

The Societal Consequences of Higher Education

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Abstract

The advent of mass schooling played a pivotal role in European societies of the later nineteenth century, transforming rural peasants into national citizens. The late-twentieth-century global expansion of higher education ushered in new transformations, propelling societal rationalization and organizing, and knitting the world into a more integrated society and economy. We address four key dynamics: (1) Higher education sustains the modern professions and contributes to the rationalization of society and state. (2) The supranational and universalistic orientation of higher education provides elites with shared global cultural frames and identities, facilitating globalization. (3) Consequently, tertiary education provides a foundation for major global movements and sociopolitical change around diverse issues, such as human rights and environmental protection as well as potentially contentious religious and cultural solidarities. (4) Higher education contributes to the reorganization of the economy, creating new monetarized activities and facilitating the reconceptualization of activities distant from material production as economic. In short, many features of the contemporary world arise from the growing legions of people steeped in common forms of higher education. Panel regression models of contemporary cross-national longitudinal data examine these relationships. We find higher-education enrollments are associated with key dimensions of rationalization, globalization, societal mobilization, and expansion of the service economy. Central features of modern society, often seen as natural, in fact hinge on the distinctive form of higher education that has become institutionalized worldwide.

Keywords

comparative education, higher education, globalization, universities, political effects of schooling

Higher education has expanded enormously during the past century, in every part of the world (Douglass, King, and Feller 2009; Schofer and Meyer 2005). This has created a huge population of individuals schooled in institutions that carry a common rationalistic and universalistic culture. We analyze the aggregate consequences of this transformation, which represents the latest chapter in the evolution of the “schooled society” (Baker 2014).

Schooling is conventionally understood as a source of human capital and a basis for worker productivity and economic growth (Psacharopoulos 1984) or as a system for reproducing societal inequalities (Boudon 1973; Collins 1979). These

views overlook many aspects of schooling. Mass education in Europe was largely a political enterprise, not an economic one. Education was linked to reform movements that incorporated citizens into emerging nation-states (Maynes 1985; Ramirez and Boli 1987; Reisner 1922). Schooling transformed European societies, helping forge

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the modern nation-state and the democratic citizen. Imposed on often-reluctant populations, schooling knitted diverse ethnolinguistic groups into national citizenries with common languages and identities (Weber 1976). Education and literacy created novel possibilities for communication and interaction, expanding the public sphere and facilitating new forms of mass civic and political organization (Anderson 1991; Furet and Ozouf 1982). In short, mass education helped establish the foundation of modern democratic polities (Meyer, Ramirez, and Soysal 1992; for the United States, see Kaestle 1983). Education also yielded a labor force capable of serving growing industrial economic organizations (Stinchcombe 1965), but the economic effects were neither the original impetus for public schooling nor its principal consequence.

The latter half of the twentieth century saw the advent of mass higher education (Trow 1974), and the consequences were as seismic as the impact of mass schooling a century before.¹ Higher education helps construct global citizens organized around universalistic expertise and scientific knowledge, and it sustains a cultural frame linked across societies and built into social positions of great collective meaning and legitimacy (Kamens 2012; Meyer 1977; Ramirez and Tiplic 2014). Thus, higher education leads to rationalization of society and state, propelling new forms of organization, globalization, and social mobilization. We also reflect on consequences for the economy. Historically, higher education was thought to be distant from the economy, and perhaps even detrimental to it. Now, the products of higher education are increasingly interpreted and measured as economic, as part of a growing postindustrial “knowledge economy” (Block and Burns 1986; Davis and Kim 2015; Frank and Meyer 2020; W. Powell and Snellman 2004; World Bank 2000).²

We build on neoinstitutional theories of education, refining the perspective and offering new arguments about the importance of higher education for globalization, the service economy, and world society. We also systematically explore the aggregate effects of higher education across key domains of society.

BACKGROUND

Recent decades have seen a global wave of higher education expansion (Barro and Lee 2015; Schofer

and Meyer 2005). At the start of the twentieth century, only the tiniest fraction of the world’s population—under one-half of 1 percent of a cohort—attended a university. Now, higher education is part of the modal life course in the developed world. Gross tertiary enrollment ratios exceed 90 percent in affluent societies, like South Korea and Finland. The global South also saw rapid enrollment growth: Botswana is at 25 percent, Ecuador 45 percent, and war-torn Sudan roughly 17 percent (UNESCO 2015). Importantly, the global expansion of higher education largely involves common forms, such as the university, with similar curricula and credentials (Frank and Gabler 2006; Frank and Meyer 2020). Many of our arguments hinge on this. A world of incommensurable national higher education systems, or alternative forms of higher education (e.g., pure vocationalism), would produce different consequences.

As with mass schooling, the original focus of higher education was not principally economic, and expansion was not strongly linked to labor market demand (Windolf 1997). Born out of monastic traditions in Europe, universities mainly produced clergy, lawyers, doctors, and scholars—professionals filling highly specialized and valued (although not necessarily well-paid) roles in society. No one imagined that a radically expanded set of professionals could be needed or absorbed by the labor market. Educational reformers argued that the productivity of soldiers, peasants, or factory workers might benefit from the discipline of mass schooling, but few anticipated benefits from reading Plato or studying calculus. At the time, people debated whether lower-class individuals were capable of imbibing higher knowledge (Soares 1999).

More generally, people debated whether higher education had practical utility at all. This view is reflected in older meanings of the terms *academic* and *scholastic*: knowledge of no practical use. Andrew Carnegie captured this sentiment:³

Men have sent their sons to colleges to waste their energies upon obtaining a knowledge of such languages as Greek and Latin, which are of no . . . practical use to them. . . . They have been “educated” as if they were destined for life upon some other planet than this. . . . In my own experience I can say that I have known few young men intended for business who were not injured by a collegiate

education. Had they gone into active work during the years spent at college they would have been better educated men in every true sense of that term. (Carnegie 1889:20–21, cited in Ris 2015)

Higher education was considered a consumption good, not a useful investment, and—in the eyes of some—a waste of time and resources. Even today, we wonder if much is learned in college (Arum and Roksa 2011). Thus, Harbison and Myers (1964) encouraged developing countries to invest in mass education, but they discouraged university expansion. Moreover, expanded education might be politically dangerous: Unemployed intellectuals were seen as a source of political disorder or revolution (Huntington 1968; Lange 2012). Schumpeter (1950) thought the intellectuals produced by capitalism might ultimately destroy it. Communist countries maintained a similar skepticism: The working class should focus on its own economic power and not be distracted by status pretension. Thus, most communist countries limited higher education (Baker, Köhler, and Stock 2004; Lenhardt and Stock 2000), focusing instead on “manpower planning,” whereby educational opportunities were managed to match specific labor market needs.

