

Universities and Democratization*

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This Draft: September 4, 2018

Abstract

What is the effect of universities on democratization? Existing research has shown the democratizing effects of mass-level literacy and educational attainment but not specifically assessed the effects of elite education. We argue that elite education is as or even more important as a driver of democratization. Higher education offers alternative ruling elites the ability to forge social ties among themselves, acquire organizational skills, and engage in the production of ideological frames necessary for political collective action. Using original data on all universities in the world, we show that the number of universities exerts an independent and positive effect on democratization. This effect is largely driven by private universities as opposed to state universities. Incumbent ruling elites are more likely to control access to and content of higher education institutions when state control is high—private institutions on the other hand are powerful venues for alternative ruling elites to begin their political careers.

*Paper prepared for the Mini-Conference on Authoritarian Regimes at the Annual Meeting of the Southern Political Science Association. All remaining mistakes are our own.

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1 Introduction

What is the role of education for democratization? Existing research has argued that mass literacy and educational attainment are important pre-requisites or drivers of democracy (Dewey, 1916; Lipset, 1959; Benavot, 1996; Feng & Zak, 1999; Sanborn & Thyne, 2014). Mass education generates an attitudinal shift towards more liberal values (Almond & Verba, 1963), allows for the questioning of traditional authority structures, and elevates the collective action potential of the population (Glaeser *et al.*, 2007). Empirical evidence for the importance of mass education for democracy has been found at the macro-structural level (Feng & Zak, 1999; Sanborn & Thyne, 2014) and the individual micro-level (Hillygus, 2005; Berinsky & Lenz, 2011; Larreguy & Marshall, 2016; Wantchekon *et al.*, 2015).¹ Even the pro-democracy effects of Protestant missionaries are argued to operate via the mechanism of mass literacy and education (Woodberry, 2012; Lankina & Getachew, 2012).

In contrast to this existing body of work, we ask what are the effects of *elite education* on democratization?² Elite education, specifically via the availability and access to universities, is distinct from mass-level attitudinal shifts induced by education and generates independent effects on the likelihood of democratization. Focusing on the role of elite education is necessary and important because elite cohesion is crucial for the reproduction authoritarian regimes. Authoritarian regimes stay in power (at least in part) by successfully avoiding schisms within the ruling coalition and repeatedly producing a class of regime insiders that

¹Although Croke *et al.* (2016) describe the possibility of “deliberate disengagement” of educated citizens in authoritarian regimes.

²Sanborn & Thyne (2014) also distinguish between primary and tertiary education but our analysis goes beyond their treatment by developing a different argument, employing different empirical measures, and covering a broader sample of cases.

act as loyal agents of the regime.³ In the same vein, challenges to authoritarian regimes are often issued by rivaling or newly emerging elites that are excluded from access to power (Haggard & Kaufman, 2012). Recent work on the contractarian origins of democracy argues that democracy is more likely to emerge when new economic elites demand credible protection from the predation by incumbent elites (Ansell & Samuels, 2014). Even mass opposition to authoritarian rule, like the Euromaidan in Ukraine 2013 or mass demonstrations in Tahrir square, typically does not materialize without the organizing efforts of a vanguard (Migdal, 1974; Popkin, 1979; Lichbach, 1995; De Mesquita, 2010).

We argue that elite education, via access to universities, especially for new economic and social elites removed from power, is a key contributor to democratization. Elite education matters for democratization for at least three reasons. First, similar to mass education, universities expose elites to liberal values and lead to attitudinal shifts that affect the preferences and behaviors of elites (Dahl, 1971; Gift & Krmaric, 2017; Horowitz *et al.*, 2015; Barcel, 2017). At universities elite actors can also engage in ideological labor that is required to support a future opposition movement. Investments in the development of a coherent political ideologies, like liberalism, communism, fascism, liberation theology or anti-colonial theory can pay powerful political dividends for the creation of political mass organizations. Second, university education imbues elites with skills to organize collective action. Organizing in student groups is a perennial feature of university life and offers the opportunity for elite actors to hone and practice collective action skills. Third, attending universities amplifies social connections within elite groups and fosters intra-elite cooperation. When new classes

³The literature on the Chinese Communist Party provides good examples in this regard (Guo, 2007; Li & Zhou, 2005; Xu, 2011; Shih *et al.*, 2012; Li & Zhou, 2005; Jia *et al.*, 2015).

of elites emerge, like a new bourgeois economic elite in 19th century Western Europe, shared experiences via a university education forges important social ties that can be exploited to solve coordination and collective action problems. Some opposition leaders, like the famous “*Arbeiterkaiser*” August Bebel, chairman of the 19th century German Social Democratic Party, emerge without university education. We contend, however, that more often rivaling, but currently excluded elites, rise to political prominence in part due to the social and organizational capital acquired in a university setting. Universities afford potential future ruling elites the opportunity to acquire skills for regime change and rule.

There is, however, an important caveat to this mechanism. Universities have traditionally also played an important role in supplying regimes with loyal and capable civil servants, being a part of the larger institutional fabric that allows for the reproduction of authoritarian regime elites (Riddle, 1993). Despite the historical origins of universities as religious institutions, states relatively quickly established firm control over higher education, largely with the purpose of training agents of the state (Riddle, 1993; Regg, 2004). This regime control over universities limits the ability of regime outsiders and emerging rival elites to leverage universities for the purposes outlined above. We argue that the democratizing effects of universities hinge on the degree to which states exert control in the higher education sector. In countries where university education is wholly supplied by the state, authoritarian rulers are unlikely to grant regime outsiders full and free access to universities. In contrast, where private universities are more prevalent, new elites are more likely able to acquire a university education, with strong consequences for the likelihood of regime change.

Why would authoritarian regimes ever allow the existence of or access to higher education, if it bears the prospect of opposition? Authoritarian leaders face a trade-off in that

universities also serve as engines of innovation and growth for the larger economy (Valero & Reenen, 2016; Cantoni & Yuchtman, 2014; Andrews, 2017). Especially universities with limited state involvement and control are more likely to produce path-breaking and paradigm shifting innovations than universities with state control focused on the survival of the authoritarian regime. This, however, as we argue also increases the chances of democratization, more so than public universities.

We test our argument using original cross-national data on the full record of all universities. We take the World Higher Education Database as our starting point, which supplies a full register of currently existing institutions of higher education around the world. We supplement this database with country-specific historical information on universities that existed but closed.⁴ We merge this information on the existence of universities to a panel of 193 countries, covering the years 1800-2015, although information on regime type and control variables is more completely observed from 1900-2015. We estimate the effect of the logged number, raw count, and per capita number of universities on the level of democracy, measured via the polity 2 score (Marshall *et al.* , 2009), the V-dem polyarchy score (Teorell *et al.* , 2016) and the dichotomous democracy measure by Boix *et al.* (2013). We control for confounding effects of population size, GDP per capita, average levels of schooling in the general population, inequality, the incidence of internal and external armed conflict, and national military capabilities as a measure of state capacity.

We document a statistically significant, robust, and substantively meaningful positive effect of the number of universities on the level of democracy. When we disaggregate the effect by public and private universities, we find that the democratizing effects of availability

⁴In the current version of the paper the historical information is only used for Europe.

of higher education are driven solely by private universities, whereas the number of public universities has no effects or even decreases the level of democracy. We confirm these results with a number of robustness checks.

Our paper makes at least three noteworthy contributions to the literature. First, we simultaneously broaden and deepen the debate around the effects of education on democratization. While the vast majority of research has focused on mass educational attainment, little thought has been given to the importance of elite education. We broaden this research agenda by focusing on the distinct effects of elite education via universities. We add to the debate by offering a new and nuanced theoretical argument as the specific mechanisms and conditions under which university education does and does not contribute to democratization. Second, this paper also adds to the larger discourse on the role of elites and elite coalitions in authoritarian regimes. By highlighting potential trade-offs autocratic rulers face in the management of elite human capital, we bring closer together research on authoritarian politics on economic development ([Przeworski *et al.*, 2000](#); [Acemoglu & Robinson, 2012](#)). Third, our paper makes a decidedly empirical contribution. Our findings document a distinct effect of elite education on democratization and call into question prior findings on mass educational attainment. Moreover, our data on the existence and characteristics of (nearly) all universities that ever existed offers a multitude of opportunities for future research.

