, .16 for a hierarchical institution, and .09 for no tertiary education, all else equal. For leaders that specialized in economics or law at an Anglo-American university, the probability increases to .58 and .52, respectively. We show the substantive effects of the other variables—all of which are measured on latent scales—by first rank-ordering the countries within the sample based on their 2012 values. Holding all else constant, a country with the median ranking would improve 7 spots in its rule of law ranking (out of 153), 4 spots in its financial ranking (out of 173), 4 spots in its human rights ranking (out of 196), and 12 spots in liberal democracy (out of 175), if its leader was educated at an Anglo-American university, compared to no tertiary education. These increase further—13 spots in rule of law, 9 spots in human rights, and 12 spots in liberal democracy—if that same leader specialized in economics or law.

## Robustness: Self-selection and Structural Conditions

Interpreting the above results as causal, rather than mere correlations, is predicated on the assumption that leader assignment to educational models is uncorrelated with their policy preferences. There are two potential sources of endogeneity in our sample; first, leaders with liberal predispositions may self-select into Anglo-American institutions. Second, structural conditions may make it more likely that reform-minded leaders are selected. We employ a number of strategies—a review of relevant literature, and several robustness checks using alternative research designs—to explore and rule out each of these potential concerns.

## Self-selection

Ideology-based self-selection presupposes that, at the time of admission, international students at Anglo-American universities have a stronger liberal predisposition than students that pursue education elsewhere. In particular, this difference must hold for the subsample of students that are likely to become future leaders of their countries, such as the children of current political elites. The evidence, however, points against such a difference.

A key difference between international students at Anglo-American universities and those that study elsewhere is family income: proof of financial support is a key condition on international admissions at Anglo-American universities. Upon receiving the admissions letter, students must provide the university with evidence of sufficient funds to cover a full year of tuition at the international rate, as well as accommodations.[25] Students also have to provide this evidence when applying for a student visa. As a consequence of these financial requirements, the offspring of economic and political elites from illiberal regimes are over-represented among the international students from non-OECD countries in our sample.[26]

Indeed, educating their children at Anglo-American universities is a common practice among illiberal elites.[27] For example, Chinese President Xi Jinping's daughter and former CCP party boss Bo Xilai's son each attended Harvard (International Business Times 2012). Children of Syria's Assad, Egypt's Mubarack, and Libya's Gaddafi studied in the UK (Danin 2011). Bahrain's crown prince Salman bin Hamad bin Isa al-Khalifa earned degrees from both American University and Cambridge (Danin 2011).[28]

The relationship between Anglo-American education and family power is also systematically found among the leaders in our sample. Using data from Ellis, Horowitz, and Stam (2015), we identify leaders from elite families based on their father's occupation.[29] Among

25. For example, for the US law see https://studyinthestates.dhs.gov/students/financial-ability, for the British law, see https://www.gov.uk/student-visa/money. Unlike domestic students, international students are generally ineligible for off-campus employment, and face restrictions for on-campus employment as well.

26. In our sample, only 7% of leaders were in democracies, and 15% in economically open states, when they turned 18 years old, using data from V-Dem and Wacziarg and Welch (2008).

27. For example, according to the International Business Times (2012), 90% of Chinese citizens with assets over $16 million, and 85% of those with assets over $1 million, say they will send their children to study abroad, with the US and other Anglo-American institutions being the top choices.

28. Other examples include: Pakistani leader Perves Musharraf's son studied in the US, as did Lebanon president Saad Hariri, son of former president Rafik Hariri, as well as the daughters of both Philippines leader Marcos and Indonesian ruler Sukarno (Braw 2014).

29. Leaders whose fathers were royalty/nobility, high-ranking government or military officials, or large

leaders with elite backgrounds, 36 out of 155 (23%) attended Anglo-American universities, compared to 70 out of 453 (15%) for leaders with non-elite backgrounds. This difference is statistically significant at $p < 0.05$ (two-tailed). There are no such differences for other Western or non-Western universities, foreign institutions, or military schools.[30] These results are the opposite of what we would expect based on the liberal self-selection logic.

Children of illiberal elites, moreover, are unlikely to have liberal predispositions irrespective of their destination of study. Their families' connection to the regime guarantees their wealth and political power. Parents grooming their children to become future political leaders have no incentive to expose their children to liberal values. If anything, these international students are likely primed to be skeptical of liberal norms and values.[31]

The preference among illiberal elites to obtain an Anglo-American education for their children is driven, first and foremost, by institutional prestige, then language of instruction, and distance from the home country (Mazzarol and Soutar 2002; Kaba 2012; Cebolla-Boado, Hu, and Soysal 2018; Wojciuk 2018). Parents from all over the world want to send their children to top-ranked institutions, which tend to cluster in a handful of countries, such as the US (54 of the top 200), the UK (29 of the top 200), and continental Western Europe (54 of the top 200) (Kaba 2012).

Top universities receive thousands of applications, and have their pick at what students to admit. Thus, whether a student is admitted to an Anglo-American university is decided by the school, not the student, and is driven by grades, test scores, and extra-curriculars, rather than ideology. And given the strong correlation between the family's status-quo bias and the ability to afford to send an offspring to an Anglo-American university, the pool of potential international students from illiberal regimes likely skews illiberal.

### Alternative Research Designs

We use several research design strategies that allow us to isolate the causal effect of education, even in the presence of possible self-selection in the full sample. First, we take advantage of a natural experiment opportunity resulting from the overwhelming number of

plantation owners are coded as elite.

30. The full set of results are presented in the Online Appendix.

31. This type of selection effect, of course, would induce a conservative bias in our statistical estimates.

applications at highly ranked universities. Essentially, the only part of the school selection process that is under students' control is selecting the schools, to which they *apply*. Any self-selection process would, therefore, take place at the application, rather than the admission, stage: liberally inclined students may submit more applications to Anglo-American or other Western schools than to schools located in various authoritarian regimes.

After applications are submitted, which schools offer a student admission is entirely random as it relates to the student's liberal predisposition—the omitted variable of concern. Once admissions decisions are made, a student may have a choice between a handful of schools, and the largest driving factor of school choice at this point is rankings/prestige (Mazzarol and Soutar 2002; Cebolla-Boado, Hu, and Soysal 2018). Even if liberal self-selection were at work during the application process, a student's choice of school is limited as a result of factors uncorrelated with ideology. Depending on the strength of their application, this choice may not even include Anglo-American or other Western institutions—many students ultimately go to school in their home country despite having applied internationally. And when choosing between two Western schools, the student is likely to use ranking, not ideology, as their ultimate decider, especially given that most eighteen-year-olds are likely unaware of the subtle curricular differences between Anglo-American and other Western institutions.

Thus, there are two stochastic elements that decouple school selection from students' ideological preferences: the admissions stage, and the final choice between a handful of schools that offered admission to the student. As a result, whether a student ends up at an Anglo-American or another Western institution—the two institutional types, to which a liberally predisposed student may apply—is as-if random with respect to ideology. Therefore, the differences in effect between Anglo-American and other Western institutions in Table 4 can be interpreted as causal.

Second, we perform two subsample analyses: (a) on a subsample of elite families only and (b) on a sample matched on observables. The elite subsample constitutes a "hard test" of our theory: leaders from elite families should be the least likely to implement liberal reform, as they and their families derive the greatest benefits from the status quo. If liberal bias is the selective mechanism at work, leaders from these families should be the least likely to be affected. Meanwhile, the matched design allows, under some assumptions, for

recovering unbiased estimates of the treatment effect: although the potentially offending variable—a leader's liberal bias—is unobservable, it may correlate and follow the same empirical distribution as the observed ones, e.g., *former British colony* or *US-aligned state*. If this assumption holds, an analysis of a sample matched on observable covariates recovers unbiased estimates of the treatment effect (Imai, King, and Stuart 2008, 483–485). The results from each of these analyses support the inferences of the main analysis.

### Structural Conditions

We also consider whether structural conditions make it easier for liberal-minded leaders to enter office. If this were the case, then our results may be attributing previously initiated policy changes or domestic political actions to the education of subsequent leaders. We assess this in three ways: first, we consider whether reform make it easier for liberal-minded leaders to enter office. To check for this, we test—and find no evidence—that a change in our dependent variables predicts whether the next leader will hold a degree from an Anglo-American institution.

Second, we examine as-if random leadership turnover resulting from leaders dying of natural causes while in office. As the timing of death and succession is independent of structural conditions, this approach allows us to isolate the effect of education (Jones and Olken 2005; Krcmaric, Nelson, and Roberts 2020). Third, we adopt an instrumental variable approach, using boarding school as an instrument for Anglo-American education.[32] The results of both analyses support the inferences from the main analysis.

On balance, the results of these additional checks suggest that leader education is not endogenous to policy outcomes. Complete results are reported in the Online Appendix.

## Conclusion

Our study advances recent research linking leader education to policy outcomes by highlighting the role of educational models and specializations in leader's policy behavior. Specifically, it provides evidence that the transmission of classical liberal values is a key mechanism in

32. Data on whether a leader attended boarding school are obtained from Ellis, Horowitz, and Stam (2015).

this process. More broadly, our study emphasizes the importance of micro-level explanations for policy change: while macro-level factors certainly create constrains, policy decisions are ultimately made by individuals.

Our analysis has several implications. One is that leader education affects debates about liberalization and state development. Some contend that economic development precedes political liberalization and consolidation, while others argue the opposite (cf. Boix 2011; Acemoglu et al. 2019). Our results indicate that Anglo-American educations make both trade liberalization and democratic reform substantively much more likely, with increases in financial openness and improvements in rule of law and human rights protections more moderate. Coupled with a specialization in law or economics, however, the likelihood of liberalization in most policy areas significantly increases.