Consequently, scholars across the political spectrum bemoaned higher education expansion. The titles tell the story: *The Overeducated American* (Freeman 1976), *The Diploma Disease* (Dore 1976), *The Great Training Robbery* (Berg 1970), and “No Salvation outside Higher Education” (Shils 1971). Boudon (1973), emphasizing the fixed character of the occupational system, critiqued the emergent faith in education as an instrument for overall occupational mobility. Collins (1979) saw the inflationary character of the credential society as a status competition bubble that would inevitably burst.

Social disorder in response to “overeducation” did not come to pass, but the transformations that followed were nevertheless revolutionary (Baker 2014). The growing legions of graduates not only filled up society’s elite positions, but they also dramatically expanded them. People’s attitudes, empowerment, and knowledge of the world were systematically altered (Kamens 2012). In one sense, the critics were right: Higher education expansion generated many elites beyond—and sometimes in opposition to—the economy, traditionally conceived (Brint 1994; Manza and Brooks 1999).

What the critics did not anticipate (but see Bell 1973) was that ideas and measures of the economy would be reconceptualized to treat the formerly “wasteful” goods produced by higher education as socially and economically valuable components of a “knowledge society.” For instance, academic sociology, a dubious enterprise from the point of view of traditional business elites, is measured as useful economic activity worldwide in measures of gross domestic product (GDP).

Theorizing the Consequences of Higher Education

To shed light on this transformation, we develop neo-institutional theories of education (Baker 2014; Kruecken and Drori 2009; Meyer 1977; Meyer et al. 2007) and world society scholarship on global change (Meyer, Boli, et al. 1997; Ramirez, Meyer, and Lerch 2016). Neoinstitutional ideas see education as a foundational societal institution that constructs modern culture, society, and individual identity, beyond serving as a training system for individuals or a mechanism of class reproduction. Schools legitimate key forms of knowledge and expertise and link them to occupational and social categories that are often constructed by the schooling systems themselves.

Higher education underlies key features of the contemporary world, sustaining globalization, new kinds of societal mobilizations, and new conceptions of the economy. Specifically, higher education produces (1) radically expanded rationalized organizational structures, populated by professionalized persons; (2) globalized forms of interaction, linking local activity to more universalistic cosmologies; (3) social mobilization, legitimated by schooled ideologies; and (4) changes in concepts and measures of social progress, such that schooled notions of value take precedence over mundane material ones in social understandings and measures of development.

This article focuses on the overall macrolevel consequences of higher education expansion. Many studies address the effects of higher education on individual-level attitudes and behaviors (e.g., Pascarella and Terenzini 2005), especially within affluent democracies. These studies are instructive but may not generalize to diverse types of countries (e.g., nondemocracies) and do not necessarily speak to aggregate societal effects. For instance, an individual-level association

between education and wages does not imply that educational expansion will cause the aggregate GDP to increase. Likewise, individual-level education is correlated with voting behavior, but the historical growth of schooling has not produced aggregate growth in voter turnout (Nie, Junn, and Stehlik-Barry 1996). Macrolevel analyses are warranted.

The effects of higher education on society may involve both macro- and microlevel mechanisms. This study does not empirically address mechanisms, although we discuss various possibilities. Individual-level educational socialization processes can drive aggregate change (Coleman 1986); economists (and some sociologists) imagine everything works this way. But this is naive. Perhaps the highly credentialed people simply displace others, with no (or negative) net consequences (Boudon 1973; Collins 1979). On the other hand, expanded education may have macro effects, for instance, by creating and legitimating new roles and status distinctions in society or legitimating new forms of knowledge and new elites (Jepperson and Meyer 2011). Thus Barrett (1995) finds that countries with more academic demography are more likely, *ceteris paribus*, to adopt population policies. This may reflect the work of demographers, but it may also simply reflect the growing authority of demographic knowledge in society. Such effects, positive or negative, can occur independent of any individual-level effects of schooling. As an example, state laws and bureaucratic procedures often presume or depend on university-based knowledge and personnel (lawyers, economists, or environmental engineers). Other effects of education may arise from emergent systemic properties. Universities may act as “receptor sites” of global links and flows (Frank, Hironaka, and Schofer 2000), and thus the establishment of similar university structures across disparate locations may create new possibilities for global networks to develop. Overall, individual-level findings cannot be mechanically aggregated, and our aggregate empirical analyses do not adjudicate between individual-level socialization mechanisms and macrolevel ones.

HIGHER EDUCATION AND THE RATIONALIZED, GLOBAL SOCIETY AND ECONOMY

We outline four key areas of societal change that help define our modern, rationalized, and

globalized society. Our claim is that these features of society—which we mostly take for granted—in fact hinge on the distinctive forms of higher education institutionalized worldwide. Counterfactual worlds built, for example, around vocational higher education or a diversity of local knowledge systems and credentials, would be very different.

Professionalization and Organizational Rationalization

Professionalization. Expanded higher education helps establish a growing set of occupational categories rooted in academic knowledge (Brint 1994; Drori et al. 2003). Institutions of higher education turn out professionals, and expansion produces growth in the size and scope of professional occupations (Wilensky 1964). At a more collective level, expansion constructs and legitimates the authority of rationalized knowledge: *Everyone* becomes aware that authoritative bodies of knowledge exist, are comprehensible, and inform dominant understandings of the world. Whether or not an individual pursues training in business administration, for instance, one can learn that management knowledge and expertise exist and are understood to improve the functioning of organizations.