2 Education and Democratization

Many scholars have argued that education is a key prerequisite for democracy ([Dewey, 1916](#); [Lipset, 1959](#); [Benavot, 1996](#)). First, education fosters human capital accumulation and secure

property rights, which leads to economic development and in turn promotes the emergence of democratic political institutions (see e.g. [Glaeser *et al.*, 2004](#)). Societies that are more educated and affluent therefore tend to adopt electoral rights and other democratic reforms and, eventually, transition to democracy. A lack of mass-level education might also generate grievances that lead to violent conflict and, eventually, regime change ([Thyne, 2006](#)). Macro-level, cross-country evidence largely finds a positive association between average levels of schooling and levels of democracy ([Papaioannou & Siourounis, 2008](#); [Barro, 1999](#); [Sanborn & Thyne, 2014](#); [Feng & Zak, 1999](#)). Some dissenting voices, however, question the robustness of this relationship once country-level fixed effects have been taken into consideration ([Acemoglu *et al.*, 2005](#)).

More focused on the micro-level mechanism, education may also affect democracy through its socializing influences on individuals (see e.g. [Lipset, 1959](#); [Almond & Verba, 1963](#)). Education enables a “culture of democracy” by raising the benefits (or lowering the costs) of political participation and social interactions, more generally. For example, via socialization and changing group incentives ([Lipset, 1959](#); [Glaeser *et al.*, 2007](#)). Hence, better educated citizens tend to be more attentive to politics, are more likely to alleviate collective action problems, and to mobilize in mass opposition movements, especially in autocratic countries ([Dahlum & Wig, 2017](#); [Hillygus, 2005](#); [Berinsky & Lenz, 2011](#); [Larreguy & Marshall, 2016](#); [Wantchekon *et al.*, 2015](#)). The legacy of mass education on democracy can also be traced in the context of post-colonial political development. The empirical association between the presence of Protestant missionaries and democratic regime type outside Western Europe is argued to be driven by the political consequences of increased literacy, educational attainment, and associated exposure to humanistic values and notions of self-governance ([Woodberry,](#)

2012; Lankina & Getachew, 2012).

Given the likely importance of education for political participation, conflict, and regime type, education has to be considered as a political decision that actors can manipulate for their own agenda (Ansell, 2010). The distribution of education (who get to be educated) is thus an important determinant of democracy and the quality of its political institutions. Societies with more equally distributed educational outcomes are more likely to adopt constraints on the executive, electoral rights, and higher targets of democracy (Glaeser *et al.*, 2004; Barro, 1999). In fact, Castell-Climent (2008) argue that accounting for the distribution of education mutes the effect of average years of schooling on democracy, one of the most influential findings in the extant literature. While increasing the supply of education to the masses may weaken the returns that the elite accrue from their own education (Ansell, 2010), there are contexts in which it is in the interest of the elite to promote education and initiate democratization (see e.g. Bourguignon & Verdier, 2000).

Education is a mass phenomenon and a central feature of social organization. As such it is and has been an integral part of the state apparatus, social order, and nation-building efforts (Lipset, 1959; Green, 1990; Ansell & Lindvall, 2013; Bandiera *et al.*, 2015). Education can be a powerful weapon for newly developing nations (Green, 1990). As Green (1990) contends, the development of education systems is a necessary condition for industrialization and one avenue for states to build an efficient bureaucracy and loyal subjects. Hollyer (2011) finds empirical support for the latter and shows that educational enrollment rates are a powerful predictor of the adoption of meritocratic reforms, especially in countries where the politically advantaged class is small and democratic participation is low (i.e., in more autocratic regimes).

The extant literature, however, has mostly focused on the effect of primary and secondary education. The role of universities has been largely ignored in this debate.⁵ This is a gap that ought to be filled.

In 1900, only 1% of college-age people in the world were enrolled in higher education institutions (Banks & Wilson, 2017). By 2000, about 100 million people, which represents almost 20% of the cohort, were enrolled in tertiary education (Schofer & Meyer, 2005). Moreover, universities matter for diffusion of beliefs, elite cultivation, and networking. For instance, individuals who are educated in Western universities are socialized to view democracy as a legitimate form of government (Dahl, 1971; Gift & Krcmaric, 2017; Horowitz *et al.*, 2015; Barcel, 2017). At the macro-level, we know that a significant association between university presence in a region and approval of a democratic system exists (Valero & Reenen, 2016).⁶ In contrast, individuals educated in universities in less democratic countries, such as China, may be less concerned about political and civil rights and the rule of law (see e.g. Wang, 2016). University education, by producing leaders of thought and of political organization, may also lead to organized movements for regime change and/or independence, like in East Africa (Mazrui & Tandon, 1967).

Historical evidence suggests that universities are closely associated with religion and politics, and over time, secular politics. The foundation of a university, particularly in early European societies, was one mean of asserting ideological dominance through control via the authority of institutional knowledge (Riddle, 1993). Universities can therefore provide

⁵An important exception are Sanborn & Thyne (2014), who consider the effects of mass-level and tertiary education simultaneously. We expand on their efforts and develop a more nuanced argument about the conditions under which and specific mechanism through which higher education affects democratization.

⁶The main focus of Valero & Reenen (2016) is the relationship between the number of universities and economic growth. They do consider support for democratic values as a causal channel for how universities affect economic growth, however.

ideological and professional support to the state. Even in contemporary times, irrespective of regime type, political aims are often cited as an educational goal (Glaeser *et al.* , 2007).

3 Elite Education and Democratization

The existing literature has articulated a number of mechanisms that link mass-level education to the likelihood of democratization but has yet to develop a specific argument about the role of elite-level education. At the same time, the historical and political science literature has emphasized the role of universities for state- and nation-building but has not sufficiently considered the downstream effects for political regime change. In this section, we develop a theoretical argument about the role of universities for democratization. Our argument emerges from the tension between a ruler’s need to use higher education to spur innovation, supply capable bureaucrats, and legitimize the regime, while trying to curb the rise of competing elites that could challenge the existing ruling regime.

Work on authoritarian politics has highlighted a number of trade-offs dictators face trying to secure their hold on power (Svolik, 2012, 2013; Egorov & Sonin, 2011; Rundlett & Svolik, 2016). Dictators need to carefully consider who to co-opt into their ruling coalition, who to empower to enforce the monopoly of violence, who to recruit as agents of the state, and how to ensure mass compliance. Universities play an important role for the latter two tasks. First, dictators typically face some form of minimal performance requirement. For example, they have to deliver economic rents for a small ruling coalition or, under some conditions, even broad-based economic growth and public service delivery for larger sections of society (Mesquita *et al.* , 2003). Dictators therefore need loyal and capable agents, i.e, civil servants, that can staff key state bureaucracies to manage the economy

and provide public services. Universities have historically played an important role as suppliers of civil servants to the state via training individuals in the practice of law (Riddle, 1993). In fact, rulers purposefully usurped control of universities for this purpose (Regg, 2010). Second, universities are also key in the production of religious and political ideologies, via the refinement of ideological and political thought and the associated training of disseminators, e.g., priests and teachers. Religious and political teaching in support of the regime are then deployed to generate legitimacy for autocratic regimes (Cantoni *et al.*, 2017; Alesina & Fuchs-Schndeln, 2007). For example, Christian theology played an integral role in justifying absolute rule in Europe and universities across Europe were core suppliers of regime-supporting thought (Regg, 2010). These two motivations provide autocratic rulers incentives to encourage the creation of universities but do not explain why dictators would tolerate autonomy and regime critical thinking in institutions of higher learning.