Another is that incorporating educational models improves our understanding of how major powers create and maintain political orders and hierarchies. While previous research has identified several international factors that impact major power alignment (McManus and Nieman 2019; Nieman et al. 2021), their micro-foundations are less understood. A leader's educational background may be a crucial link in why states with similar structural conditions chose whether to align with specific powers.

In addition, our study also speaks to the diffusion literature. While previous work has focused on the mechanisms of coercion, competition, and socialization as channels of policy transmission (Simmons and Elkins 2004; Thies, Chyzh, and Nieman 2016), our study suggests that tertiary education networks are also an important pathway. Leaders that attended universities promoting similar values and principles are able to speak to one another from a common framework, reducing transaction costs and identifying focal points, which facilitates the spread of ideas.

From a policy perspective, tertiary education of international students should be viewed not only as a tool for generating human capital, but also through the lens of power projection. Investment in tertiary education has a long-term payoff in terms of influence over the policy agenda of other states by changing the underlying interests of these states' elites (Norrlof 2014, 1063). Shared policy preferences not only reduces military conflict (Nieman 2016; Gallop and Minhas 2021), but also increases coordination and cooperation (Henke 2019).

Building world-class educational institutions that attract students from all over the world is an important tool of normative and ideational influence.

For liberal states, however, any foreign policy benefits are conditional on both protecting university autonomy from the state and maintaining egalitarian classroom settings. Government interference in university affairs have downstream effects. Efforts to ban specific theories or subject matter from curricula, policies that undermine classroom environments, and prioritizing budgets and endowments over classroom quality, may reduce, or even eliminate, the influence of higher education as a foreign policy tool.

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**Biographical Statements**

MARK DAVID NIEMAN is an Assistant Professor at the UNIVERSITY OF TORONTO, TORONTO, ON, M5S 3G3.

MAXWELL B. ALLAMONG is a POSTDOCTORAL ASSOCIATE at DUKE UNIVERSITY, DURHAM, NC, 27708.

# Appendix for "Schools of Thought: Leader Education and Policy Outcomes"

Mark David Nieman Maxwell B. Allamong

This appendix provides additional information to supplement that of the main manuscript, and is divided into five sections. First, we provide information as to how the original leader education data were constructed. Second, we present a correlation matrix of our dependent variables to demonstrate that they are capturing different policies. Third, we address whether our main results are sensitive to the inclusion of military schools. Fourth, we provide a through discuss of potential endogeneity and present results, using a variety of research designs, to demonstrate that our results are robust. Finally, we discuss model fit and outliers from our main analyses.

# 1 Data Construction

The data include all non-OECD countries—with state membership defined using the Correlates of War state membership criteria (Correlates of War Project 2017). We use the Archigos dataset (Goemans, Gleditsch, and Chiozza 2009) to identify state leaders. A team of research assistants used this list to gather education data for each leader. The research assistants were asked to record (1) the university attended, (2) the type of degree earned (e.g., bachelor's, masters), (3) the university type (e.g, educational, military), and (4) the subject studied.

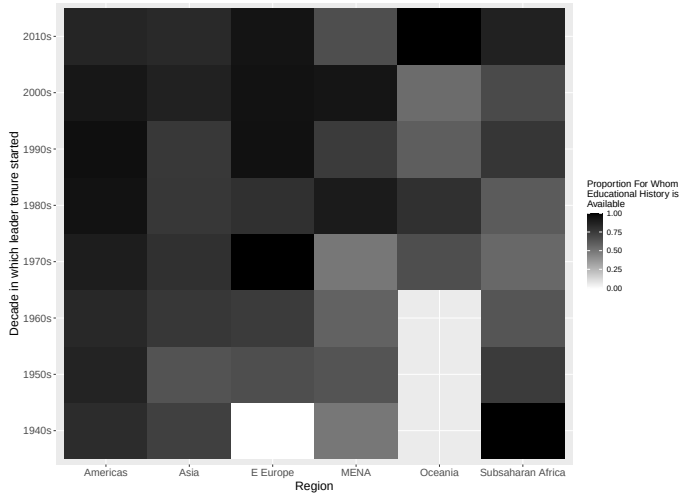
Multiple research assistants independently searched for information on leaders' educational history using a variety of sources. Most common sources included print or online encyclopedias, history books, biographies, obituaries, and newspaper articles. Other sources included government web pages, websites of various NGOs, IGOs, and sometimes of the leaders themselves. Information on the same set of leaders was independently coded by multiple coders. Discrepancies among coders were resolved by further searches by the two primary investigators.

The resulting dataset contains the following variables: Archigos observation number, leader name, the name and three letter abbreviation of the state where the leader led the government, the name of the leader's tertiary institution, the type of tertiary institution (educational, military, religious, vocational), the country name and three letter abbreviation hosting each leader's educational institution, and leaders' subject of study. We include only educational tertiary institutions in our educational model analysis, and educational and military in our specialization model, with religious and vocational excluded due to their lack of emphasis on classical liberal norms and values. Several leaders earned more than one major, or earned advanced degrees in majors other than that of their undergraduate degree. For the purposes of testing our theory, we code these leader's institutions and majors by selecting the institution/major that associated with the greatest exposure to the classical liberal norms and values (out of the institutions/majors they attended/studied). For example, Nyerere of Tanzania, who earned an undergraduate degree in education from Makerere College, Uganda, and an MA in economics and history from Edinburgh, UK, is coded as having an Anglo-American education in the field of economics.

The distribution of leaders educated by country features a relatively small number of countries educating many non-OECD leaders and a long tail of countries with few or no leaders educated. In decreasing order of frequency, the non-OECD leaders are educated in the US (123), the UK (104), France (53), Russia (30), India (19), Bosnia (12), Guatemala (12), Uruguay (12), Brazil (11), Ecuador (11), Romania (11), and Thailand (11), with all other countries educating 10 or fewer leaders.

Information on leaders' higher educational history was found for a large majority of leaders (80.8%), while no known educational history was found for the remaining 19.2%. A handful of sources explicitly stated that a leader did not receive higher education, which is noted accordingly in the data, but for most leaders with no known educational history, our

Figure A.1: Heat Map of Leader Education Data Availability, by Region and Decade of Leader Tenure Onset.




*Note:* There were no independent non-OECD Oceananic states until 1970. The only one Eastern European leader whose term began in the 1940s, Georghiu-Dej of Romania, had no confirmed tertiary education.

coders simply did not find any indications that a leader received higher education. We treat these cases as the leader having no tertiary education in our analysis. Data missingness on leaders' educational history is relatively evenly distributed over time, while the regional distribution is slightly skewed towards Oceania, sub-Saharan Africa and the Middle East/North Africa. Figure A.1 presents a heat map displaying the proportion of leaders, by region and decade in which the leader spell began, for whom higher educational history is available.

# 2 Correlation of Dependent Variables

Table A.1 reports the correlation matrix for the five outcome variables. The table shows that while some of the indicators have moderate correlations with one another, it is clear that there is substantial variation. While change in rule of law has a moderate positive correlation with change in democracy, the remaining variables have only relatively weak correlations to one another. These results are consistent with the observation that states do not always liberalize in all policy areas simultaneously, e.g., China.

That the indicators capture different aspects of liberalization is useful in two key ways. First, looking at multiple indicators allows us to separate our theoretical account from competing theories, meeting a call by Krcmaric, Nelson, and Roberts (2020) in their recent review article on country leaders to better parse specific mechanisms. By using multiple indicators, for example, we can examine whether some fields of study have larger liberalizing effects than others, or whether spill-over effects occur outside of a leader's specialization.

Second, it is helpful to see which policy areas are most affected by education. Within the literature, for example, debate continues regarding the sequencing of liberal change. One group argues that economic liberalization leads to political liberalization and consolidation (e.g., Lipset 1959; Dahl 1971; Linz and Stepan 1996; Przeworski and Limongi 1997; Mousseau 2003; Boix 2011), while another contends that political reforms encourage economic liberalization and growth (e.g., Bueno de Mesquita et al. 2003; Acemoglu and Robinson 2006; Gerring, Thacker, and Alfaro 2012; Acemoglu et al. 2019). Within the latter, some argue that only specific institutional and legal reforms (e.g., strengthening rule of law, independent central banks) lead to economic growth, rather that broad-based democratic reform (e.g., Li and Resnick 2003; Doucouliagos and Ulubaşoğlu 2008).

The results from Tables 4 and 5 in the manuscript help shed light on how education affects these debates. Predicted probabilities from these tables indicate that educational models and specialization affect which policy areas liberalize, with the effects of specialization being conditional on the educational model. Specifically, holding all else equal, Anglo-American educations make both trade liberalization and democratic reform substantively much more likely, with the impact on financial reform and improvements in rule of law moderate more moderate. Coupling Anglo-American education with a specialization in law or economics, however, significantly increases the substantive impact in all policy areas except for financial openness.