Growing numbers of professionals bring society under purview and control, and growing numbers of university-educated individuals organize activity under such expertise. In developed countries, like the United States, professionals make up the largest occupational category (Brint 1994; Wyatt and Hecker 2006). This has been analyzed in terms of the benefits that may accrue to professionals themselves, with the establishment of new (and sometimes exclusive) domains of specialized expertise (Abbott 1988). But there are broader consequences. The expanding professions, rooted in the university and science, systematically rationalize social life wherever they go (Drori et al. 2003; Fourcade 2006; Frank and Meyer 2020; Walker 2014). Doctors, psychologists, and educational professionals transform child-rearing practices, supplanting traditional forms of advice. Economists and MBAs remake the world of business. Psychologists reshape our understanding of the self and personal relationships.

The Organizational Revolution. Schooled people function within highly rationalized

organizations. They have greater capacity to create organizations and to order their activities around rational-legal understandings (Bromley and Meyer 2015). Indeed, the massive body of social science research on formal organizations is primarily about the behavior of schooled people.

Mass education created the citizen-worker who could participate in bureaucracy, work organizations, and mass-membership groups (Almond and Verba 1963; Kamens 2012; Stinchcombe 1965). Higher education systems, by contrast, often focus on the creation of public and private elites who create and run organizations. Higher education thus supports the establishment of formal organizations, and the structuring of activity in rational-legal terms, yielding greater standardization and systematization (Bromley and Meyer 2015). This supplants traditional organizational relations rooted in kinship and patronage, which are increasingly recharacterized as “corruption” (Drori, Jang, and Meyer 2006).

Proposition 1: Higher education expands and institutionalizes the professions and leads to the organizational rationalization of society and state. Societies with expanded higher education will have more professional activity, more formal organization, and more rationalized structures.

These changes are often celebrated, but rationalization can be seen as an iron cage of discipline and governmentality, leading to the erosion of traditional social relations (Foucault [1978] 1991; Miller and Rose 2008; Scott 1998; Walker 2014). Critical literatures have arisen regarding many areas—medicine, education, the charitable world, formal government, and profit-making firms. One might question whether neoliberal economic policies, proffered by economists worldwide, should be viewed as social progress. But many individuals are immersed in higher education, and others perceive the legitimating rules involved, and so the expansion of professional knowledge continues apace.⁴

The Creation of Participants and Relationships in a Global Society

Most institutions of higher education are self-consciously organized as sites of universal

knowledge, as embodied in the word *university* (Frank and Meyer 2020). After their medieval origins, universities fell under the aegis of ascending national states, and some competing forms of higher education emerged, but the orientation to supranational knowledge and community persisted. In most countries, higher education is deeply enmeshed in international communication (often using global languages; originally Latin and Greek, now English), organized around universalistic scientific and professional knowledge, and linked to similar institutions around the world.

In short, the university is a global institution (Meyer et al. 2007; Frank and Meyer 2020). Most universities use standard curricular categories, and curricular innovations diffuse rapidly among them (Frank and Gabler 2006; Frank and Meyer 2007; Frank, Robinson, and Olesen 2011). Students across the world study familiar topics, such as “organic chemistry,” “microeconomics,” or “sociology.” The organizational structures of higher education are diverse (Clark 1983), but the character and categories of knowledge have important homogeneities: reciprocally recognized fields, courses of study, and degrees.

As growing numbers of people experience higher education, they are trained in common subjects, socialized in similar ways, and stamped with globally meaningful credentials and identities. Certificated training in economics or industrial engineering is met with recognition virtually everywhere and is highly valued in stratification systems. Education is an increasingly central ingredient and indicator of social position across the globe (Shavit, Arum, and Gamoran 2007).

Higher education expansion thus generates a global class of people of shared status, with the capability to communicate, interact, and organize transnationally.⁵ This increases the possibilities for globalization. As one example, the expansion of higher education facilitates the joining or establishment of international organizations. It becomes easier to create an international environmental nongovernmental organization or global social movement, for instance, if people accept a common set of scientific and professional authorities and skills (e.g., biologists, climate scientists).

Similarly, higher education facilitates state-to-state interaction and coordination. Political scientists have long recognized that intergovernmental cooperation rests substantially on scientific and professional *epistemic communities* (Haas 1992).

Senior civil servants and policy makers across the globe, now university educated, share common degrees and professionalized knowledge. The educated elites in Britain who established EU membership share much in common with their counterparts across Europe. Indeed, possession of a college degree appears to have been the most decisive predictor of support for EU membership versus “Brexit” (McGill 2016).

Higher education also expands the possibilities for international economic activity. A shared educational and professional background reduces actual and perceived transaction costs and provides a basis for trust, facilitating cross-border investment. It is conventional to treat economic globalization as the consequence of technology that renders long-distance transactions profitable. These transactions do not happen in a vacuum; social relations underlie global economic ties (Bandelj 2002). Modern economic activity is facilitated by legions of lawyers, accountants, MBAs—and of course, economists (Fourcade 2006). These are all creatures of higher education, and they grease the wheels of international commerce.

These international orientations and interactions increase prospects for supranational cooperation, but they also mean competition and conflict can be aggregated to supranational levels. In the United States, for instance, people and government elites pursue global agendas on all sorts of normative grounds, ranging from free-market ideologies to LGBT issues to animal rights. These initiatives are sometimes welcomed but often provoke reactions. Proponents of global agendas tend to be more schooled than their critics (Kamens 2012; *The Economist* 2016). For instance, major international organizations have mobilized heavily around women’s rights and LGBT rights, and they have faced varying degrees of opposition from conservative religious and political groups in the global North and South (Hadler and Symons 2018). Individuals, organizations, and national states, acting on globalized frames, can readily find grounds for conflict rooted in issues of interest and identity organized on very large scales.

Proposition 2: Higher education increases global integration, facilitating supranational interaction and cooperation, but also competition and conflict. Countries with more expanded higher education will have more participation in international treaties, ties

to international organizations, and international economic relations (as well as potentially contentious conceptions of interest and identity).

Empowered Mobilization and Social Change

It is well known that mass education predicts conventional political participation, such as voting (Almond and Verba 1963). Higher education propels new kinds of empowered global mobilization around issues such as the environment, human rights, gender inequality, and a wide variety of cultural and religious ideologies.

The Rise of Shared Opinion Frames. Individuals form opinions on a wide variety of social and political issues, but this is mainly a property of the schooled (Kamens 2012; Lerner 1958). University-educated people routinely form opinions on large-scale issues that reach beyond national states: the status of women, LGBT issues, environmental problems, dimensions of human equality and human rights, and the concentration of power in large corporations. Unschooled people tend not to articulate responses to these sorts of issues in universalized terms (Lerner 1958).