Distinct from training civil servants and generating regime-legitimizing ideologies, universities are also crucial engines of economic innovation. An emerging body of work has documented the important long-term effects of scientific progress, specifically produced in universities, for technological innovation and economic development (Valero & Reenen, 2016; Cantoni & Yuchtman, 2014; Andrews, 2017). Universities act as hubs of economic development by generating technological innovations, producing knowledge spill-overs, and facilitating the pooling of labor markets in university towns. Upper-tail human capital has important effects on economy development, distinct from mass-level education (Squicciarini & Voigtlander, 2015). We contend that the role universities as engines of innovation works best if the state exerts somewhat limited control over the day-to-day internal operation of institutions of higher education. Since innovation requires questioning of existing paradigms

and field-specific authority, limited regime oversight is likely to encourage more scientific innovation ([Acemoglu *et al.*, 2014](#)). Innovation also requires the intake of new human capital with different perspectives, mental frameworks, and heuristics ([Lazear, 1999](#); [Hong & Page, 2001](#); [Herring, 2009](#)), requiring universities to admit students from outside the narrow circle of the incumbent ruling elite.

We believe this principle extends to innovations in the field of political ideologies and theories of governance. Dictators use universities to produce regime-affirming ideologies and political thought but to remain effective, these ideological outputs require constant adaptation and refinement to a changing economic and social landscape. To generate innovative and effective regime ideologies or new governance approaches, regimes need to tolerate some minimal amount of independence and iconoclasm within the university setting (hence, e.g., the need for a norm of academic freedom). Dictators have to navigate a tight line in encouraging just enough scientific and political innovation via universities to maintain the regime. Too much control stifles innovation and limits the adaptability of the regime.

Consider, e.g., universities that are under tight grip of the regime, with state bureaucrats controlling the selection of teaching personnel, the intake of students, and content of instruction and research. We argue that in such an environment innovation will suffer at the expense of merely regime-replicating activities (e.g., take the outsized relevance of orthodox Marxist ideology in the curriculum of many universities of the Soviet bloc). Such an allocation of resources might replicate elites in support of the existing regime but offers only a limited ability to evolve, posing a different risk to regime stability in the long-run. Dictators that plan to use universities as a tool to produce effective civil servants, to generate persuasive ideologies that enhance regime legitimacy, and foster economic development have to tolerate

some minimal form of independence in universities.

On the other hand, too little control bears the risk of empowering rivaling elites to challenge the current distribution of power. Strong autonomy of universities brings with it possible seeds for regime change in the medium to long-run. By granting autonomy to universities and opening access to socio-economic elites outside the narrow circle of individuals in the ruling coalition, universities can become launching pads for an alternative ruling class.

Indeed, elites are crucial for regime change and democratization. Whereas mass uprisings are often a very visible and important element of democratization movements (Haggard & Kaufman, 2012), elite splits and elite-led challenges to autocratic rule are likely to be more important (O'Donnell *et al.*, 1986). Every revolution needs a vanguard (Migdal, 1974; Popkin, 1979; Lichbach, 1995; De Mesquita, 2010). We argue that newly emerging economic or social elites, that are not yet part of the existing regime's ruling coalition, are key to understanding democratization. It is those politically excluded elites, which are rising in economic or social power, that are vectors of democratization (Ansell & Samuels, 2014). Fearing expropriation by the incumbent regime, rising elites have an incentive to push for political reform to tie the hands of authoritarian regime and grant political representation. We believe that the eventual increase of *political* power of new elites is facilitated by universities. Rising elites will be, due to their economic and social resources, the first to pursue access to existing institutions of higher education. Universities, given their role as way stations to key state and social institutions, are a pathway to for politically excluded elites to advance within the existing regime. By attending universities these new elites may be incorporated into the existing regime but are also exposed to forces that can empower them to force regime change onto the incumbent regime.

First, given universities' role in the production of intellectual frameworks that are used to legitimize incumbent authoritarian rule, new elites have the opportunity to engage in intellectual labor themselves. By engaging with norms of academic discourse, especially the primacy of rational argument over social hierarchy, elites will adopt liberal and humanistic values themselves (Dahl, 1971). The prevalence of Enlightenment thinking played an important role in shaping elite's demand for regime change. Elite education and the density of knowledge elites haven been found to predict demands for democratization in the French Revolution and were drivers of subsequent expansions of mass education (Squicciarini & Voigtlander, 2016). Relatedly, existing research in international relations has shown that leaders with a university education show a stronger commitment to liberal values and are less likely to engage in conflict (Gift & Krmaric, 2017; Barcel, 2017).⁷

Doing so also increases the chances of producing intellectual innovations that question existing regime ideology. By acquiring and modifying intellectual frameworks of political rule, currently excluded elites gain the necessary understanding and vocabulary to demand institutional change from the current regime. Ideological innovation is not only necessary for rising elites to realize a general desirability of democratic rule and their own possible role as alternative ruling elites. It also enables the translation of abstract political thought into a mass-consumable ideology that can be deployed to facilitate collective action in the wider population. Universities are crucial for the production of possibly regime-challenging mass ideologies. They also supply possible alternative ruling elites with the necessary intellectual scaffolding to build political mass organizations, such as political parties, social movements or rebel groups, that can be the organizational vehicle for regime change.

⁷Though Horowitz *et al.* (2015) question this relationship.

Second, universities offer the opportunity for future elites to practice and hone collective action skills. Students at universities have always joined and participated in various associations internal to the university. By engaging in university associational culture, students become acquainted with the challenges of collective action and gain important practical experience. As students become exposed to potentially regime-challenging political thought, they also often become engaged politically outside the narrow university setting. Student groups are common participants in larger pro-democracy social movements. Since students have fewer constraints on their schedules, are armed with regime-challenging ideologies, and are aware as their potential role as vanguard and future status as ruling elite, they act as key agents of regime-challenging collective action.

Third, attending universities allows alternative ruling elites to forge deep social bonds and ties among themselves. By creating intra-elite ties, universities facilitate the creation of elite social networks that facilitate collective action in the future. Universities not only create ties among politically excluded elites but also facilitate the creation of bonds with elites that are part of the ruling coalition. These cross-elite faction ties can be especially important for regime change. While such ties can be exploited to co-opt rising elite into the incumbent regime, they are also an important avenue for regime outsiders to recruit allies within the ruling coalition and generate factional splits (O'Donnell *et al.* , 1986).

These three forces taken together endow elites with the ability to challenge an incumbent autocratic regime and make institutional reforms towards *democracy* more likely. We emphasize that it is movements towards democracy that become more likely and not simply regime change more generally. Given that universities feature a commitment to humanistic values, put an emphasis on innovation and questioning incumbent authority, adhere

to norms of self-governance, and empower currently excluded elite groups, we believe that regime change towards the political incorporation of new sections of society are more likely than mere coups.

Taken together, we argue that the presence of universities increases the chances of democratization or movements towards a democratic regime type:

H1: Universities increase the chances of democratization.

Given our initial discussion of an autocrat's use of universities as a tool for regime survival, we believe that the overall effect of universities is largely driven by universities with limited state control. Universities that are under the tight oversight of an autocratic regime are less likely to a) allow for innovation in political thought or governance approaches and b) block the recruitment of new elites into the higher education setting. Regimes exert control over universities in a variety of ways. By providing state funding, requiring accreditation by state bodies (e.g., consider the current conflict around Central European University in Hungary), regulating student access, being involved in the hiring of teaching personnel, granting legal protections of employment (e.g., tenure) and academic freedom or controlling the content of instruction, regimes can factually impose full control over universities. As argued above, regimes often have an incentive to tolerate some autonomy from state control to spur innovation. Given this trade-off between innovation and narrowly reproducing loyalty to the incumbent regime, dictators often opt for at least a modicum of autonomy for universities. Regimes that opt for full state control in the service of regime stability often suffer clear consequences in terms of scientific innovation. Most well-documented is the case of Nazi Germany. As the Nazi regime began to consolidate power, they purged Jewish, liberal, and left individuals from various societal institutions, universities among them. The

resulting exodus of human capital had dramatic long-term consequences for scientific innovation and contributed to Germany’s decline from the world’s leading university system at the end of the 19th century (Moser *et al.* , 2014; Waldinger, 2010, 2016). A similar process may potentially occurring in Turkey at the moment, though its outcomes are unclear.