Table A.1: Correlation Matrix of Dependent Variables

| | Trade Liberalization | Rule of Law | Financial Openness | Human Rights |
|---|---|---|---|---|
| Rule of Law | 0.039 | | | |
| Financial Openness | 0.370 | 0.042 | | |
| Human Rights | 0.195 | 0.302 | 0.159 | |
| Liberal Democracy | 0.159 | 0.535 | -0.053 | 0.361 |

# 3 Military Schools

We treat military educations as distinct from those tertiary institutions with a more traditional focus on education. Table A.2 reports the frequency tabulation for the 34 leaders attending military schools located in countries following the Anglo-American education model. With the possible exceptions of the US Military Academy at West Point (Nicaragua's Somoza, 1946) and Valley Forge Military Academy and College (Bulgaria's Saksgoburggotski, 1959), most of the remaining schools focus primarily on military training in strategy and tactics for officers—rather than traditional coursework—and have shorter programs than traditional BA/MA/PhD programs. Thus, we excluded them from the analysis in Table 4 in the article.[1]

As a robustness check, we relax the distinction between military and non-military institutions in models displayed in Table A.3. Our main findings are robust to this specification. The primary differences between this model and Table 4 in the manuscript is that *Other Western Education* is now statistically significant in the *Trade liberalization* model.

Table A.2: Frequency of Anglo-American Military Schools.

| Military School | Country | Frequency |
|---|---|---|
| Royal Military Academy Sandhurst | UK | 12 |
| Mons Officer Cadet School | UK | 6 |
| Army Command and General Staff College (Ft. Leavenworth) | US | 5 |
| Armour Centre | UK | 1 |
| Australian Joint Services Staff College | AUL | 1 |
| Britannia Royal Naval College | UK | 1 |
| International Military Education and Training | US | 1 |
| Inter-American Defense College | US | 1 |
| Royal College of Defence Studies | UK | 1 |
| Royal Naval Gunnery School | UK | 1 |
| United States Army War College | US | 1 |
| United States Military Academy at West Point | US | 1 |
| Valley Forge Military Academy and College | US | 1 |
| Armored Cavalry School at Fort Hood | US | 1 |

[1]We did include include military schools from both *Anglo-American* and *non-Anglo-American* states in Table 5, which looked at the effect of specialization, conditioned by educational model, on policy outcomes. Neither type of military school was associated with liberal reform, compared to a leader with no tertiary education, across any outcome (*non-Anglo-American military schools* were associated with democratic backsliding); that military schools were statistically indistinguishable from having no tertiary education helps validate the decision to exclude them from the models reported in Table 4.

Table A.3: Effect of Pooling Military and Education Types on Political Outcomes.

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Trade Liberalization | Rule of Law | Financial Openness | Human Rights | Liberal Democracy |
| | (1) | (2) | (3) | (4) | (5) |
| Anglo-American Education | 1.927** | 0.033** | 0.224** | 0.147** | 0.042** |
| | (0.684) | (0.009) | (0.107) | (0.057) | (0.009) |
| Other Western Education | 1.263* | 0.019* | −0.212* | 0.145$^{+}$ | 0.046** |
| | (0.672) | (0.011) | (0.117) | (0.095) | (0.018) |
| Hierarchical Education | 0.801$^{+}$ | 0.018** | 0.068 | 0.047 | 0.024** |
| | (0.595) | (0.009) | (0.096) | (0.056) | (0.007) |
| Economic Development | 0.059 | 0.011** | 0.037 | 0.076** | 0.013** |
| | (0.242) | (0.004) | (0.051) | (0.026) | (0.004) |
| Oil Producer | −0.590 | −0.022$^{+}$ | −0.064 | −0.165** | −0.022** |
| | (0.570) | (0.015) | (0.123) | (0.081) | (0.010) |
| Executive Constraints | 2.241** | | 0.268* | 0.450** | |
| | (0.890) | | (0.157) | (0.113) | |
| Former British Colony | −0.642 | 0.003 | −0.170** | −0.088* | −0.004 |
| | (0.509) | (0.010) | (0.082) | (0.050) | (0.007) |
| US Ally | −0.019 | 0.010$^{+}$ | 0.108 | −0.118** | 0.0004 |
| | (0.496) | (0.007) | (0.085) | (0.051) | (0.008) |
| Ethnic Fractionalization | 0.007 | −0.011 | −0.237$^{+}$ | −0.139$^{+}$ | 0.010 |
| | (0.727) | (0.016) | (0.149) | (0.093) | (0.011) |
| Population | 0.062 | −0.004* | −0.029$^{+}$ | −0.092** | −0.003$^{+}$ |
| | (0.149) | (0.002) | (0.022) | (0.018) | (0.002) |
| Time in Office | 0.024 | 0.0004 | 0.019** | −0.001 | −0.001* |
| | (0.025) | (0.001) | (0.010) | (0.004) | (0.001) |
| DV Entering Office | | −0.104** | −0.224** | −0.255** | −0.161** |
| | | (0.020) | (0.029) | (0.031) | (0.025) |
| Constant | −4.626* | −0.014 | −0.170 | 0.004 | −0.029 |
| | (2.437) | (0.036) | (0.467) | (0.268) | (0.039) |
| Observations | 240 | 730 | 588 | 850 | 847 |
| $R^2$ | | 0.075 | 0.135 | 0.128 | 0.085 |
| Log Likelihood | -95.625 | | | | |

*Note:* **p<0.05,*p<0.1, two-tailed; $^{+}$p<0.1, one-tailed. Model 1 estimated with logistic regression; models 2–5 estimated with OLS. Standard errors clustered by country.

# 4 Addressing Potential Endogeneity

We address possible leader self-selection in three ways: on theoretical grounds, referring to the existing literature on international students' choice of schools, and by implementing several research designs to rule out endogeneity—difference-of-means tests comparing elite/non-elite attendance to different university types; a natural experiment; replicating our main results on a subsample of political elites; implementing a matched design; testing whether structural conditions make Anglo-American leaders more likely to be chosen; replicating our main results on a subsample of leaders whose entry into office was as-if random owing to their predecessor dying of natural causes; and using an instrumental variable regression approach. We think that, taken together, our triangulation approach offers strong evidence against concerns arising from selection effects.

### Self-Selection by Liberal-inclined Leaders

We start by considering a future leader's decision to attend an Anglo-American university. A possible source of endogeneity is that would-be leaders self-select into colleges based on their existing ideological orientations, i.e. liberally-oriented would-be leaders may choose to attend Anglo-American universities, while those with more illiberal orientations may choose to attend college elsewhere.

The option to attend college abroad, especially at an Anglo-American institution, is only available to a select few members of the economic elite (that can afford the cost of tuition, travel and accommodations, etc).[2] The overwhelming majority of the leaders in our sample grew up in illiberal countries,[3] where the economic and political elites are inextricably linked: the leader or regime distributes economic rents in exchange for political support, and vice versa (Bueno de Mesquita et al. 2003). Both parties derive great benefits from the status quo and neither has an incentive to change it. The strength of the co-dependence increases with wealth and political power: since future leaders often come from the families of the top political elites, their families have the strongest incentive to preserve the status quo.[4] Therefore, following the self-selection logic, none of the elites that are grooming their children to become future political leaders have any incentive to expose their children to liberal values. If anything, students from illiberal countries that do attend Anglo-American universities are likely primed to be skeptical of liberal norms and values.

Their pro-status quo bias notwithstanding, a sizable proportion of illiberal elites do send their children to Anglo-American universities. Among the Chinese elites that sent their children to US universities are President Xi Jinping, whose daughter Xi Mingze (expected

[2]Scholarships for international students are relatively rare.

[3]In our sample, out of the leaders that were born in independent states, only 7% were in democracies and 15% in economically open states at the time they turned 18. These figures are calculated using V-Dem's *liberal democracy* measure and Wacziarg and Welch's (2008) trade liberalization data. We follow V-Dem recommendations for dichotomizing their liberal democracy measure, with those states scoring above 0.5 being coded as democratic and those below 0.5 coded as non-democratic.

[4]Indeed, most leaders in our sample of non-OECD countries grew up in relatively privileged families—financially, politically, and socially.

to be a future party chair and president) studied at Harvard, and Bo Xilai, a dismissed party boss, whose son also attended Harvard (International Business Times 2012). Children of other illiberal leaders that studied in the UK include Syria's Bashar al-Assad, Egypt's Gamal Mubarack, and Libya's Seif al-Islam, each groomed by their fathers as their successors (Danin 2011). Jordan's King Abdullah was educated at Sundhurst, a British military school, and Bahrain's crown prince Salman bin Hamad bin Isa al-Khalifa earned degrees from both American University and Cambridge (Danin 2011). The list goes on: Sergei Zheleznyak, deputy speaker of the Russian Duma, sent two children to study in Switzerland and one to the UK; Pakistani leader Perves Musharraf's son studied in the US, as did Lebanon president Saad Hariri, son of former president Rafik Hariri, and the daughters of both Philippines leader Marcos and Indonesian ruler Sukarno (Braw 2014).

Beyond these anecdotes, illiberal political elite's preference for Anglo-American education for their children is well-documented. According to a report by the International Business Times (2012), 90% of Chinese citizens with assets over $16 million, and 85% of those with assets over $1 million, say they will send their children to study abroad, with the US being the top choice, while 7 of the top 8 recipient countries are English-speaking (Switzerland is the exception).[5] The main explanation offered for preferring the US and other Anglo-American universities is that the education of a family's (often) only child is a critical investment, and that US universities are the gold standard. These families specifically mention that American universities offer cross-disciplinary fields and a focus on critical thinking. Parents complained that China's educational methods and standards for measuring student talent are too rigid compared to the US, and believed that US schools place greater value on all-around development and quality-oriented education.

The relationship between obtaining an Anglo-American education and family wealth and political power is also systematically supported in our data. Table A.4 tabulates leader's education backgrounds by their father's occupation.[6] Leaders from elite families (royalty or nobility, high-ranking government or military position, large plantation owner) are more likely than those from non-elite families to attend Anglo-American universities—the opposite of what we would expect, based on the liberal self-selection logic.[7] The liberal self-selection mechanism leads to the expectation of, on average, an inverse relationship between wealth

[5]Li and Feng (2018), using survey data, also find that Chinese students that study abroad are more likely to come from affluent families.