Transforming Opinion into Action. By establishing a large transnational class of people immersed in common rationalized frames, higher education transforms the potential for collective mobilization and change at national or supranational levels (Allendorf and Thornton 2015; Thornton, Dorius, and Swindle 2015). Basic schooling provides people the skills and standing to protest a foul-smelling town dump, but higher education expands collective possibilities for quantifying environmental harm, establishing organizations to oppose environmental problems, formulating grievances in terms of abstract and universalized principles, and launching effective challenges in legal and political arenas. In a world teeming with people steeped in globally oriented higher education, it is easier to establish pro-environmental social movement organizations, like Greenpeace (Longhofer and Schofer 2010). Likewise, Lange (2012) highlights ways that expanded education can support large-scale ethnic mobilization and conflict.

Turning Shared Action into Organizational Structure. Higher education expansion increases social movements' capacity to organize (Davis et al. 2005). World society has seen massive numbers of social movement organizations, international nongovernmental organizations (INGOs), and intergovernmental organizations promoting human rights, democracy, environmental protection, transparency, and education itself (Boli and Thomas 1999; Meyer, Frank, et al. 1997; Ramirez et al. 2016; Schofer and Longhofer 2011; Smith 2007; Suárez and Bromley 2012). Much empirical work focuses on movements generally seen as progressive, but oppositional and reactionary movements also rise to prominence and are increasingly organized on a global scale (Hadler and Symons 2018).

Proposition 3: Higher education increases the potential for societal mobilization and social change. Countries with expanded higher education will have more mobilization of opinion and action devoted to social, political, cultural, and economic causes.

Monetization: The Reorganization and Reconceptualization of Economic Activity

It is conventional to see higher education as augmenting human capital and technical innovation. These factors are thought to encourage economic growth and to render the contemporary world a “knowledge society” or “knowledge economy” (Nowotny, Gibbons, and Scott 2001; Stehr 1994; for reviews, see W. Powell and Snellman 2004; Välimaa and Hoffman 2008). As ideology, such lines of thought have become dominant. Yet, cross-national evidence on the relationship between higher education and economic growth is surprisingly weak and contested. Early studies found null effects (e.g., Benavot 1992; Meyer and Hannan 1979). Most cross-national research focuses on mass education (e.g., Barro and Sala-i-Martin 1995; Hannum and Buchmann 2005), and findings about higher education are often tenuous or conditional (Barro and Lee 2015; Chabbott and Ramirez 2000; Schofer, Ramirez, and Meyer 2000). That said, a growing body of evidence supports the idea that higher education, especially universities, matter—for instance, by contributing to patenting

and firm innovation (e.g., Jaffe and Trajtenberg 2002; Kantor and Whalley 2014). Indeed, some comparative studies of U.S. regions and countries have found a relationship between universities and economic growth (Hausman 2012; Valero and Van Reenen 2019).

We argue that the rationalization of society and state contributes to a reconceptualization of formerly noneconomic activities (or even things seen as costly to growth) as economic in character. Areas of life previously managed informally (e.g., care of young and old, medical and religious services) are now heavily monetarized, conceptualized as part of an expanded economy, and included in measures of economic progress—centrally, the GDP. This is a striking contrast with the older Communist world, which resisted higher education expansion and, not coincidentally, measured its economy in material terms (“net material product”) that excluded services: The economy was understood in terms of widgets rather than lawyers, accountants, and social scientists.

For example, child-rearing has become scientized and professionalized over time, and it is now largely the province of individuals with higher education degrees. The grandmother watching children has given way to paid professional day-care providers, often with academic credentials. Child psychological and educational development problems are codified and studied by professionals. New fields, such as special education, emerge, and the elaborate management of newly defined problems, such as attention-deficit hyperactivity disorder (ADHD), follows (J. Powell 2011). Even such a specialized task as youth entry into higher education is rationalized and monetarized: We see the rise of SAT tutors, college application consultants, professional admissions officers, and so on. All of these roles are valued as part of economic production and contribute to the GDP.

Some of the societal mobilizations that spring from higher education, such as environmentalism and human rights, have the potential to slow economic growth by limiting the exploitation of natural resources or workers. But these movements involve great expansions of professionalized activity. Companies must perform extensive testing of product safety. Construction projects require elaborate environmental impact evaluation and reporting, involving masses of environmental professionals and consultants. Stringent pollution regulations render old production methods and infrastructures outmoded and necessitate massive

investments in new technologies and production methods (Hoffman 1997). All these expenses are counted as productive activity within the GDP—even the lawsuits launched by proenvironmental groups and the costly environmental remediation efforts that result.

Educated professionals create opportunities for the reconstruction of economic value (Zelizer 1997). Much contemporary measured economic value hinges on professional theorization (Fourcade 2011). Individuals may pay more for locally grown organic produce, sustainable fish, cage-free chicken and eggs, or fair-trade coffee, based on elaborate theories of human, animal, and environmental well-being. The augmented value of fair-trade coffee rests on complex understandings regarding environmental protection, morality, and potential remedies for global inequality, not to mention rationalized organizational structures (e.g., certification regimes). Such an edifice would be hard to imagine in the absence of universities and modern professionals. Likewise, managers can justify the costs of worker training and consulting regarding issues of gender equality, diversity, or sexual harassment in the workplace, not only due to regulatory requirements but also due to elaborate theories about workplace productivity (Dobbin 2009).

Were national accounting based on a society's material production, as was the case in the Communist world, the effect of higher education might be negative because huge sectors of activity have shifted away from material production. Firms have vastly expanded administrative, accounting, human resource, and legal superstructures (Bromley and Meyer 2015). New fields of nonproductive activity have emerged, involving consulting, legal, and financial services. One important example is "financialization," whereby a sizeable fraction of affluent economies is now channeled into elaborate and abstract economic instruments (Davis and Kim 2015). The impact on economic efficiency is not clear, but financialization greatly increases measured GDP. Another example is growth of the nonprofit sector, with voluntaristic activity and charity increasingly professionalized, populated by specialists with MBAs in nonprofit management, and accounted as part of the economy (Bromley, Hwang, and Powell 2012).