State control over universities lies on a continuum between no autonomy and institutionally and financially assured independence from state authority. For the latter, consider the U.S. system of higher education. Well endowed private universities, governed by powerful board’s of trustees, with strong legal protections of academic freedom and tenure, grant American universities an unusual degree of autonomy and ability to educate alternative ruling elites. We argue that the three forces that contribute to a rivaling ruling elites’ ability to foster democratization are more powerfully at work in university systems with less state control:

H2: The democratizing effect of universities is driven by universities with less state control.

4 Research Design and Data

To investigate the theoretical argument, we require a measure of both our key concepts: the existence or density of universities in a given country and changes in regime type, i.e. democratization. To increase the robustness of our results, we rely on three different operationalizations of counting universities and three different measures of democracy measures, going back to the early 19th century.

Our first and main measure of *democratization* is the continuous measure of democracy created by the Polity IV Project (Marshall *et al.* , 2009). The *polity2* variable ranges ranges

from +10 (strongly democratic) to -10 (strongly autocratic). It is based on measures of competitiveness and openness of elections, the nature of political participation, and the extent of checks on executive authority.

Second, we confirm our results using the dichotomous democracy score from the *Boix, Miller, and Rosato (BMR) Political Regimes* data (Boix et al. , 2013). The variable is coded as a 1 if a country satisfies minimal conditions for contestation and participation (Dahl, 1971) and 0 otherwise. Specifically, democratic political regimes are defined as holding free and fair elections and satisfying a threshold value of suffrage. Democratization, according to the Boix et al. (2013) measure, is thus defined as a transition from zero to one.

Lastly, we use the electoral democracy index created by the *Varieties of Democracy (V-Dem)* project (Coppedge et al. , 1990). The V-Dem measure is another aggregate index, based on expert codings, and ranges from 0 (not democratic) to 1 (fully democratic). It is an operationalization of Dahl's notion of the core institutional guarantees for polyarchy and was developed by Teorell et al. (2016).

Since we are interested in assessing the effects of access to higher education on democratization, we need a measure that captures the presence of universities. Prior work that has distinguished the effects of higher from mass-level education, e.g., Sanborn & Thyne (2014), has relied on the share of the population aged 20-59 with tertiary education. This approach has two distinct drawbacks. First, there is limited availability of data in terms of country and time coverage. Second, our argument focuses on the role of small groups of alternative ruling elites. Whether 20% or 30% of a country's population has tertiary education will have little bearing on our proposed mechanism, whereas the presence of one or five universities will. Instead, to measure our main independent variable, we create a counter of the number

of universities in a given country-year. To construct this variable we first created a list of medieval universities in Europe prior to 1800 based on Regg (2010, 2004) and de Ridder-Symoens (2003, 1996). Next, we created a list of universities and their founding dates for all countries in the world based on the *World Higher Education Database (WHED)*. The *WHED* includes information on all universities that are currently accredited. We then combine the two lists. Since the vast majority of universities do not close after being opened in the first place, the list based on Regg (2010, 2004) and de Ridder-Symoens (2003, 1996) is near total subset of the cases covered in the *WHED*. We plan to extend the list of historical universities that have closed outside of Europe in future iterations.

Based on the list of universities and their founding dates, we code three variables: *Universities* is a count of how many universities a country has at a given point in time; 2. $\text{Log}(\text{universities})$ is the natural log of the total number of universities in a given country year;⁸ 3. *Universities pc* is the number of a country's universities in a given year divided by the population in thousands.

To test our more nuanced hypothesis about state control, we require a measure that distinguishes between universities that have more or less autonomy. As explained in Section 3, regimes employ a number of tools to exert control over universities. Official accreditation, funding, regulating access for students, setting legal protections for tenure and academic freedom, selecting teaching staff and proscribing educational content, a full accounting of regime control would require measures across all these different dimensions. To our knowledge, no such systematic data exists across countries or time periods. As an alternative, we rely on a crude proxy to distinguish universities with more or less state control. The *WHED*

⁸We add one to the count of universities prior to taking the natural log to avoid creating values of infinity.

does provide information on a university's status as *public* or *private*⁹, mostly based on the university's funding structure. While regimes can exert influence over private institutions via other regulations, we contend that this distinction captures some elements of autonomy from state involvement relevant to our argument. Using the WHED classification, we create the raw total count of public and private universities, as well as the corresponding logged and per capita measures. We create these measures for each country in our data set from 1800 to 2015.

We include several control variables to decrease the probability of biased estimates due to confounding. First, we include a measure of population size from the Maddison Project database (Bolt & van Zanden, 2014). We also gather indicators regarding average years of schooling (van Leeuwen & Li, 2014), in an effort to disentangle our results from the effects of primary and secondary education. We also control for GDP per capita, which was also taken from (Bolt & van Zanden, 2014). Next we include controls for the level of income inequality (and inequality squared), and the incidence of internal and international armed conflict from the Clio Infra Project.¹⁰ Lastly, we include controls for oil income taken from Haber & Menaldo (2011) and military capabilities from the National Material Capabilities dataset (Singer, 1988).

Our sample includes 193 countries from 1800 to 2015. In Figure 1 we show our counter of the number of universities around the world (left) and their split across different regions (right). The number of universities starts increasing substantially in the second half of the 19th century. The growth rate increases especially in the second half of the 20th century,

⁹The database also includes the category of *predominantly-public* and *private-for-profit*. We classify the former as *public* and the latter as *private* for the purposes of our analysis.