[6]Using data from Ellis, Horowitz, and Stam (2015), we code leaders as coming from *politically elite families* if their father's occupation was either: (a) royalty or nobility; (b) a high-ranking government position; (c) a wealthy land-owner; or (d) a high-ranking military position. The Ellis, Horowitz, and Stam (2015) data reduces the end of our time frame to 2004, so our sample including family backgrounds consists of 155 leaders with politically elite families out of a total of 608 leaders.

[7]There is no difference between leaders from elite families or non-elite families in attending other Western or non-Western universities. Father's occupation is also not a statistically significant predictor of whether a leader studies abroad or at a home university (p-value>0.35): about 59% of leaders with political elite backgrounds obtained their education at a foreign university (while 41% studies at a domestic university), compared to 54% of leaders from non-elite families (46% went to a domestic university). Finally, leaders from both elite and non-elite families receive military educations at roughly the same rate: 14% for elite backgrounds vs 17% for non-elite backgrounds (p-value>0.35).

Table A.4: Educational Background of Leaders from Elite and Non-elite Families.

| | Political Elite | Not Political Elite | P-value (t-test) |
|---|---|---|---|
| Attend Anglo-American University | 36 (23%) | 70 (15%) | <.05 |
| Attend Other Western University | 11 (7%) | 28 (6%) | >.69 |
| Attend Hierarchical (Non-Western) University | 48 (31%) | 164 (36%) | >.23 |
| No University Education | 60 (39%) | 191 (42%) | >.44 |
| Total | 155 (100%) | 453 (100%) | |

and connectedness to the ruling regime and attending an Anglo-American institution (i.e., those who derive fewer benefits from the regime are more likely to support liberal reform).

The results in Table A.4 show that, if anything, another type of selection effect may be at work—that in which the wealthy status-quo elites are more, not less, likely to send their children to Anglo-American institutions. This indicates that (1) the choice of school may be driven by factors other than ideology, e.g., prestige, and (2) the illiberal elites are either unaware of or discount the possible socialization effects of attending a liberal institution. The latter implication is rather intuitive, though somewhat outside of the scope of the current study. The former implication is widely supported in the literature (Mazzarol and Soutar 2002; Cebolla-Boado, Hu, and Soysal 2018; Aslanbeigui and Montecinos 1998).

According to surveys of international students, university quality and prestige are the deciding factors in their choice of university (Mazzarol and Soutar 2002; Aslanbeigui and Montecinos 1998). A survey by Mazzarol and Soutar (2002) showed that large majorities of international students (over 79%) chose to study abroad to obtain a better quality education. They also find that, compared to domestic students, international students treated university reputation, quality, and alumni network as more important to their choice of where to study. Cebolla-Boado, Hu, and Soysal (2018) used data from 120 British universities and found prestige was, by far, the strongest predictor of the number of Chinese international students, explaining 8 times more of the variation than the second highest predictor (costs).

A strong focus on reputation among international students creates an obvious bias towards famous and highly ranked universities. Parents from all over the world want to send their children to highly ranked schools (Kaba 2012). Though many countries seek to develop world-class universities, such institutions tend to cluster in a small set of countries (Marginson 2006; Guri-Rosenblit 2015; Curaj et al. 2015). The US (32 of the top 100, 54 of the top 200) and the UK (29 of the top 200) dominate the list of world-class universities; overall, the US, UK, Canada, and Europe make up 75% of the top 200 ranked world universities (Kaba 2012). A survey by Institute of International Education and US State Department of prospective study-abroad students from 11 countries (Vietnam, India, Mexico, Thailand, Hong Kong, Brazil, Germany, Turkey, UK, Nigeria, and South Africa) found that 75% had the US as their first choice; the next three spots were the UK (8%), Canada (5%), and Australia (3%) (Wojciuk 2018). The US had significantly higher ratings for having the widest range of schools and programs, highest quality higher education system, and being welcoming to foreign students, with its main disadvantage being high tuition.

Given the overwhelming demand to attend Anglo-American universities, as well as the large number of high quality schools within this educational model, it is no surprise that 42% of all students crossing borders to study do so in either the US or UK, with another 14% going to other English-speaking countries whose universities also follow the Anglo-American model (Marginson 2006). In other words, most students want to attend the top universities—which are more likely to follow the Anglo-American model—and these schools select which students to admit. Thus, the opportunity to attend an Anglo-American university—as well as internalize the classical liberal content making up the curriculum—is determined primarily by factors other than ideology. And given the strong correlation between the family's status-quo bias and the ability to afford to send an offspring to an Anglo-American university, the distribution of the ideology of would-be leaders at Anglo-American institutions is likely skewed illiberal, at least on the first day they arrive on campus.

### Accounting for Endogeneity using Research Design

While in the previous section, we used the data and the literature to rule out self-selection on theoretical grounds, in this section we take an alternative approach. We start with the premise that self-selection may, in fact, be at work, and implement several research designs that help isolate the causal effect of our primary theoretical variable (Anglo-American learning model), even in the presence of self-selection in the full sample.

### A Natural Experiment

First, as described in the manuscript, we take advantage of a natural experiment opportunity resulting from the overwhelming number of applications at top ranked universities that happen to be located countries with either Anglo-American or other Western education models. The differences in the empirical results for the Anglo-American and other Western institutions can be interpreted as the causal effect of educational background (i.e., the liberalization, rule of law, and financial openness outcomes in Table 4 of the manuscript).

### Political Elite Sub-Sample

Second, we replicate our analysis on the subset of the data that constitutes an especially "hard test" of our theory, if the results are driven by student self-selection: leaders from the families of the political elite (as defined earlier using data obtained from Ellis, Horowitz, and Stam (2015)). We expect that leaders in this subsample are the least likely to implement liberal reforms, as they and their families derive the greatest benefits from the status quo. If liberal bias is the selective mechanism at work, leaders from these families should be the least likely to be affected. The results of this additional analysis, displayed in Table A.5, replicate our general finding that, even for this subset of leaders, attending an Anglo-American institution increases the likelihood of liberal reform in trade, rule of law, and democracy.

Table A.5: Tertiary Educational Model and Political Outcomes, Subset of Politically Elite Families.

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Trade Liberalization | Rule of Law | Financial Openness | Human Rights | Liberal Democracy |
| | (1) | (2) | (3) | (4) | (5) |
| Anglo-American Education | 2.012** | 0.048** | −0.024 | 0.001 | 0.063** |
| | (0.874) | (0.018) | (0.224) | (0.140) | (0.028) |
| Economic Development | 0.569 | 0.027** | −0.154+ | 0.168** | 0.014+ |
| | (0.543) | (0.008) | (0.119) | (0.067) | (0.011) |
| Oil Producer | 0.922 | −0.063** | 0.335+ | −0.179 | −0.017 |
| | (1.221) | (0.024) | (0.216) | (0.190) | (0.031) |
| Executive Constraints | 0.009 | | 0.389 | 0.298 | |
| | (1.573) | | (0.562) | (0.303) | |
| Former British Colony | 1.581 | −0.028* | −0.666** | −0.090 | −0.022 |
| | (1.375) | (0.016) | (0.198) | (0.119) | (0.019) |
| US Ally | 1.334 | −0.0004 | 0.050 | −0.052 | −0.010 |
| | (1.403) | (0.012) | (0.203) | (0.119) | (0.021) |
| Ethnic Fractionalization | −1.262 | 0.022 | 0.775** | −0.071 | 0.022 |
| | (1.842) | (0.029) | (0.332) | (0.215) | (0.039) |
| Population | −0.208 | 0.006+ | −0.130** | −0.072+ | 0.003 |
| | (0.332) | (0.004) | (0.064) | (0.050) | (0.006) |
| Time in Office | 0.042 | 0.002* | −0.010 | 0.001 | −0.002+ |
| | (0.055) | (0.001) | (0.021) | (0.007) | (0.001) |
| DV Entering Office | | −0.113** | −0.231** | −0.260** | −0.246** |
| | | (0.037) | (0.091) | (0.087) | (0.071) |
| Constant | −5.177 | −0.230** | 2.206* | −0.980+ | −0.057 |
| | (4.719) | (0.078) | (1.167) | (0.663) | (0.087) |
| Observations | 56 | 133 | 67 | 142 | 142 |
| $R^2$ | | 0.246 | 0.316 | 0.153 | 0.169 |
| Log Likelihood | -23.315 | | | | |

*Note:* **p<0.05,*p<0.1, two-tailed; +p<0.1, one-tailed. Model 1 estimated with logistic regression; models 2–5 estimated with OLS. Standard errors clustered by country.

## A Matched Design

Third, we implement a matched design. The idea is that, although the potentially offending variable—a would-be leader liberal bias—is unobservable, it may correlate and follow the same empirical distribution as the observed ones, such as *former British colony* or *US Ally*. If this assumption holds, performing the analysis on a sample matched of the observable covariates would allow for recovering unbiased estimates of the treatment variable (Imai, King, and Stuart 2008, 483–485). In our case, this assumption seems fairly reasonable, e.g., there is a likely positive correlation between leaders studying at an Anglo-American university if they are from a former British colony or a US ally due to either self-selection or because they simply have more opportunities to do so through exchange programs or streamlined visa processes.

We use coarsened exact matching to pair the observations from the full sample on all independent variables, other than the treatment (attending an Anglo-American university) (Iacus, King, and Porro 2011, 2012).[8] The resulting sample consists of pairs of observations

[8]Coarsening consists of dichotomizing or multi-chotomizing of all continuous variables prior to matching to increase the number of matches (Iacus, King, and Porro 2011, 2012). The number of thresholds used for coarsening is optimized to achieve the balance between the treatment and control groups.