Proposition 4: The expansion of higher education leads to greater economic growth through increased human capital and

innovation and through the rational-legal organizing of many activities as part of the service economy. The economic effects of higher education will thus be largest in the service sector of the economy.

DATA

We examine the relationship between expanded higher education and a wide range of social, political, and economic outcomes using cross-national data from recent decades. Panel regression analyses focus on the period from 1960 to 2012, although some analyses cover a smaller span due to limited data.

Dependent Variables

Professionalization and Rationalization (Proposition 1)

Professions. The growth of professions is measured by the number of professional organizations in a country, taken from Associations Unlimited (Gale Research Group 2014). This includes traditional professional organizations (lawyers, doctors) as well as associations of scientific professionals (civil engineers, geologists). We take the natural log to reduce skewness.

Civil society organizations. We use Associations Unlimited to construct a general measure of associations in a country. The measure includes a diverse array of groups, from charitable organizations to sports associations to political advocacy groups (see Schofer and Longhofer 2011). We take the natural log to reduce skewness.

Rationalization of the state. We combine several measures from the World Bank's Doing Business Project that reflect rationalization of a country's legal, regulatory, and bureaucratic environment. We compute z scores and combine the following (inverting, so higher values indicate greater rationalization): (1) the time it takes to resolve insolvency (bankruptcy) in years; (2) the time it takes to prepare, file, and pay taxes; and (3) the number of steps to enforce a contract. For instance, the average time to resolve insolvency is 1.2 years in Germany versus 5.5 years in Indonesia (World Bank 2014).

Global Integration (Proposition 2)

International treaties. We measure a country's participation in international treaties with a cumulative number of international treaty ratifications

from a set of major environmental, human rights, and labor treaties. Environmental treaty ratifications are derived from ECOLEX (2014). Ratification of International Labour Organization (ILO) conventions is available from NORMLEX (ILO 2014). Human rights treaty ratifications are published by the Office of the United Nations High Commissioner for Human Rights (2014).

Participation in world society (INGOs). A country's linkage to the international community is measured by INGO memberships in the *Yearbook of International Associations* (Union of International Associations 1971–2012). The measure is the number of different INGOs in which a country's citizens hold membership, logged to reduce skewness.

International trade. International trade is measured by trade openness, defined as the total of imports and exports as a proportion of GDP (World Bank 2014).

Foreign direct investment (FDI). FDI is measured as the net inflow of foreign direct investment as a percentage of GDP (World Bank 2014).

Societal Mobilization (Proposition 3)

Environmental associations. We use Gale Research Group's (2014) Associations Unlimited to construct a measure of the number of proenvironmental groups in a given country (Longhofer and Schofer 2010). We take the natural log to reduce skewness.

Air pollution. We measure air pollution using the natural log of sulfur dioxide emissions, a component of power plant and motor vehicle emissions (World Bank 2014). Higher values indicate more environmental damage. Several other measures of environmental damage yield similar results.

Political associations. We use Gale Research Group's (2014) Associations Unlimited database to construct a measure of political groups in a given country. These include a wide range of advocacy, movement, and mass membership groups devoted to political causes. We take the natural log to reduce skewness.

Human rights violations. We examine a measure of human rights practices taken from the Political Terror Scale data set (Gibney et al. 2015). Higher values indicate worse practices.

Economic Growth and Sector Change (Proposition 4)

Overall size of the economy. We model GDP per capita at time t as a function of independent

variables measured five years prior ($t - 5$), following Barro and Sala-i-Martin (1995). Another common strategy in the literature is to compute a GDP change score over the period; results were similar.

Economic sectors: Agriculture, industry, service. We measure the relative size of each sector as a percentage of the overall economy (World Bank 2014). We also conducted analyses of absolute sector size and note the results. The service sector includes high-tech/high-skill and low-skill services; a measure specifically looking at high-skill services would be preferable. We corroborated our main findings with other measures of service sector activity, such as personnel in high-skill service jobs (not presented; available upon request).

Independent Variables

Our main interest is the expansion of higher education, which we measure by a country's gross tertiary enrollment ratio. The measure includes students enrolled in International Standard Classification of Education levels 5 and 6 (which correspond to conventional understandings of higher education) as a proportion of the relevant population age group (World Bank 2014).⁶ We focus on enrollments due to the quality and temporal coverage of the measure.⁷ We do not suggest that educational effects necessarily operate via individual-level participation or socialization. Alternative measures, such as the organizational expansion of universities in a country, would also be appropriate.⁸

Population is measured by the natural log of country population (in 10,000s; World Bank 2014). GDP per capita captures a country's overall level of development and wealth and is an important control for the outcomes we examine. We use real GDP based on purchasing power parity in inflation-adjusted U.S. dollars from the Penn World Table (Feenstra, Inklaar, and Timmer 2013).

Many outcomes addressed in this article may be affected by a society's level of democracy. We use the Polity IV measure, a 21-point scale that distinguishes between autocratic and democratic societies (Marshall, Gurr, and Jaggers 2013).

We seek to distinguish the effects of higher education over and above the effects of mass schooling, which brings literacy, numeracy, and

basic integration into the national polity. We use the gross enrollment ratio (World Bank 2014) to measure secondary education. Note that gross enrollment ratios may exceed 100 due to their method of calculation (World Bank 2020). Analyses using net enrollment ratios (which include only enrollees in the official age group for a given level of schooling) yield similar results. We use gross enrollments because data coverage is better in early years.

Analyses of economic growth and sector expansion include a control for the investment share of GDP, as is conventional (Levine and Renelt 1992). Investment data are taken from the Penn World Table (Feenstra et al. 2013).

Descriptive statistics for all measures can be found in Appendix A, and a correlation matrix of outcome measures is in Appendix B (see Supplemental Material in the online version of the article).

METHODS

Our main tables use panel regression models with country fixed effects.⁹ Fixed-effects models focus on within-case variability over time, addressing omitted-variable bias due to constant features of countries (e.g., region, colonial legacy). Tables 1, 2, and 3 use annual data from roughly 1960 to 2012 with independent variables lagged one year. Analyses of economic growth in Table 4 use pooled five-year panel models and include the lagged dependent variable, following conventions in the economic literature (Barro and Sala-i-Martin 1995); annual data produce similar results.