¹⁰www.clio-infra.eu

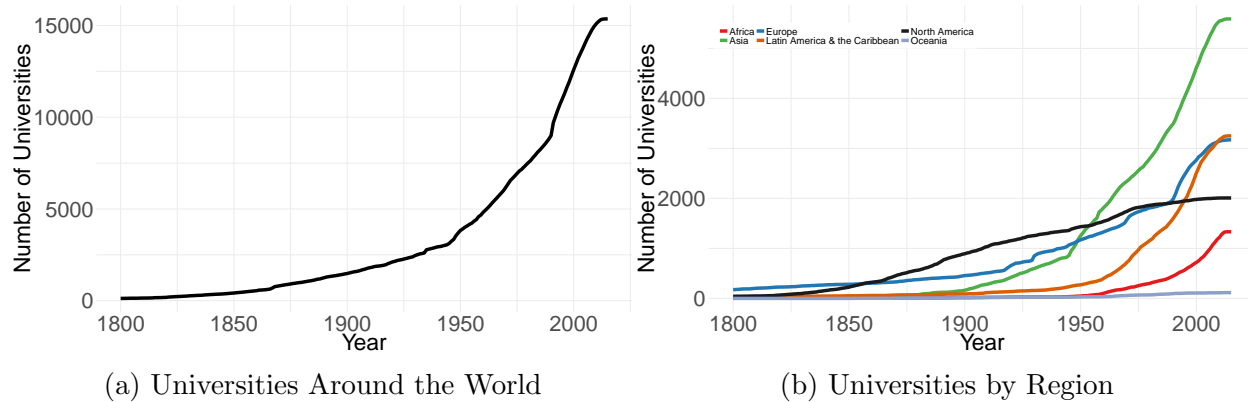


Figure 1: Number of Universities from 1800 to 2015

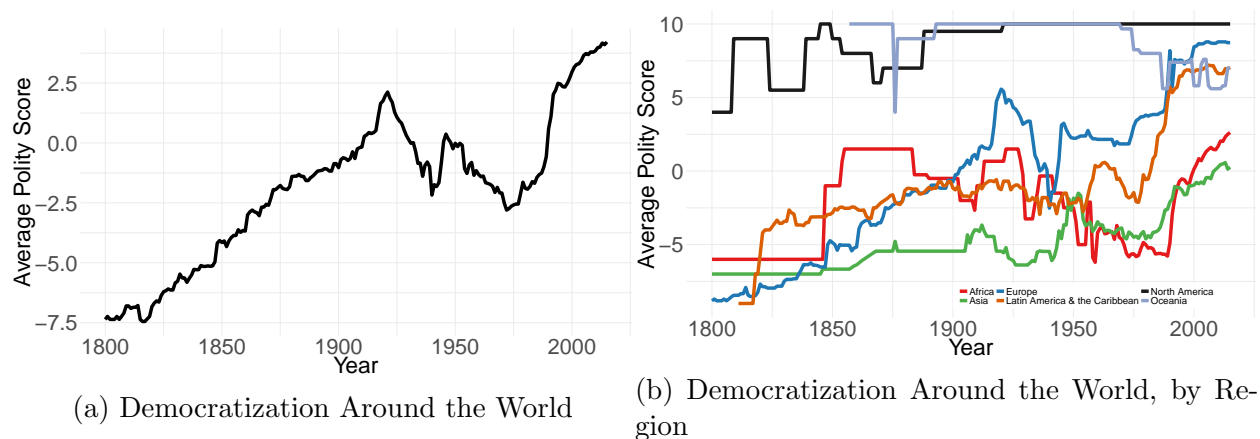


Figure 2: Democratization from 1800 to 2015

and becomes almost exponential. As expected, the early growth in universities is mostly due to the creation of universities in North America and Europe, but Asia caught up quickly in the latter half of the 20th century.

Figure 2 on the other hand shows our main dependent variables over time: the average polity score in the world (left) and its average for the five world regions. As with all measures of democracy, the average polity score in the world generally increased until the early 20th century. We can observe a decrease until the 1970s and then a continuous increase since. Figure 2b shows how the average polity scores differ by region, again North America precedes all other regions in terms of levels of democracy, followed by Oceania and Europe.

4.1 Research Design

In order to investigate our theoretical argument, we estimate panel models using the *polity2* democracy measure as our main dependent variable. We also primarily use the logged count of universities in a given country as our main independent variable. This is our preferred measure for two reasons. First, the raw count is quite skewed. Second, we believe that the per capita measure makes less theoretical sense, since our theoretical argument is based on the education of an elite network and not mass education. In the supplementary Appendix of the paper we present all models estimated with both the other measures of democracy (Boix-Miller-Rosato & V-Dem), as well as the two other operationalizations of the university counter (raw count & per capita measure).

Prior to estimating any statistical models, the plots in Figure 3 illustrate the bivariate relationships between our independent variable—the *logged university count*—and our main measure of democracy—*polity2*. The left plot shows the simple bivariate relationship for all observations in the data. While somewhat hard to see, due to the large number of points, we can generally observe a positive relationship between the two variables. The plot on the right (Figure 3b) shows the relationship between the two variables when averaged across the world for each year. While this mostly exemplifies the trend over time, it also shows a strong bivariate relationship between the two variables.

We specify the following model for the panel data:

$$y_{it} = \alpha_i + \gamma_t + \beta \mathbf{X}_{it} + \delta U_{it} + \epsilon_{it}, \quad (1)$$

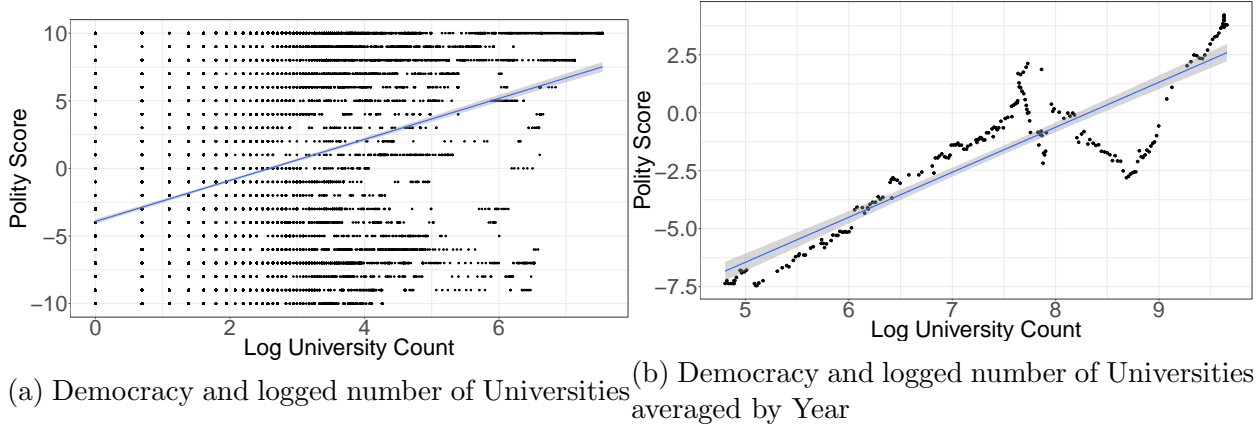


Figure 3: Democracy and Tertiary Education

where α_i and γ_t are country- and year-specific intercepts (fixed effects), $\mathbf{X}_{i,t-1}$ is a matrix of time-varying covariates, and β is a vector of the corresponding estimated coefficients. $U_{i,t-1}$ is our main variable of interest, the logged count of universities in country i at time $t - 1$ and δ is the main coefficient of interest. $Y_{i,t}$ is a country's democracy score, here *polity2*. Given that we are interested in the within country effects and to control for unobserved covariates at the country level, we include country fixed effects in all models. To control for potential *waves of democratization* (trends) all models include year fixed effects. We lag all independent variables by one year.

Based on our theoretical argument, we expect δ to be positive, i.e. showing a positive association between the number of universities in a given country and its democracy score. All results we present below are based on standard errors clustered at the country level.

5 Empirical Results

In Table 1 below we present the results from our first regression models, estimating the effect of logged number of universities on polity scores. Recall that due to the inclusion of country

fixed effects (α_i in Equation 1 above), the estimated effects are based on within country variation.

To provide a baseline result, the first column in Table 1 shows the results from the bivariate model, only including country and year fixed effects. Here, the coefficient of interest (on logged universities) is positive but very small and not statistically significant. In the second model we add controls for GDP per capita, logged population size, and the average years of schooling. These define the minimal set of controls we believe are necessary to estimate the effect of universities on democratization. In our view these variables (GDP, population, primary and secondary education) exert the greatest threat of inducing bias due to confounding. We therefore mostly focus on the results of the models with limited controls.

Once we add the three controls, the estimated coefficient for logged number of universities is substantially large, in the expected direction, and statistically significant at conventional levels. Surprisingly, the effect of average years of schooling is estimated to be negative (and not significant) in these models, similar to findings of [Acemoglu *et al.* \(2005\)](#). The coefficients for GDP per capita and logged population size are also found to be statistically indistinguishable from zero at the 5% level.

With regard to our main variable of interest, according to the model including the basic set of controls, a one unit increase on the logged number of universities is estimated to be associated with a 1.26 point increase in a country's polity score. Put differently, a one standard deviation increase in the logged number of universities (1.57) is associated with more than a one point jump on the polity score.

Lastly, column three in Table 1 shows the results when we include the full set of controls. Here, we add controls for inequality and inequality squared. The results provide some

Table 1: Democratization – Polity2

	Polity2	Polity2	Polity2
	(1)	(2)	(3)
log(Universities)	0.20 (0.42)	1.17* (0.64)	1.11 (0.80)
GDP pc		-0.0001 (0.0001)	-0.0004** (0.0002)
Log(Population)		-1.62 (1.42)	-6.19** (2.52)
Avg Years of Schooling		-0.13 (0.28)	0.22 (0.56)
Inequality			0.47** (0.21)
Inequality Squared			-0.005** (0.002)
Armed Conflict Internal			-0.07 (0.41)
Armed Conflict International			0.27 (0.50)
Oil Income pc			0.0002 (0.0003)
Military Capabilities			-20.55 (17.24)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	16,228	8,789	3,793
R^2	0.67	0.71	0.76

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

evidence of the concave relationship hypothesized by [Acemoglu & Robinson \(2001\)](#). Additionally, we control for armed conflict (both internal and external), oil income per capita, and state capacity (proxied by military capabilities). Neither of these controls substantially changes our results with respect to universities, though the coefficient size increases marginally.