Table A.6: Tertiary Educational Model and Political Outcomes, Matched Sample.

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Trade Liberalization | Rule of Law | Financial Openness | Human Rights | Liberal Democracy |
| | (1) | (2) | (3) | (4) | (5) |
| Anglo-American Education | 1.642** | 0.015* | 0.297** | 0.132** | 0.021** |
| | (0.751) | (0.009) | (0.115) | (0.054) | (0.010) |
| Economic Development | −0.024 | 0.015** | 0.068 | 0.007 | 0.017** |
| | (0.365) | (0.007) | (0.074) | (0.032) | (0.007) |
| Oil Producer | 1.289+ | −0.004 | −0.140 | −0.170* | −0.016 |
| | (0.992) | (0.012) | (0.164) | (0.099) | (0.016) |
| Executive Constraints | 1.486 | | 0.181 | 0.535** | |
| | (1.633) | | (0.319) | (0.203) | |
| Former British Colony | −2.841** | −0.012 | −0.274** | −0.149** | −0.022** |
| | (1.371) | (0.012) | (0.108) | (0.070) | (0.009) |
| US Ally | −0.666 | 0.015+ | 0.078 | −0.075 | 0.010 |
| | (0.809) | (0.010) | (0.116) | (0.065) | (0.009) |
| Ethnic Fractionalization | −2.180+ | −0.035+ | 0.037 | −0.255** | −0.005 |
| | (1.563) | (0.027) | (0.205) | (0.119) | (0.017) |
| Population | 0.093 | −0.011** | −0.066** | −0.120** | −0.006** |
| | (0.373) | (0.003) | (0.031) | (0.022) | (0.002) |
| Time in Office | 0.115 | 0.004** | 0.022 | 0.003 | 0.004** |
| | (0.125) | (0.002) | (0.018) | (0.012) | (0.002) |
| DV Entering Office | | −0.104** | −0.208** | −0.189** | −0.165** |
| | | (0.030) | (0.038) | (0.041) | (0.043) |
| Constant | −2.426 | 0.028 | −0.166 | 0.847** | −0.023 |
| | (2.950) | (0.049) | (0.698) | (0.283) | (0.050) |
| Observations | 87 | 336 | 296 | 378 | 378 |
| $R^2$ | | 0.130 | 0.143 | 0.117 | 0.117 |
| Log Likelihood | -31.623 | | | | |

*Note:* **p<0.05,*p<0.1, two-tailed; +p<0.1, one-tailed. Model 1 estimated with logistic regression; models 2–5 estimated with OLS. Standard errors clustered by country.

(leaders) that have the same (coarsened) values on all covariates. The treatment group consists of leaders that went to an Anglo-American school, whereas the control group consists of their exact (coarsened) matches that did not attend an Anglo-American institution. We allow for multiple matches per case and discard the unmatched observations. The results of this matched analysis are presented in Table A.6 and support our finding that leaders with Anglo-American education are more likely to implement liberal reforms than those without.

Taken together, this discussion and results provide a clearer view of the processes that lead to the treatment assignment in our study. We see no systematic evidence that leaders may self-select in colleges based on their ideological predisposition. If anything, the opposite may be true: attending Anglo-American institutions is a privilege that is almost exclusively available to the status-quo elites rather than their (possibly more liberal) opposition. This type of selection effect, of course, induces a conservative bias, making is more difficult for us to find support for our hypothesis. Interpreting our main results through the lens of a natural experiment in the size of the "treatment dose" indicates that, among the subset of students attending Western universities, there is variation in liberal policy reform between leaders that attended Anglo-American universities to compared to those that attended other Western universities. Our robustness checks using the "hardest test" and matching designs also provide further evidence for our theory.

### Structural Conditions

Endogeneity may also arise if countries that are already on the path to liberalization are more likely to choose leaders educated at Anglo-American institutions. In other words, changing structural conditions create a type of path dependence, where reforms make it easier for liberal-minded leaders to enter office. If these liberal-minded leaders are more likely to be educated in Anglophone or other Western countries, then our results may be attributing previously initiated policy changes to the education of subsequent leaders.

We address this source of endogeneity in three ways: first, we explore whether leaders with Anglo-American educational backgrounds are more likely to be selected once liberalizing reforms have been implemented. Here, we treat leader education as the dependent variable and *DV* $\Delta$ *by Previous Leader* as the key independent variable. If a selection process arising from is indeed at work, we would expect that policy changes (liberalization) implemented by the previous leader would increase the probability that a leader with Anglo-American education enter office—we test this by using these new variables, along with some controls, as predictors of the next leader's education.

The results are presented in Table A.7. We estimate separate models for democracies (models 1–3) and non-democracies (4–6), and for leaders with each of education background: *Anglo-American*, *Other Western*, and *Hierarchical*. Looking at both democratically-elected and non-democratically selected leaders accounts for both whether Western-educated leaders are more likely to be elected after reforms are underway, as well as subjects our theory to a "hard test"—we would expect that winning coalitions in autocracies are unlikely to intentionally choose liberal reformers that could change the existing distribution of resources. We follow the recommendations of the V-Dem team and treat states with a value greater than 0.5 on the *liberal democracy* scale as being democratic.

Focusing on the five *DV* $\Delta$ *by Previous Leader* variables, there is little systematic evidence that states are more likely to choose leaders with specific educational backgrounds in a way that would bias our main results. Anglo-American educated leaders—our primary theoretical variable of interest—are not significantly more likely to take office, in either democratic or autocratic regimes, following liberal reforms; the only statistically significant result a *negative* effect on financial openness, which would make it *more difficult* for leaders with Anglo-American educational backgrounds to come to office. Leaders with other Western educational backgrounds are less likely to be elected following reform in rule of law. Conversely, leaders with *Other Western* education are more likely to come to power following democratic reforms (in both pre-existing democracies and autocracies), which is evidence of possible structural selection effect for *Other Western*-educated leaders. Despite this, we did not find evidence that leaders with other Western educations are associated with liberal policy reform in our main analysis for four of the five policy outcomes. These results do suggest, however, that previous findings that leaders with Western educations *writ large*—rather than just Anglo-American ones—may be associated with greatest degree of democratic reform, should be taken with a grain of salt.

Table A.7: The Effect of Prior Liberalizing on Next Leader's Education.

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | AA Elected | Other West. Elected | Hier. Elected | AA Selected | Other West. Selected | Hier. Selected |
| Economic Development | −0.087 | −0.096 | 0.322** | −0.083** | −0.004 | 0.194** |
| | (0.106) | (0.062) | (0.145) | (0.042) | (0.023) | (0.046) |
| Oil Producer | −0.321 | 0.080 | 0.158 | −0.175 | 0.034 | 0.050 |
| | (0.211) | (0.061) | (0.203) | (0.113) | (0.071) | (0.149) |
| Former British Colony | 0.487** | 0.084 | −0.419** | 0.180** | −0.062 | 0.035 |
| | (0.149) | (0.098) | (0.139) | (0.091) | (0.045) | (0.118) |
| US Ally | 0.319** | −0.093 | −0.109 | 0.425** | −0.044 | −0.123 |
| | (0.125) | (0.077) | (0.163) | (0.086) | (0.050) | (0.096) |
| Ethnic Fractionalization | 0.831** | −0.672** | −0.286 | 0.209 | 0.081 | −0.353** |
| | (0.300) | (0.288) | (0.423) | (0.140) | (0.085) | (0.162) |
| Population | −0.019 | −0.002 | 0.025 | −0.024 | −0.030* | 0.039 |
| | (0.029) | (0.028) | (0.035) | (0.029) | (0.017) | (0.029) |
| Prior Leader's Δ in Trade | −0.038 | 0.142 | −0.001 | −0.098 | 0.014 | 0.173 |
| | (0.191) | (0.090) | (0.186) | (0.089) | (0.057) | (0.113) |
| Prior Leader's Δ in Rule of Law | 0.232 | −1.086** | 1.054 | 0.143 | −0.092 | −0.253 |
| | (0.700) | (0.486) | (0.693) | (0.426) | (0.170) | (0.370) |
| Prior Leader's Δ in Financial Openness | 0.059 | 0.031 | −0.104* | −0.078* | 0.027 | 0.002 |
| | (0.066) | (0.039) | (0.057) | (0.043) | (0.025) | (0.050) |
| Prior Leader's Δ in Human Rights | −0.180 | 0.021 | 0.108 | 0.041 | −0.036 | 0.128** |
| | (0.146) | (0.044) | (0.167) | (0.041) | (0.035) | (0.048) |
| Prior Leader's Δ in Liberal Democracy | −0.127 | 0.955** | −0.703 | 0.100 | 0.590* | −0.580 |
| | (0.435) | (0.393) | (0.519) | (0.455) | (0.346) | (0.398) |
| Constant | 0.663 | 1.185** | −2.311 | 0.805* | 0.350 | −1.222** |
| | (1.140) | (0.553) | (1.601) | (0.430) | (0.245) | (0.332) |
| Observations | 52 | 52 | 52 | 142 | 142 | 142 |
| Log Likelihood | -21.847 | 17.667 | -28.821 | -60.784 | -8.722 | -80.545 |

*Note:* **p<0.05,*p<0.1, two-tailed. All models estimated with logistic regression. Standard errors clustered by country.