There is much discussion of modeling strategies for panel data (e.g., Baltagi 2008; Beck and Katz 2011; Wooldridge 2002). The performance of a particular model is contingent on many factors, including structure of the data (temporally versus cross-sectionally dominant), extent of unobserved heterogeneity, amount of temporal “noise” in the data, and whether the data may be nonstationary. We use a conventional approach (country fixed effects) and then explore robustness across alternative specifications, including random effects, ordinary least squares (OLS) regressions with panel-corrected standard errors, and dynamic panel models. Models with the lagged dependent variable can address potential dynamic processes and some forms of endogeneity (discussed later). We also considered models with longer lags (e.g., 10 years), as it could take some time for

independent variables to affect some outcomes. Appendix C in the online supplement presents some robustness checks. Most of our findings are robust; a few are not.

Additional strategies to address endogeneity bias include using lags of independent variables (creating temporal separation), modeling temporal change, or including the lagged dependent variable (which controls for prior cumulated reverse-causal effects), which reduce potential for the dependent variable to plausibly influence independent variables, and using “system GMM” dynamic panel models (Wooldridge 2002). We explored these options, and results were consistent (some are included in Appendix C in the online supplement). Another strategy is to find alternative measures that avoid reverse-causal effects. For instance, analyses of the effect of tertiary enrollment on INGO memberships may be biased because INGOs (some of which are devoted to development and education) encourage tertiary expansion (Schofer and Meyer 2005). To address this, we examined INGO subtypes that are unlikely to encourage tertiary expansion, such as environmental INGOs. A final strategy involves the use of instrumental variables models for panel data, such as the “system GMM” estimator (Wooldridge 2002).

To simplify presentation, we focus on a common set of control variables across the tables. However, we also explored a large number of additional variables relevant to particular outcome variables. Results were generally robust, except when large numbers of highly collinear variables were included together. We also looked for influential cases using Cook’s *D* and by examining partial regression plots. Moderate outliers could be found in some analyses, but they generally did not affect results and were not excluded.

RESULTS

Our goal is to explore associations between higher education expansion and a broad set of country-level outcomes. Table 1 presents panel regression models examining the relationship between tertiary enrollment and societal rationalization, focusing on the expansion of professional associations, civil society organizations, and bureaucratization of the state. We observe significant positive associations in all cases: Higher education is associated with the number of professional associations, expansion of civil society organizations,

Table 1. Panel Regression Models: Effects of Secondary and Tertiary Enrollment Ratios on Expansion of Professions and Organizations and Rationalization of the State.

Variable	Professional Groups	Civil Society Organizations	State Rationalization
Population (log)	0.62*** (0.018)	0.95*** (0.015)	-0.75 (0.478)
GDP per capita (log)	0.18*** (0.012)	0.13*** (0.011)	1.26*** (0.172)
Democracy	0.00 (0.001)	0.01*** (0.001)	-0.00 (0.013)
Secondary enrollment	0.40*** (0.039)	0.20*** (0.033)	-0.04 (0.556)
Tertiary enrollment	0.49*** (0.041)	0.35*** (0.036)	2.69*** (0.404)
Constant	-3.99*** (0.156)	-4.38*** (0.134)	-6.45* (3.179)
Observations	5,696	5,696	819
R ²	0.601	0.730	0.189
Countries	143	143	123

Source: Gale Research Group (2014); World Bank (2014).

Note: Standard errors in parentheses; all independent variables lagged one year. GDP = gross domestic product.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

and state bureaucratic efficiency. In the latter case, the contrast with secondary enrollments is revealing: Mass education has no significant effect. The higher education effects displayed in Table 1 can reflect the greater number of socialized individuals (as actors or as audiences), but they can also reflect highly collective organizational and discursive processes, independent of individual socialization.

Table 2 explores the idea that higher education contributes to globalization, linking societies, states, and economies together by providing common cultural frames and legitimated professionalized knowledge. We see that higher education expansion is strongly associated with international treaty ratification, consistent with the international relations literature on “epistemic communities.” Higher education is also associated with INGO membership counts, a measure of connection to the international community. We additionally examine environmental INGOs, which are substantively interesting and serve as a check on the general INGO finding (see the earlier discussion of endogeneity). Again, we find a large positive association, which can reflect the behavior of schooled individuals or more macro-sociological organizational and cultural processes.

Table 2 also addresses measures of economic globalization. Higher education is strongly

associated with international trade, which involves transnational business relations across societies. We also find a positive association of higher education with (incoming) FDI. Such arrangements, we argue, are facilitated by common identities, shared knowledge, and professional expertise generated by higher education. The higher education effect sizes are substantial across Table 2. By contrast, coefficients for mass education are smaller and sometimes nonsignificant.

Table 3 examines broad societal movements in environmentalism and human rights, which have been the focus of much attention and mobilization. Tertiary education is positively associated with domestic environmental and political organizing.¹⁰ By contrast, we also examined the relationship between higher education and political unrest/violence. Higher education is not associated with unrest; the fears of mid-twentieth-century scholars appear to be unfounded (not presented; available upon request). Beyond the organizations involved, higher education is associated with changes in societal outcomes in environmental and human rights domains. For instance, tertiary enrollments are associated with lowered air pollution, and higher education enrollments are associated with improvements in human rights practice. (Alternative measures of pollution and human rights violations yield similar results.) By contrast,

Table 2. Effects of Secondary and Tertiary Enrollment Ratios on Global Integration: World Polity, Society, and the Global Economy.

Variable	Treaty Ratification	INGO Membership	Environmental INGO Membership	Trade	FDI Inflows
Population (log)	11.46*** (0.227)	1.70*** (0.047)	0.92*** (0.030)	2.41 [†] (1.407)	2.53*** (0.671)
GDP per capita (log)	0.56*** (0.140)	0.16*** (0.028)	0.10*** (0.018)	11.87*** (0.853)	0.67 [†] (0.388)
Democracy	0.24*** (0.010)	0.01** (0.002)	0.02*** (0.001)	0.32*** (0.060)	0.04 (0.027)
Secondary enrollment	5.42*** (0.457)	0.69*** (0.093)	0.53*** (0.057)	-2.30 (2.642)	-1.37 (1.235)
Tertiary enrollment	20.64*** (0.513)	0.87*** (0.100)	2.28*** (0.061)	27.08*** (2.814)	4.47*** (1.185)
Constant	-76.88*** (1.392)	-7.66*** (0.292)	-6.69*** (0.182)	-75.61*** (8.442)	-22.05*** (4.216)
Observations	5,697	5,164	5,558	5,424	4,462
R ²	0.821	0.585	0.729	0.249	0.028
Countries	145	144	146	144	145

Source: ECOLEX (2014); International Labour Organization (2014); Office of the United Nations High Commissioner for Human Rights (2014); Union of International Associations (1971–2012); World Bank (2014).