In the Appendix we provide the results for the same models when: 1) the V-Dem or Boix-Miller-Rosato [2013](#) measures are used as the dependent variable (Tables [A.1](#) and [A.2](#); or 2) when we measure our variable of interest as the raw count or in per capita terms (Tables [A.3](#) and [A.4](#)). While the results across the models differ marginally, the effect of universities on democracy is estimated to be positive in all models that include some controls. The precision with which the coefficient is estimated, however, varies across these models. Aside from our main result, it is notable that we recover the concave relationship between inequality and democratization for all three measures of democracy.

All in all, the results in this section provide evidence that the number of universities in a given country are positively related with its level of democracy. While the precision of estimates varies across the different models, in general we find a positive (and mostly significant) effect, providing support for Hypothesis 1.

5.1 Private vs. Public

While the results above lend some credibility to the hypothesized effect of universities on democratization, the theoretical argument we provide above contains more nuance. As we contend, state control of universities can be important for leaders to minimize the potential effect on regime demise. In this section we therefore take a closer look at the proposed

theoretical mechanism by splitting the number of universities into two types: public and private institutions.

Table 2 shows the results from the same models estimated above but now we split our universities measure into two variables: the natural log of public and private universities in a given country-year.

First of, the results are stronger throughout all three models and across the different operationalizations of the independent and dependent variables. Whereas in the models in the previous section the strength of the coefficient and size of standard errors varies substantially, with the university counter separated by types the results are much more stable throughout.

Across all three models presented in Table 2, the effect of public universities is estimated to be negative. The uncertainty associated with these estimates, however, is large and none reach conventional levels of statistical significance. On the other hand, in line with the theoretical argument made above, the effect of private universities is substantially large and in the expected direction. The estimated effect is stronger than that for *all types of universities*. Moreover, the coefficient on private universities is statistically significant at the 1% level in all three models. These results are essentially the same when we subset our sample to the period after World War II, i.e. post 1950. Note also that these results are not due to the USA or Canada, when the two countries are excluded the coefficient on private universities decreases marginally but stays substantially large and significant at the 1% level.¹¹

Based on our model with the minimal set of controls and both public and private universi-

¹¹Results are also robust to a jackknife approach, excluding one country at a time.

ties separated, a one standard deviation increase in the logged number of private universities (1.48) would be associated with an increase of almost three points on the polity scale. Importantly, again these results are robust to estimating the same models using the other democracy scores as dependent variables (Tables A.5 and A.6 in the Appendix). Similarly, when we estimate the same models as presented in 2 with the two other operationalization of the independent variables: raw university count or in per capita terms, the results remain the same. These models are presented in Tables A.7 and A.8 in the Appendix.

Only in one of these specifications is the estimate for private universities insignificant at conventional levels. In the model with the full set of controls and using per capita university counts as the independent variable the standard errors increase substantially. There is a possibility, however, that this is due to the stark decrease in the number of observations, due to missingness in the controls.¹²

In splitting universities by their funding type, into private and public institutions, we are able to investigate our general theoretical argument in more detail. In contrast to the general results in the previous section, the empirical results presented here are both stronger, more robust, and in line with our theoretical expectations from Hypothesis 2. The estimated coefficients displayed in Table 2 and in the Appendix lend credence to the idea that state control over universities matters. As we show here, the positive (but somewhat less stable) effect of *all* universities on democratization is due to private institutions. Once we split universities into private and public, only private universities have a positive effect. Notably, the estimated coefficients for public and private universities do not change if we do not

¹²In future versions of this paper we will check the robustness of the results by first imputing missing values in the data.

Table 2: Democratization – Polity2

	Polity2	Polity2	Polity2
	(1)	(2)	(3)
log(Public Universities)	-0.94** (0.43)	-0.92 (0.73)	-1.24 (0.95)
log(Private Universities)	1.55*** (0.30)	1.90*** (0.42)	1.28** (0.54)
GDP pc		-0.0001 (0.0001)	-0.0004*** (0.0001)
Log(Population)		-1.63 (1.26)	-5.80** (2.38)
Avg Years of Schooling		-0.02 (0.26)	0.27 (0.53)
Inequality			0.36** (0.18)
Inequality Squared			-0.004* (0.002)
Armed Conflict Internal			-0.16 (0.41)
Armed Conflict International			0.55 (0.49)
Oil Income pc			0.0004 (0.0003)
Military Capabilities			-20.37 (18.63)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
<i>N</i>	16,228	8,789	3,793
<i>R</i> ²	0.68	0.72	0.76

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

control for the other type, suggesting that these results are not due to a high correlation between the two variables.

5.2 Leaders

Our analyses so far have focused on the overall effects of universities on the likelihood of democratization. In this section we briefly explore a secondary observable implication of our argument related to political leaders. If universities increase the chances of democratization by imbuing elites with liberal values, providing them with mass ideologies for mobilization, offering venues to practice collective action skills, and forge important social networks, then we would expect that leaders that come to power in the wake of movements towards democracy should be more likely to feature university education backgrounds than other leaders.

To explore this possibility, we rely on the LEAD data (Ellis *et al.* , 2015), which provides detailed background data for all national political leaders from 1875 to 2004. First, we distinguish leaders that are associated with movements towards democracy from all other leaders. To do so, we rely on the Varieties of Democracy data Version 8.0, which provides polyarchy scores from 1789 to 2017 (Coppedge *et al.* , 1990). We take the polyarchy score from the year before each leader’s entry to power, as identified in the LEAD data, and the polyarchy score the year after entry to power, to identify leaders that assumed office in the context of a shift towards more democracy. While not perfect, this approach broadly identifies leaders that rose to power either in the explicit context of a democratization movement or at least liberalized political institutions in their ascent to power. Out of a total of 2965 leaders in the LEAD data, 1545 assumed power and the polyarchy score of their country improved within one year. The LEAD data codes each leaders educational background into