Liberal reforms also have no effect of the probability of electing/selecting leaders with hierarchical educational backgrounds, with two exceptions: autocracies are less likely to elect leaders educated at a hierarchical institution following increases in financial openness, and autocracies are more likely to select leaders educated at a hierarchical institution following improvements in human rights protections. Overall, there is little evidence that liberal reforms increase the probability of electing/selecting a leader with a more liberal education background.

Second, we look at turnover arising from leaders dying of natural causes while in office. The timing of death is as-if random, in that the timing of death and succession is exogenous to the policy outcome variables (Jones and Olken 2005; Krcmaric, Nelson, and Roberts 2020). We follow Jones and Olken (2005) and include only those leaders that took office following a regular process. Within our data, there are 67 such leader changes. Among the subsample, 10 are from the Americas, 20 from Asia, 6 from Eastern Europe, 13 from the Middle East and North Africa, and 18 from sub-Saharan Africa. Temporally, leaders within the subsample are distributed relatively evenly, with 3 that started their tenures during the 1940s, 6 during the 1950s, 8 during the 1960s, 12 during the 1970s, 11 during the 1980s, 11 during the 1990s, 7 during the 2000s, and 9 during the 2010s. Among the subsample, leaders with no education are observed at frequency greater than expected (22 out of 67, or 33%) compared to those leaders whose predecessor did not die of natural causes in office (198 our of

914); a difference-of means tests show that this difference is statistically significant ($p < .07$, two-tailed). Conversely, none of the frequencies of the other educational backgrounds are observed at a statistically different rate between those leaders whose predecessor's died of natural causes in office and those whose did not.

Given the small sample size, we include only the *DV entering office* as a control in our analysis. In addition, the sample size necessitates a change in one of our dependent variables—*Trade Liberalization*—in order to have enough observations to recover reasonable estimates. Recall that trade liberalization is measured as a binary variable, where states are coded as 1 if none of 5 conditions of a closed economy outlined by Wacziarg and Welch (2008) are met[9] and, owing to the overwhelming tendency of states to stay open once they have transitioned from a closed economy, our sample included only leaders with closed economy when they took office. Among leaders that took power in a regular process owing to their predecessor's natural death, there are only eighteen observations.

Instead, we use a proxy measure that captures a key observable implication of trade liberalization: imports as a percent of total trade flows. While a focus on policy is preferred, owing to the more direct control that a leader has on it compared to outcomes, an increase in the proportion of imports of the course is a relatively straightforward implication of domestic trade liberalization. In contrast to other trade and developmental models, such as mercantilism or either import substitution or export-oriented industrialization, liberal trade models treat imports as reducing opportunity costs and consider unilateral liberalization as economically beneficial on its own.[10] Therefore, we expect that leaders that liberalize to have a relative rise in imports. Moreover, in comparison to alternative measures, imports as a percentage of total trade flows is the one most directly implicated by government policy and least sensitive to other external factors. Conversely, an alternative measure like trade as a percent of GDP is an implication of not just government policy but also many external factors that are outside of a leader's control, such as a country's location, its economic size, the economic size and growth rates of its neighbors, as well as macro global economic conditions.

The results of this additional analysis are displayed in Tables A.8 and are consistent our finding that attending an Anglo-American institution increases the likelihood of liberal reform in trade, rule of law, and democracy. The coefficients for the other two outcomes, while not statistically significant at conventional levels, are in the expected direction. Given the very small sample size for successors of leaders that died from natural causes and followed a regular process, these results are suggestive, especially taken together with the results from our previous tests.

[9]The five conditions—any of which is sufficient to treat an economy is closed—are: average trade tariffs of $\geq$40%, non-tariff barriers $\geq$40% of trade, black market exchange rate depreciated by $\geq$20% relative to exchange rate during the 1970s and 1980s, a state monopoly on major exports, or a social economic system as defined by Kornai (2002) (Wacziarg and Welch 2008, 190).

[10]This argument was first laid out by Smith ([1776] 2003) and is offered as the standard "trade is good for consumers" supply and demand open market–logic laid out in most introduction to economics, introduction to international relations, and introduction to international political economy textbooks (see, for example, Mankiw (2020, Ch 3), Frieden, Lake, and Schultz (2021, Ch 7), and Oatley (2019, Ch 3)).

Table A.8: Tertiary Educational Model and Political Outcomes, Predecessor Died.

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Alt. Trade Measure | Rule of Law | Financial Openness | Human Rights | Liberal Democracy |
| | (1) | (2) | (3) | (4) | (5) |
| Anglo-American Education | 0.052* | 0.093** | 0.004 | 0.148 | 0.045* |
| | (0.030) | (0.031) | (0.230) | (0.197) | (0.023) |
| DV Entering Office | −0.195** | −0.115** | −0.081 | −0.242** | −0.128** |
| | (0.067) | (0.049) | (0.066) | (0.062) | (0.050) |
| Constant | 0.112** | 0.063** | 0.064 | −0.085 | 0.034** |
| | (0.037) | (0.017) | (0.111) | (0.083) | (0.013) |
| Observations | 58 | 48 | 39 | 67 | 65 |
| $R^2$ | 0.169 | 0.203 | 0.041 | 0.192 | 0.124 |

*Note:* **p<0.05,*p<0.1, two-tailed; $^{+}$p<0.1, one-tailed.

Table A.9: Additional Tertiary Educational Models and Political Outcomes, Predecessor Died.

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Alt. Trade Measure | Rule of Law | Financial Openness | Human Rights | Liberal Democracy |
| | (1) | (2) | (3) | (4) | (5) |
| Anglo-American Education | 0.058* | 0.085** | −0.003 | 0.078 | 0.048* |
| | (0.033) | (0.032) | (0.262) | (0.208) | (0.025) |
| Other Western Education | 0.0004 | 0.031 | −0.174 | 0.179 | 0.035 |
| | (0.043) | (0.038) | (0.399) | (0.287) | (0.037) |
| Hierarchical Education | 0.014 | −0.031 | 0.034 | −0.233$^{+}$ | −0.0003 |
| | (0.026) | (0.024) | (0.244) | (0.170) | (0.020) |
| DV Entering Office | −0.196** | −0.119** | −0.087 | −0.254** | −0.126** |
| | (0.070) | (0.049) | (0.070) | (0.063) | (0.051) |
| Constant | 0.106** | 0.072** | 0.068 | −0.014 | 0.032** |
| | (0.039) | (0.020) | (0.154) | (0.109) | (0.015) |
| Observations | 58 | 48 | 39 | 67 | 65 |
| $R^2$ | 0.173 | 0.255 | 0.048 | 0.229 | 0.137 |

*Note:* **p<0.05,*p<0.1, two-tailed; $^{+}$p<0.1, one-tailed.

We further replicate this analysis in Table A.9, this time including the other education models. These results highlight that the effect of education on each outcome is unique to Anglo-American educational background only. There is no evidence of any effect of other Western or hierarchical education models exerting any liberal effect on policy outcomes.

Third, we apply instrumental variable (IV) regression to account for either self-selection or structural sources of endogeneity. IV regression allows us to rule out endogeneity as long as the instrumental variable meets two conditions: exogeneity and relevancy (Wooldridge 2016). Our instrument for Anglo-American education is whether a leader attended boarding school. The variable *Boarding school*, were obtained from Ellis, Horowitz, and Stam (2015), and is coded as 1 if a leader attended a boarding school, and 0 otherwise. Our instrument meets the exogeneity requirement, as there is no theoretical reason to expect future policy preferences to be directly affected by whether a child attended a boarding school (a decision the child generally has only minimal role in). There is also no reason to expect any relationship between a leader's boarding school attendance and the structural conditions

surrounding their entry to office. The instrument also meets the relevancy assumption, as boarding schools tend to improve the prospects of their pupils' admissions to Anglo-American universities.[11]

Since the endogenous variable we are instrumenting is binary, we adopt appropriate maximum likelihood analog to the standard a two-stage least squares by estimating a series of endogenous treatment-effects models (Heckman 1978; Maddala 1983; Wooldridge 2010). The idea is that fitted values for the endogneous treatment variable (Anglo-American education) are obtained from a probit regression (regressed on all exogenous variables and the instrumental variable *boarding*).[12] These fitted values are then used in place of the original treatment variable in the outcome equation.[13]

The results for the outcome equation of each of these models are reported in Table A.10. The instrumented Anglo-American education variable is statistically significant in all models. These results indicate that Anglo-American education exerts an independent affect on each policy outcome.

In sum, we address endogeneity using a variety of research designs. We first employ difference-of-means tests to demonstrate that leaders from wealthy, illiberal families are actually more likely to attend Anglo-American universities. Next, we apply three research designs to further account for self-selection on the part of liberal-inclined leaders—a natural experiment arising from institutional differences in Western institutions unbeknowst to liberal-inclined leaders; a subsample of wealthy, illiberal leaders; and a matched sample—to show leaders with Anglo-American educational backgrounds are more likely to liberalize than leaders with other educational backgrounds. Finally, we implement three research designs to account of structural conditions that may impact the selection of liberal-inclined leaders—we model whether previous liberalization by makes Anglo-American leaders more likely be be selected into office; look at a subsample of leaders that assumed office via regular processes after the natural death of their predecessor; and apply an instrumental variable approach. Across each of these various approaches, we find little evidence that the central finding that education models affect policy outcomes—and, in particular, that leaders with Anglo-American educational backgrounds are the most likely to liberalize—are driven by either self-selection or structural conditions.

[11] Exogeneity assumption, is of course, theoretical and cannot be tested. The relevancy assumption is supported: *Boarding school* has a positive and statistically significant effect ($p < .01$) on attending an Anglo-American university.