Note: Panel regressions with fixed effects. Standard errors in parentheses; all independent variables lagged one year. FDI = foreign direct investment; GDP = gross domestic product; INGO = international nongovernmental organization.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Effects of Secondary and Tertiary Enrollment Ratios on Political Mobilization and Social Change.

Variable	Environmental Organizations	Air Pollution	Political Organizations	Human Rights Violations ^a
Population (log)	0.20*** (0.019)	1.99*** (0.047)	0.85*** (0.019)	0.24* (0.117)
GDP per capita (log)	0.15*** (0.013)	0.69*** (0.031)	0.12*** (0.013)	-0.36*** (0.041)
Democracy	0.004*** (0.001)	0.001 (0.002)	0.02*** (0.001)	-0.04*** (0.003)
Secondary enrollment	0.63*** (0.042)	-0.43*** (0.097)	0.27*** (0.040)	0.08 (0.128)
Tertiary enrollment	0.60*** (0.045)	-3.62*** (0.118)	0.46*** (0.043)	-0.75*** (0.165)
Constant	-2.37*** (0.168)	-14.09*** (0.405)	-4.81*** (0.162)	-71.98*** (5.979)
Observations	5,745	4,149	5,696	3,981
R ²	0.466	0.478	0.662	0.265
Countries	143	116	143	137

Source: Gale Research Group (2014); World Bank (2014); Gibney et al. (2015).

Note: Panel regression models with fixed effects. Standard errors in parentheses. GDP = gross domestic product.

^aIncludes additional controls for civil war, ethnic fractionalization, and year trend, following Cole (2013).

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Effects of Secondary and Tertiary Enrollment Ratios on GDP and the Relative Size of Economic Sectors (as Percentage of GDP), 1960 to 2010.

Independent variable (5-year lag)	GDP per Capita	Service	Industry	Agriculture
Investment	0.32*** (0.083)	-1.38 (2.322)	13.53*** (2.496)	-10.39*** (2.133)
Secondary enrollment	0.16** (0.055)	4.59** (1.469)	-0.62 (1.550)	-2.07 (1.364)
Tertiary enrollment	0.41*** (0.082)	7.04** (2.174)	-3.33 (2.238)	-2.22 (1.837)
GDP per capita, log	0.71*** (0.022)			
Service		0.56*** (0.028)		
Industry			0.59*** (0.028)	
Agriculture				0.68*** (0.023)
Constant	2.29*** (0.164)	20.25*** (1.345)	10.28*** (1.014)	8.24*** (1.083)
Observations	1,317	981	984	988
R ²	0.712	0.487	0.430	0.648
Countries	161	154	155	154

Source: Feenstra, Inklaar, and Timmer (2013); World Bank (2014)

Note: Five-year pooled panel regression models with lagged dependent variable and fixed effects. All independent variables lagged five years, including lagged dependent variable. Standard errors in parentheses. GDP = gross domestic product.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

mass education is not particularly associated with these forms of societal change.

Table 4 turns to the economy. The first model focuses on overall GDP at the end of a five-year span, with controls for initial level of GDP and investment (following prior work, e.g., Barro and Sala-i-Martin 1995; Levine and Renelt 1992). We find that tertiary enrollment has a modest but significant positive association with the size of the economy, consistent with conventional wisdom that higher education boosts growth. The finding is notable, as analyses of earlier periods tend to observe only conditional effects. This result may be due to increased human capital and innovation, or it may reflect the expansion of professional knowledge and organizational rationalization, which are counted in conventional measures of economic activity.

Table 4 further breaks out the economy by sector (as percentage of GDP) to highlight higher education's relationship with the overall structure of the economy. Higher education is associated with an overall shift away from industry and

agriculture toward the service sector. Tertiary enrollments have large positive effects on services but negative (insignificant) effects on other sectors (as percentage of GDP).¹¹ Of course, service sector size is only a rough indicator of the relationship we are looking for, as the service sector includes informal and low-skill economic activities beyond professional and organizational development; measures of high-skill professional services might produce larger associations.

Robustness Checks

Appendix C in the online supplement summarizes some of our robustness checks (discussed earlier): country fixed effects, fixed effects with the lagged dependent variable, fixed effects with independent variables lagged by 10 years, fixed effects with AR(1) to address serial correlation, models with the dependent variable calculated as a difference, and OLS regression with panel-corrected standard errors. Most findings are robust. The analyses

regarding human rights violations are somewhat unstable and should be interpreted with caution. Also, while the association between higher education and the service sector (our main focus here) is robust, the relationship to other sectors is less so.

DISCUSSION AND CONCLUSIONS

We contribute to sociological work addressing the transformative effects of schooling on society, writ large. Mass education formed the basis for national citizenship. Higher education, we argue, constructs core features of the contemporary rationalized and globalized world, providing a foundation for global integration and the modern service economy. Higher education changes national and global societies by expanding the professions, rationalizing the state and societal organizations, establishing common (increasingly global) frames, connecting local societies to world society, and ultimately propelling new societal movements around issues such as environmentalism and human rights (and presumably many others). We present regression models showing that tertiary enrollments are associated with many measures of these outcomes.¹²

The associations between higher education and the outcomes in this article are substantively very large. In standardized terms, higher education was always among the biggest coefficients in our models, and generally much larger than secondary schooling (not presented; available upon request). The substantively largest effects involved features of the modern state (e.g., rationalization) and measures of internationalization (INGOs, treaties, trade). Mass schooling rivaled the effects of higher education only when it came to measures of civic organization (see Almond and Verba 1963). When it came to measures of societal change, such as improvements in environmental pollution, higher education coefficients were again much larger.