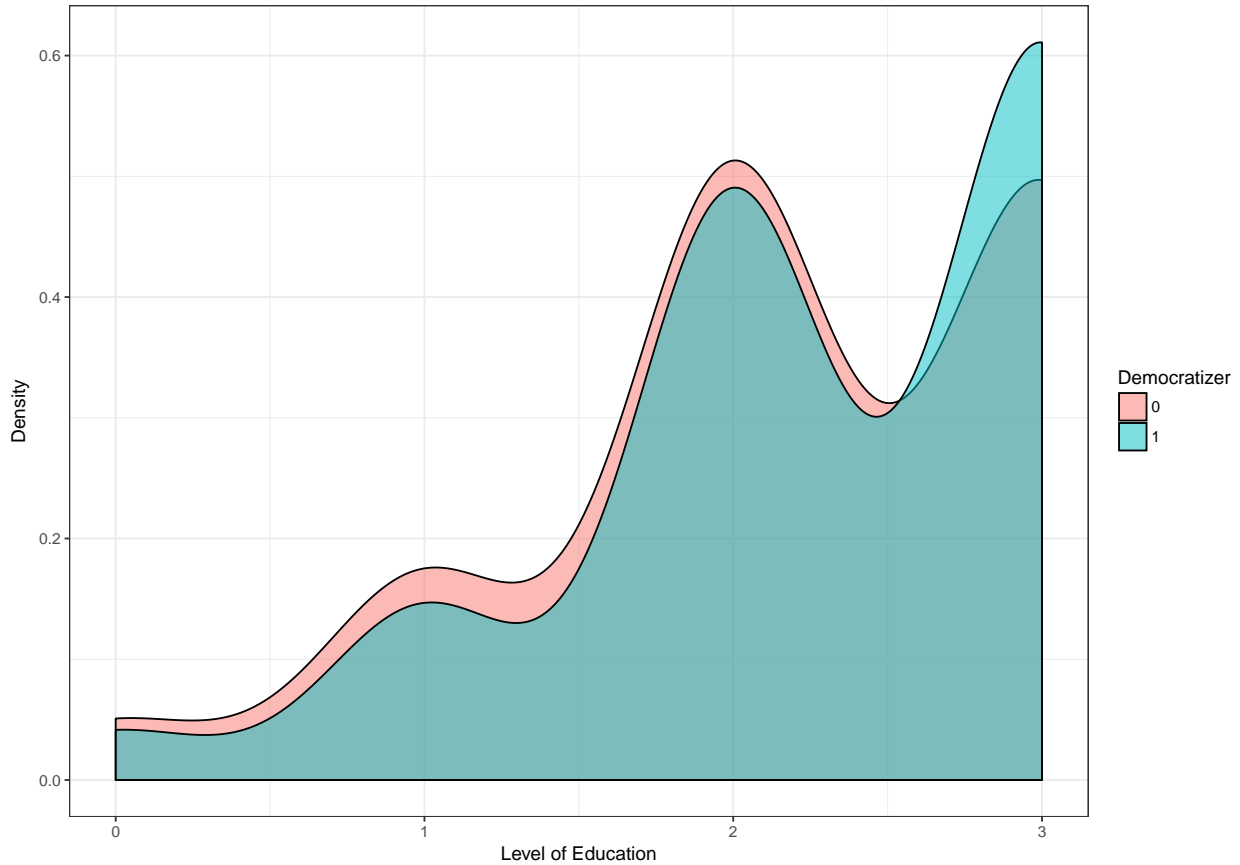


Figure 4: Education Levels of Leaders by Type of Institutional Change

four categories, ranging from primary (= 0), secondary (= 1), university (= 2), to graduate (= 3). The average education level of leaders coming to power as “democratizers” is 2.3 compared to 2.18 for all other leaders. The difference of 0.12 is statistically significant below the 1% level. Figure 4 shows the distribution of education levels by leader type. The figure nicely illustrates the increased density of leaders that are university graduates among the set of “democratizers”.

This difference survives a more stringent regression analysis, where we take the level of education as dependent variable and the democratizer status as predictor. Model 1 in Table 3 shows a simple bivariate regression. Model (2) adds country fixed effects, and Model (3) adds a number of leader-level control variables. Across all three models we find that leaders

that came to power in the context of a democratizing event, have higher levels of education.

Table 3: Leader Analysis

	Education Level	Education Level	Education Level
	(1)	(2)	(3)
Democratizer	0.12*** (0.03)	0.11*** (0.03)	0.06** (0.03)
Royalty			-0.27*** (0.09)
Military Service			-0.42*** (0.04)
Rebel			-0.22*** (0.04)
Gender			0.17 (0.16)
Physical Health			-0.15*** (0.06)
Mental Health			-0.60*** (0.16)
Constant	2.18*** (0.02)		
Country FE	No	Yes	Yes
<i>N</i>	2,639	2,639	2,633
<i>R</i> ²	0.01	0.20	0.29
Adjusted <i>R</i> ²	0.005	0.15	0.24
Residual Std. Error	0.80 (df = 2637)	0.74 (df = 2469)	0.70 (df = 2457)

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Standard errors are clustered at the leader level.

Another way of testing the same observable implication, is to look at the occupational backgrounds of democratizing leaders. Again, if our argument is correct, we should observe new elites coming to power that have occupational backgrounds associated with a university education. The LEAD data classifies occupational backgrounds of leaders into 18 categories: teaching, journalism, law, engineering, medicine, science agriculture, military, religion, labor, activist, career politician, writer, film / . music, economics, aristocrat / landowner, police, and interpreter. We take these 0/1 binary classifications as dependent variables and estimate simple fixed effects linear probability models (see tables B.9 and B.10 in the Appendix). We find a positive association between democratizing leaders and backgrounds in teaching,

engineering, medicine, activism, politics, writing, and economics—all backgrounds that are associated with a university education. In contrast, we find a negative associated with backgrounds in the police and military. These results support our proposed mechanism about the importance of elite university education for democratization.

5.3 Protest Events in Autocracies

As third piece of evidence we use data on the location and occurrence of protest events in autocracies. Based on our theoretical argument, we would expect protests to be more likely in the vicinity of universities. To test this implication we first generate a panel of the PRIO-GRID data set (Tollefsen *et al.*, 2012). Based on the geo-located university data we generate an indicator whether a given grid cell is home to any university, as well as a distance measure from each grid centroid to its closest university. As our dependent variable we use the newly released data on protest events in autocracies by ?. The MMAD data set covers all countries coded as autocracies by ? (69 in total) from 2003 to 2012. We subset our grid data to the countries and time period covered in the MMAD data. Next we use the protest event data to create an indicator of whether a mass mobilization event occurred in grid cell i in year t .

Based on the binary nature of the dependent variable and hierarchical structure, we estimate a Bayesian logit model with random intercepts for country and year. We are mainly interested in the association between the logged distance to the closest university with the occurrence of protest events. In addition, to our main independent variable, we also include grid cell level controls for population (measured in 2000), light intensity (proxying for income), share of mountainous terrain (measured in 2000), logged distance to the capital,

logged distance to the border, and travel time to nearest urban center. All control variables are taken from the PRIO-GRID data.

6 Conclusion

Universities play an important role for democratization. We contend that the exposure to liberal ideas, the opportunity to create new political ideologies and frameworks of rule, as well as the chance to practice collective action skills and forge important social ties empowers possible alternative ruling elites to become challengers to incumbent autocrats. By attending university, rising elites that are currently excluded from power gain the necessary tools to challenge the existing regime and push for democratizing reforms. Autocrats have to tolerate this risk by granting some form of autonomy to universities if they want to sustain scientific innovations and economic growth or be able to adapt their regime ideology and existing governance framework.

Existing research on the link between education and democracy has near exclusively focused on mass educational attainment and literacy. Using novel data on the near complete universe of universities, we show that the number of universities in a country is positively associated with democracy. This relationship is robust to a number of specifications and is largely driven by the effect of *private* universities, which have lower levels of state control. It is also the case that measures of mass-level education have no effect on the level of democracy after accounting for the effect of universities and country fixed effects. This suggests that the existing literature on education and democracy has largely misplaced its attention on mass-level attitudinal and behavioral changes at the expense of studying elites. Our theoretical argument suggests that it is the role of newly emerging elites that are crucial agents of democratization. Future work will have to unpack this mechanism further.

We have provided evidence for a positive association between the number of (private)

universities and democracy, controlling for country-level fixed effects, time trends, and a series of important confounding variables. Nonetheless, we do not claim evidence for a strictly causal effect. One potential issue is reverse causality, e.g., democracies are more likely to tolerate the creation of private universities. Additionally, we could have missed other unmeasured confounders that are present. In future extensions of this analysis, we consider three additional tests to substantiate these effects. First, using data on coup attempts, we will implement a falsification test to show that the number of universities has no effect on other forms of regime change besides democratization. Second, using leader-specific data from the LEAD dataset (Ellis *et al.* , 2015), we plan to test if new leaders that replace incumbents after democratizing regime changes are more likely to have attended university than other replacements. This would provide more direct evidence of our suggested mechanism. Third, we hope to exploit exogenous variation in the creation of universities in medieval Europe to address concerns of reverse causality.