[12] We do not include *Other Western* and *Hierarchical* in the first-stage estimates, since these education models are alternatives to *Anglo-American*.

[13] The trade liberalization model is estimated as a linear probability model in the second stage. This is appropriate since the linear probability model recovers consistent estimates of the average treatment effect for the instrumented variable in the second stage for both linear and nonlinear instruments (Heckman 1978, 946–947; Agrist 2001, 8).

Table A.10: Educational Models and Political Outcomes, Instrumental Variables.

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Trade Liberalization | Rule of Law | Financial Openness | Human Rights | Liberal Democracy |
| | (1) | (2) | (3) | (4) | (5) |
| Anglo-American Education | $0.198^{+}$ | $0.053^{**}$ | $1.284^{**}$ | $0.677^{+}$ | $0.122^{*}$ |
| (instrumented) | (0.136) | (0.024) | (0.408) | (0.416) | (0.070) |
| Other Western Education | 0.009 | $0.033^{*}$ | −0.078 | $0.284^{**}$ | $0.088^{**}$ |
| | (0.115) | (0.018) | (0.308) | (0.137) | (0.021) |
| Hierarchical Education | 0.061 | 0.011 | 0.219 | $0.137^{+}$ | $0.058^{**}$ |
| | (0.061) | (0.012) | (0.185) | (0.093) | (0.014) |
| Economic Development | −0.023 | $0.021^{**}$ | −0.018 | $0.099^{**}$ | $0.019^{**}$ |
| | (0.031) | (0.006) | (0.088) | (0.044) | (0.006) |
| Oil Producer | 0.004 | $-0.034^{**}$ | 0.170 | −0.068 | −0.016 |
| | (0.081) | (0.013) | (0.245) | (0.128) | (0.017) |
| Executive Constraints | 0.130 | | −0.058 | 0.043 | |
| | (0.140) | | (0.399) | (0.233) | |
| Former British Colony | −0.018 | −0.011 | $-0.327^{**}$ | −0.105 | −0.017 |
| | (0.076) | (0.012) | (0.166) | (0.119) | (0.017) |
| US Ally | $0.122^{*}$ | 0.007 | −0.068 | $-0.161^{+}$ | −0.008 |
| | (0.070) | (0.011) | (0.177) | (0.098) | (0.015) |
| Ethnic Fractionalization | 0.004 | −0.019 | $-0.488^{+}$ | $-0.231^{+}$ | 0.001 |
| | (0.104) | (0.021) | (0.343) | (0.172) | (0.027) |
| Population | −0.012 | −0.002 | 0.008 | $-0.099^{**}$ | −0.002 |
| | (0.018) | (0.003) | (0.041) | (0.030) | (0.003) |
| Time in Office | 0.006 | −0.000 | $0.025^{*}$ | 0.001 | $-0.002^{**}$ |
| | (0.004) | (0.001) | (0.015) | (0.005) | (0.001) |
| DV Entering Office | | $-0.154^{**}$ | $-0.329^{**}$ | $-0.337^{**}$ | $-0.253^{**}$ |
| | | (0.029) | (0.056) | (0.046) | (0.055) |
| Constant | 0.246 | $-0.072^{+}$ | −0.102 | −0.162 | −0.068 |
| | (0.284) | (0.055) | (0.814) | (0.448) | (0.057) |
| Observations | 173 | 386 | 234 | 410 | 407 |

*Note:* $^{**}$p<0.05,$^{*}$p<0.1, two-tailed; $^{+}$p<0.1, one-tailed. *Boarding school* is statistically significant in each instrument equation.

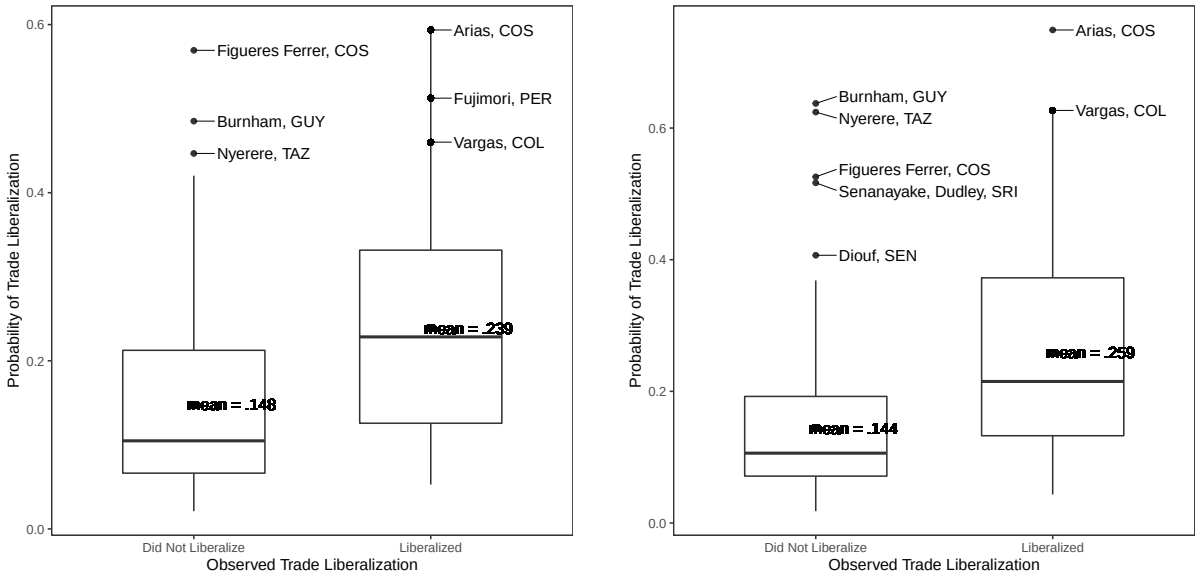
# 5 Case Fit and Outliers

We present a series of visualizations in Figures A.2a–A.6 to assess the fit of each of our main analyses from the manuscript, as well as to identify outlying cases. Figure A.2a displays the predicted probability of trade liberalization from the logistic regression using the three education models (model 1 of Table 4) on the y-axis, and the two observed outcomes (did not liberalize, liberalized) on the x-axis. The boxplots show the distributions in the predictions for each outcome, along with the conditional means.

As expected, the average predicted probability of trade liberalization for the cases that did liberalize are higher (Pr(Y=1)=0.239) than for those that did not (Pr(Y=0)=0.148). As a reference, the unconditional mean for whether a leader liberalized trade in the sample is Pr(Y=1)=0.163, suggesting that the model does a moderately good job separating cases. Among the cases that the model classified well (upper right and lower left quadrants) are Óscar Arias Sánchez of Costa Rica (PhD in political science, University of Essex), Alberto Fujimori of Peru (MA in mathematics, University of Wisconsin–Milwaukee), and Virgilio Barco Vargas of Colombia (PhD in economics, Boston University). Each of these leaders were educated at Anglo-American schools and implemented drastic reform to open the domestic economies of their countries.

According to this analysis, there are three cases of outliers (using the standard of 1.5 times the inter-quartile range). All three are cases that did not liberalize, despite having relatively high predicted probabilities of liberalization ($> 0.4$), according to our model. These include José Figueres Ferrer of Costa Rica (engineering, MIT), who implemented some liberal reform—e.g., improved rule of law, expanded suffrage and citizenship—but

Figure A.2: Model Fit and Outliers for Estimates of Trade Liberalization.




(a) Education Model

(b) Subject Studied

also nationalized the banking industry; Forbes Burnham of Guyana (law, London School of Economics), who despite the initial backing of the US and UK ended up nationalizing industries with large foreign-ownership and banning trade imports; and Julius Nyerere of Tanzania (MA in economics, Edinburgh University), an anti-colonialist and pan-Africanist who pursued an economic 'third way' during the Cold War that combined socialism with traditional communal living.

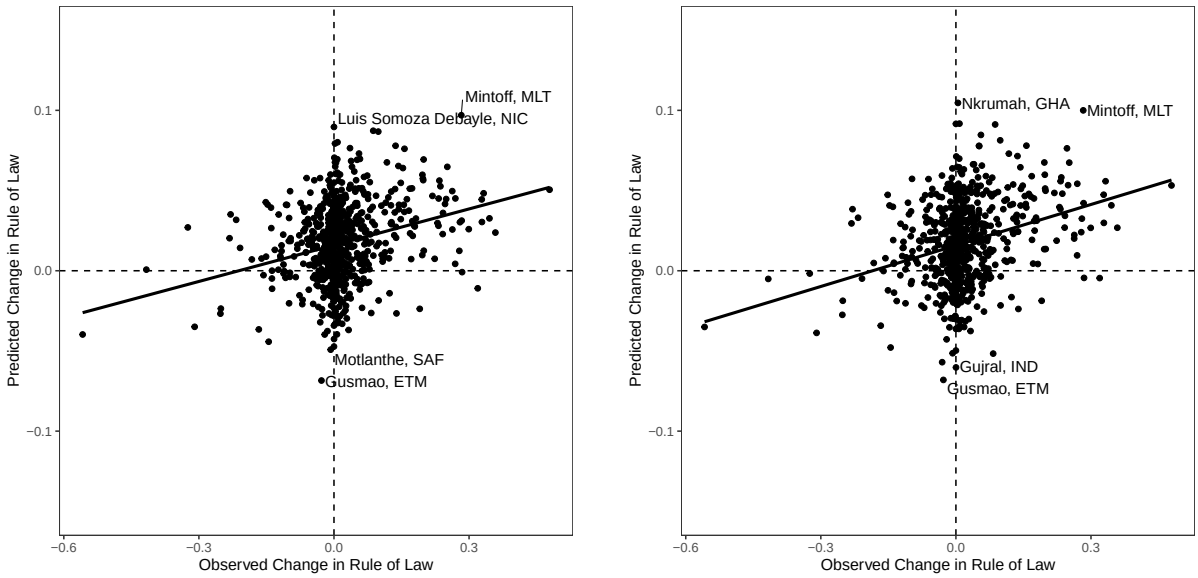
Next, we use a rough metric of classifying cases as "correctly classified" if (1) those that did not liberalize have predicted probabilities below the unconditional mean and (2) those that did liberalize have predicted probabilities above the unconditional mean. Observations that did not not meeting these conditions being classified as "incorrectly classified". According to the metric, the model is able to correctly classify 151 cases (63%), compared to incorrectly classifying 89 cases (37%).