The university has become a core institution in society and a basis for global interaction. It is difficult to imagine global firms or international movement organizations in anything like their current forms if elites were organized around heterogeneous and incommensurable national educational systems. In every social sector, the schooled people have won out. The resultant changes are depicted as economic (and they certainly are heavily monetarized), but this stretches

the conception of the economic far beyond its earlier meanings. We found that higher education is associated with expanded economic activity overall but especially with growth of the service sector. This is consistent with conventional “knowledge society” arguments, although we suggest that such effects are not merely about human capital and innovation but about a broader reconception of economic value around rationalized and professionalized activity. Higher education provides the infrastructure for constructing new kinds of economic value quite distant from conventional or material understandings of economic production.

Advocates see the major expansions of education and organizations that we have described as progress. But scholars like Foucault ([1978] 1991) remind us of the dark side of rationalization, globalized professional knowledge, and rapid world integration, which can discipline and subjugate society. The contemporary professionalized management of childhood, involving medicalization and institutionalized schooling and childcare, has yielded an epidemic in diagnoses such as ADHD, and millions of children are medicated so they can function in modern organizational settings (e.g., sit quietly all day). Whether this represents progress or a disciplinary regime is partly a matter of perspective.

Moreover, the societal mobilizations enabled by higher education may be quite heterogeneous and prone to conflict. The top leaders of Al Qaeda, for instance, appear to have attended universities, as did Communist elites in an earlier period. Global integration can globalize formerly local ethnic conflicts (Lange 2012). The sweeping rise of schooling and the professions clearly threatens some traditional institutions and elites, producing reactionary movements, and in some cases, ostentatious antiglobalism and anti-intellectualism. It is no coincidence that supporters of Brexit and Donald Trump are defined, in large part, by lack of college degrees (McGill 2016). Higher education may become an increasingly salient basis for political cleavages going forward (Piketty 2020).

Our study suggests directions for future scholarship. Sociologists might focus more on broader collective consequences of education and might be more skeptical about contemporary tendencies to see rationalized and monetarized activity as “naturally” economic. At the individual level, higher education might change people’s relation to professional and political authorities, transform their orientation to rational-legal organizing, and

provide a basis for global/universalistic worldviews and interactions (Baker 2014; Kamens 2012; Thornton et al. 2015). Moreover, the spread of higher education may have substantial effects for people who do not attend. Penalties for nonattendance likely increase as the world becomes organized in terms of higher education understandings and credentials (Baker 2014; Hout 2012). At the level of organizations, expanded higher education propels rationalization and facilitates the interpenetration of organizations and their increasingly rationalized external environment. Whether this renders organizations more efficient is not clear, but it makes them more like rationalized “actors” (Bromley and Meyer 2017).

Our study has major implications for world society theory, which has focused on formal international organizations and treaties as a source of social change and as a conceptual lens for understanding what world society is. We suggest higher education is a primary basis for the construction of a self-conscious world society. Virtually all participants in international governance and the INGO sector are products of higher education. Universities and experts play a central role in the global diffusion of ideas and policy models (Drori et al. 2003; Frank et al. 2011; Frank and Meyer 2020). And the cultural content of world society, described by Boli and Thomas (1999), involves elements that are institutionalized and propagated by higher education. If INGOs are an embodiment of world culture, higher education is surely its foundation. Higher education expansion may serve as a useful measure of collective integration on a global scale.

We do not suggest that all these changes spurred by higher education are inevitable. They reflect a distinctive period of post–World War II liberalism and would likely have differed greatly under counterfactual conditions (e.g., a world dominated by Nazi Germany or the Soviet empire). And the contemporary explosions of education, professionalization, and organization may not continue into the future. Since 2008, liberalism has come under increased attack by far-right and populist movements (Guillen 2018). Not coincidentally, we now see reactionary attacks on higher education in places like Hungary and Turkey (Schofer, Lerch, and Meyer 2019). For the moment, higher education continues to expand in the majority of countries. But sustained attacks on the university are within the realm of future

possibility and could undermine many of the effects observed in this article.


RESEARCH ETHICS

This study analyzed publicly available secondary source data on countries and did not require institutional review board review.

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SUPPLEMENTAL MATERIAL

Supplemental material is available in the online version of this journal.

NOTES

1. Global higher education in the contemporary period most commonly takes the form of the academic university (or components of the university as an institution). In this article, we refer to *higher education* and the *university* interchangeably.
2. The growth of capitalism also contributes to monetization (Polanyi 1944); thus, in our analyses we control for economic factors.
3. Carnegie later changed his tune and became a supporter of higher education.
4. This state of affairs generates reactionary antisocial movements. Thus far, reactionary movements have tended to be narrow (e.g., focusing on vaccines, evolution, or climate change) and mimic conventional forms (e.g., invoking alternative purported professional experts and evidence) rather than wholly repudiating the edifice of modern knowledge. But stronger reactions are a possibility.
5. This likely has additional consequences not discussed here, for instance, involving migration and “brain drain.”
6. Missing data were supplemented with information from UNESCO yearbooks. Gaps shorter than five years were filled using linear interpolation. These additions do not alter our findings.
7. Gross enrollments may exceed 100 percent due to how the denominator is calculated (see World Bank 2020).

8. Organizational measures have their own limitations, so we do not focus on them here. However, research on the effects of university founding would be a fruitful direction for the literature. See Ramirez and Tiplic (2014) and Valero and Van Reenen (2019).
9. We conducted Hausman tests to compare random versus fixed effects. In some cases, fixed-effect models were preferred. To simplify presentation, we use fixed effects throughout.
10. These results hold when we control for international pressures, such as treaty ratifications (not presented; available upon request).
11. Sector measurements are very crude. Much activity coded as agricultural or industrial in fact reflects expanded services (e.g., human relations departments in firms). In overall raw analyses, higher education produces positive effects on all three categories although larger associations with the service sector, specifically.
12. The real world is far more complex than our models, with potential mediating and reciprocal effects. For instance, professionalization may have reciprocal effects on higher education, and it may partly mediate other outcomes, like monetization. Likewise, rationalization and monetization, although analytically distinct, have a reciprocal relationship in many contexts. Our use of longitudinal data and various robustness checks in Appendix C (available in the online supplement) help address some concerns.

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