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A Appendix

Table A.1: Democratization – V-Dem

	Vdem (1)	Vdem (2)	Vdem (3)
log(Universities)	0.01 (0.01)	0.04* (0.02)	0.03 (0.03)
GDP pc		0.0000 (0.0000)	–0.0000 (0.0000)
Log(Population)		–0.05 (0.05)	–0.12 (0.10)
Avg Years of Schooling		0.003 (0.01)	0.02 (0.02)
Inequality			0.02** (0.01)
Inequality Squared			–0.0001* (0.0001)
Armed Conflict Internal			–0.03* (0.01)
Armed Conflict International			–0.02 (0.02)
Oil Income pc			0.0000 (0.0000)
Military Capabilities			–1.09** (0.50)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
<i>N</i>	11,839	8,865	3,825
<i>R</i> ²	0.79	0.79	0.82

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.2: Democratization – Boix-Miller-Rosato

	Boix	Boix	Boix
	(1)	(2)	(3)
log(Universities)	-0.01 (0.02)	0.08** (0.04)	0.07 (0.07)
GDP pc		-0.0000 (0.0000)	-0.0000 (0.0000)
Log(Population)		-0.01 (0.10)	-0.37** (0.18)
Avg Years of Schooling		0.01 (0.02)	0.06 (0.04)
Inequality			0.03** (0.01)
Inequality Squared			-0.0002 (0.0002)
Armed Conflict Internal			-0.03 (0.03)
Armed Conflict International			-0.02 (0.04)
Oil Income pc			0.0000 (0.0000)
Military Capabilities			-0.21 (0.96)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	15,466	8,780	3,826
R^2	0.62	0.65	0.70

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.3: Democratization – raw count of Universities

	Polity2	Polity2	Polity2
	(1)	(2)	(3)
Universities	0.0001 (0.003)	0.003 (0.003)	0.01*** (0.002)
GDP pc		-0.0002 (0.0001)	-0.0005*** (0.0002)
Log(Population)		-1.00 (1.45)	-5.99** (2.49)
Avg Years of Schooling		-0.12 (0.27)	0.14 (0.53)
Inequality			0.43** (0.20)
Inequality Squared			-0.005** (0.002)
Armed Conflict Internal			0.02 (0.39)
Armed Conflict International			0.30 (0.47)
Oil Income pc			0.0003 (0.0003)
Military Capabilities			-8.77 (23.39)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
<i>N</i>	16,228	8,789	3,793
<i>R</i> ²	0.67	0.71	0.76

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.4: Democratization – Universities per Capita

	Polity2	Polity2	Polity2
	(1)	(2)	(3)
Universities pc	321.07** (162.16)	468.79* (246.76)	422.04 (320.37)
GDP pc		−0.0001 (0.0001)	−0.0004** (0.0002)
Log(Population)		−0.55 (1.43)	−4.79* (2.61)
Avg Years of Schooling		−0.15 (0.27)	0.22 (0.55)
Inequality			0.46** (0.20)
Inequality Squared			−0.005** (0.002)
Armed Conflict Internal			−0.06 (0.40)
Armed Conflict International			0.26 (0.48)
Oil Income pc			0.0001 (0.0004)
Military Capabilities			−22.92 (17.24)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
<i>N</i>	10,443	8,789	3,793
R ²	0.70	0.71	0.76

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.5: Democratization – V-Dem

	Vdem (1)	Vdem (2)	Vdem (3)
log(Public Universities)	−0.04*** (0.01)	−0.02 (0.03)	−0.03 (0.04)
log(Private Universities)	0.04*** (0.01)	0.06*** (0.01)	0.04* (0.02)
GDP pc		0.0000 (0.0000)	−0.0000 (0.0000)
Log(Population)		−0.05 (0.04)	−0.11 (0.10)
Avg Years of Schooling		0.01 (0.01)	0.02 (0.02)
Inequality			0.01* (0.01)
Inequality Squared			−0.0001 (0.0001)
Armed Conflict Internal			−0.03** (0.02)
Armed Conflict International			−0.01 (0.02)
Oil Income pc			0.0000 (0.0000)
Military Capabilities			−1.10** (0.54)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	11,839	8,865	3,825
R^2	0.80	0.80	0.82

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.6: Democratization – Boix-Miller-Rosato

	Boix (1)	Boix (2)	Boix (3)
log(Public Universities)	-0.10*** (0.02)	-0.07 (0.05)	-0.08 (0.07)
log(Private Universities)	0.10*** (0.02)	0.13*** (0.03)	0.08** (0.04)
GDP pc		-0.0000 (0.0000)	-0.0000 (0.0000)
Log(Population)		-0.001 (0.09)	-0.34** (0.17)
Avg Years of Schooling		0.02 (0.02)	0.06 (0.04)
Inequality			0.02 (0.01)
Inequality Squared			-0.0002 (0.0001)
Armed Conflict Internal			-0.04 (0.03)
Armed Conflict International			-0.01 (0.04)
Oil Income pc			0.0000 (0.0000)
Military Capabilities			-0.19 (1.07)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	15,466	8,780	3,826
R^2	0.64	0.66	0.70

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.7: Democratization – Raw Count

	Polity2	Polity2	Polity2
	(1)	(2)	(3)
Public Universities	−0.01 (0.01)	−0.01* (0.01)	−0.001 (0.01)
Private Universities	0.005 (0.01)	0.01** (0.005)	0.01*** (0.004)
GDP pc		−0.0002 (0.0001)	−0.0005*** (0.0002)
Log(Population)		−1.17 (1.44)	−6.03** (2.46)
Avg Years of Schooling		−0.13 (0.26)	0.12 (0.53)
Inequality			0.42** (0.20)
Inequality Squared			−0.005** (0.002)
Armed Conflict Internal			0.002 (0.38)
Armed Conflict International			0.26 (0.47)
Oil Income pc			0.0003 (0.0003)
Military Capabilities			−9.39 (22.45)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
<i>N</i>	16,228	8,789	3,793
<i>R</i> ²	0.67	0.71	0.76

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

Table A.8: Democratization – per capita

	Polity2 (1)	Polity2 (2)	Polity2 (3)
Public Universities pc	−335.79 (299.32)	−394.16 (382.50)	−34.18 (389.57)
Private Universities pc	641.28** (291.81)	882.42** (434.22)	581.68 (484.11)
GDP pc		−0.0001 (0.0001)	−0.0004*** (0.0002)
Log(Population)		−1.28 (1.44)	−5.37** (2.55)
Avg Years of Schooling		−0.08 (0.25)	0.24 (0.54)
Inequality			0.43** (0.19)
Inequality Squared			−0.005** (0.002)
Armed Conflict Internal			−0.11 (0.40)
Armed Conflict International			0.29 (0.48)
Oil Income pc			0.0002 (0.0003)
Military Capabilities			−21.96 (17.36)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	10,443	8,789	3,793
R^2	0.70	0.72	0.76

***Significant at the 1 % level.

**Significant at the 5 % level.

*Significant at the 10 % level.

B Leaders

Table B.9: Leader Analysis: Occupations

	Teacher	Journalism	Law	Engineering	Medicine	Science	Agriculture	Religion	Labor
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Democratizer	0.03*** (0.01)	0.01 (0.01)	0.02 (0.02)	0.02** (0.01)	0.01* (0.01)	0.0004 (0.003)	-0.004 (0.01)	0.003 (0.004)	-0.002 (0.01)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2,778	2,778	2,778	2,778	2,778	2,778	2,778	2,778	2,778
R ²	0.13	0.10	0.19	0.12	0.11	0.15	0.14	0.15	0.25
Adjusted R ²	0.07	0.04	0.14	0.06	0.06	0.09	0.08	0.10	0.20
Residual Std. Error (df = 2608)	0.32	0.24	0.42	0.18	0.18	0.08	0.18	0.12	0.18

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Standard errors are clustered at the leader level.

Table B.10: Leader Analysis: Occupations

	Activist	Politician	Writer	Film or Music	Economics	Aristocrat/Landowner	Police	Military	Interpreter
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Democratizer	0.02* (0.01)	0.05*** (0.02)	0.01* (0.01)	0.003 (0.002)	0.03*** (0.01)	0.01 (0.01)	-0.01** (0.004)	-0.09*** (0.02)	-0.0004 (0.001)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	2,778	2,778	2,778	2,778	2,778	2,778	2,778	2,778	2,778
R ²	0.27	0.33	0.13	0.06	0.11	0.33	0.12	0.21	0.12
Adjusted R ²	0.22	0.28	0.07	0.0003	0.06	0.29	0.06	0.16	0.06
Residual Std. Error (df = 2608)	0.28	0.39	0.22	0.05	0.22	0.21	0.10	0.37	0.04

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Standard errors are clustered at the leader level.