Figure A.2b presents predicated probabilities of trade liberalization from the logistic regression using the subject studied while accounting for education model (model 1 of Table 5). In this case, the average predicted probability of trade liberalization for the cases that did liberalize increases (Pr(Y=1)=0.258) while the average predicted probability of trade liberalization for the cases that did not liberalize decreases slightly (Pr(Y=0=0.143). This indicates a slightly better fit in terms of case classification, compared to the first model. Using the same classification criteria as before, the number of correctly classified cases improves to 159 cases (66%) while the number of incorrectly classified cases decreases to 81 (34%).

Next, we present visualizations for the four outcomes that are estimated using OLS: rule of law (Figure A.3), financial openness (Figure A.4), human rights (Figure A.5), and liberal democracy (Figure A.6). The subfigures on the left display results from the education learning models (model 3, 5, 7, and 9 from Table 4), while those on the right also account for the field of study (model 3, 5, 7, and 9 from Table 5). In each figure, the y-axis reports predicted values for each outcome and the x-axis reports their observed values, overlayed with the corresponding lines of best fit. The largest outliers are labeled.

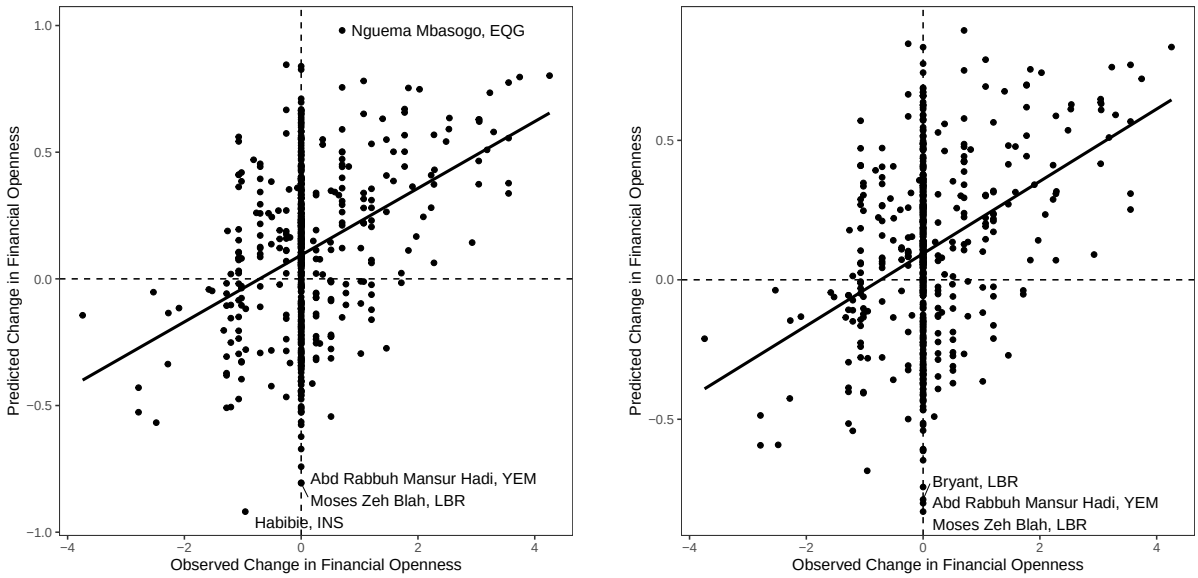
These figures highlight two points: first, it is evident that each of the models does a fairly good job of estimating the general trend in the data. The models are able to correctly predict the direction of changes in policy, though they often under-estimate the magnitude. Second, there is clear evidence of a strong status quo bias (the crowding around the x=0 line); most of the cases experienced small or no policy changes. In fact, the largest outliers are the cases, for which the model incorrectly predicts a change in policy, but one is not observed, rather than cases where the predicted policy change is substantially in the wrong direction (the relative dearth of cases in the upper left and lower right quadrants).

Figure A.3: Model Fit and Outliers for Estimates of Rule of Law.



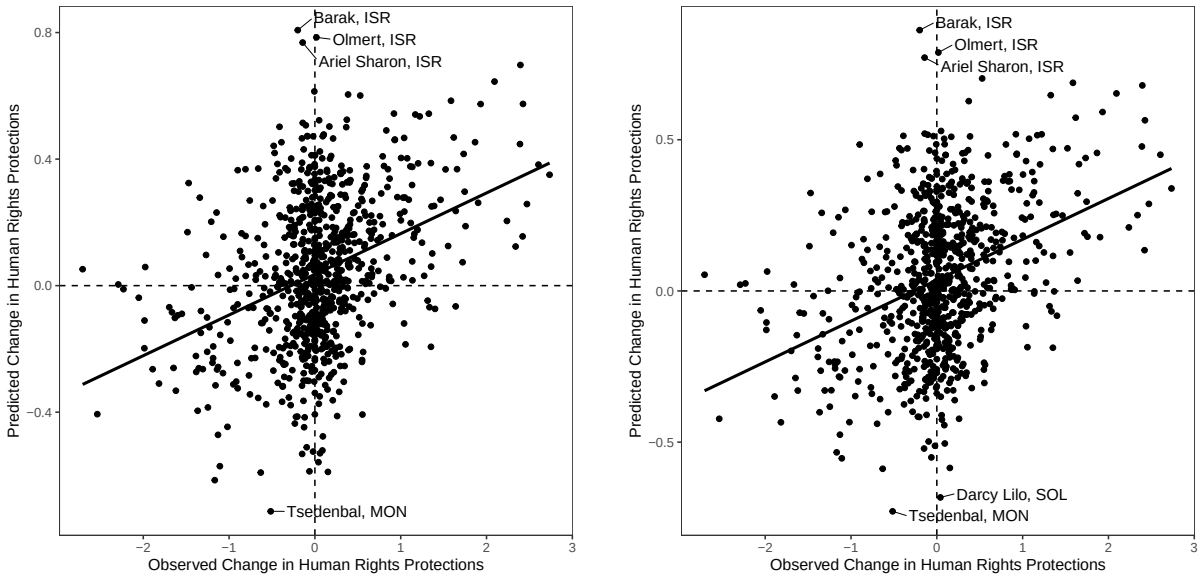

(a) Education Model (b) Subject Studied

Figure A.4: Model Fit and Outliers for Estimates of Financial Openness.



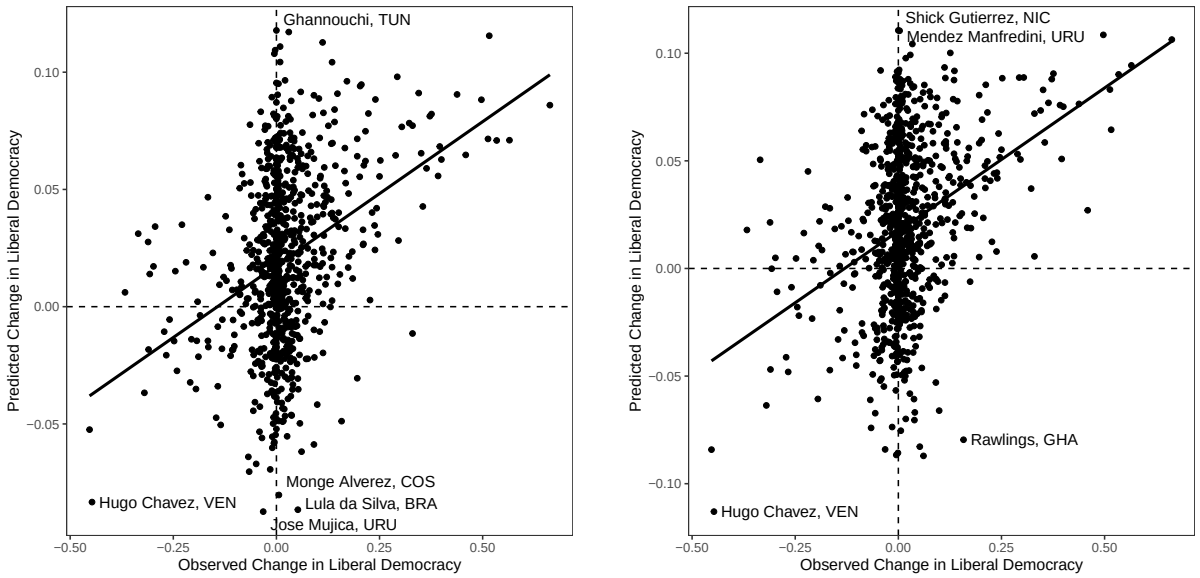

(a) Education Model (b) Subject Studied

Figure A.5: Model Fit and Outliers for Estimates of Human Rights.




(a) Education Model (b) Subject Studied

Figure A.6: Model Fit and Outliers for Estimates of Liberal Democracy.




(a) Education Model (b) Subject Studied

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