

The Historical Roots of Corruption: State Building, Economic Inequality, and Mass Education.

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Abstract

We show a link between levels of mass education in 1870 and corruption levels in 2010 for 78 countries that remains strong when controlling for change in the level of education, GDP/ capita, and democratic governance. A theoretical model for the existence of a causal mechanism between universal education and control of corruption is presented. Early introduction of universal education is linked to levels of economic equality in the late 19th and early 20st centuries and to efforts to increase state capacity. First, societies with more equal education gave citizens more opportunities and power for opposing corruption. Secondly, the need for increased state capacity was a strong motivation for the introduction of universal education in many countries. In addition to the statistical analyses, historical evidence show that strong states provided more education to their publics and that such states were more common where economic disparities were initially smaller.

The problem and the arguments

The problem of curbing corruption has concerned philosophers, social scientists, and policy makers since Aristotle (Wallis, 2005, 7). While some countries seem to have been able to carry out substantial reductions of corruption, perceived levels corruption remains high throughout much of the world. In the 2010 Corruption Perceptions Index from Transparency International (TI), measuring elites' evaluations of the honesty (or dishonesty) of political and economic institutions in their countries, 131 of the 178 nations fell below the midpoint on the 10 point of the index, with higher scores representing low corruption. Only 23 nations had scores (7 or higher) indicating that their governments are basically honest. In the Global Corruption Barometer for 2013, public opinion surveys in 107 countries conducted by TI, a majority did not see corruption as a major problem in only one country (Denmark).

We do not try to resolve the debate as to what corruption means. Some recent analyses have opposite to “ethical universalism” (Mungiu-Pippidi 2006) or “impartiality” in the exercise of public power (Rothstein 2011). This means that corruption occurs when officials in charge of a society’s “public goods” turns them into their private goods—an approach that may still be debatable but more comprehensive than other conceptualizations (Rothstein & Teorell 2012) .

Our central argument is that systemic corruption is deeply rooted in the underlying social and historical political structure. This argument is in line with a growing body of historical institutionalism arguing that historical conditions ranging from institutions to natural resources can have long term effects on economic prosperity as well as democratization (Acemoglu and Robinson, 2012; Comin *et al* 2010; Engerman and Sokoloff, 2010; Guiliano and Nunn 2013; Welzel, 2013). Our work is close to Glaeser *et al* (2004), who show that countries with the

largest primary school enrollments in 1900 had the greatest gross domestic product per capita a century later.

We find a similar dynamic between historical levels of education (in 1870) and contemporary (2010) levels of corruption across 78 countries. The persistence of high levels of corruption in many countries suggests that it has roots stemming from long-term factors rather than from more recent institutional changes. We focus on historical levels of education because:

(1) education has been one of the few factors that has been linked to lower levels of corruption (Goldin and Katz, 1999, 699; Rothstein, 2011, 111-115; Uslaner, 2008, 236-241).

(2) education leads to other factors that promote honesty, such as generalized trust and a sense of identity with the entire country rather than with specific sects or groups (Darden, 2013; Uslaner, 2002, 208);

(3) higher levels of education lead to greater levels of wealth and equality for countries, both of which are linked to lower levels of corruption (Uslaner, 2008; Glaeser, Scheinkman, and Shleifer, 2003).

The mean education level across countries has increased markedly (by six-fold) from 1870 to 2010). Yet the past has a heavy hand: The countries with the highest levels of education at the start of the series were also those at the top 140 years later ($r = .76$). And those countries that depart most from this linear relationship were the countries with the highest levels of education in 1870.

We offer several predictions:

- (1) Greater historical levels of education lead to less perceived corruption in the present;
- (2) Historical levels of education matter more for contemporary corruption than do changes in education levels. The past matters more than increases in education do,

- although "catch up" matters. But few countries have great increases in schooling levels.
- (3) Historical levels of education are more important than earlier wealth (GDP per capita) in shaping corruption. Wealth matters, but education is more important.
 - (4) Early education levels are higher in developed countries than in former colonies, but even more critical is the background of the colonials.¹ Countries with large European populations had much higher levels of education than other (former) colonies. Settlers of European origin had expectations from the state similar to the people in their native countries, so their colonial "masters" promoted higher levels of education for them than where the population was primarily indigenous (cf. Easterly and Levine, 2012).
 - (5) Countries with a more egalitarian distribution of land had higher levels of education in the late 19th century—and, in turn, countries with higher education in the past are more equal today—reflecting the importance of universal social welfare programs such as universal education for equality (Rothstein and Uslaner, 2005).
 - (6) Democracy has no impact on levels of corruption *or* on the levels of education. Democracies had neither higher levels of education in 1870 nor less perceived corruption in 2010. Our case studies suggest that political ambitions to increase *state capacity* did matter.
 - (7) Finally, we estimate an instrumental variable regression in which we show that three factors—mean school years in 1870, change in school years over time, and contemporary press freedom—determine contemporary levels of corruption (while

¹ Independent in contrast to (former) colonies include Western Europe, North America, Australia, New Zealand, Japan, South Korea

current per capita income, a contemporary measure of democratic governance, and the net level of inequality are *not* significant predictors of corruption. In the first stage of the estimation, only former colonial status and the share of people of European origins are significant predictors of early education.

Our central argument is that universal education is a critical factor in reducing corruption. Countries can "catch up" and changes in mean years of schooling also affect corruption—though not as much as historical levels. This line causality is supported by other recent empirical work showing that universal public policies can reduce corruption (Dahlström et. al. 2013, Kumlin and Rothstein 2011, Rothstein and Uslaner 2005). In addition, the human capital matters more than the level of democracy in a country 140 years ago (cf. Glaeser *et al.*, 2004). There seems also to be a strong effect from the political elite's ambitions to increase *state capacity* through educational reforms.

In our empirical analysis we combine quantitative and qualitative data. Some of the quantitative analyses are based upon small samples since many key variables for the period around 1870 (such as land inequality, GNP per capita and share of Protestants) are only available for a small number of countries. Space dictates that we can only highlight a few features of our cases that are particularly important for our theoretical approach.

Theory: Why universal education should matter for corruption?

A number of different arguments have been put forward for why the introduction of universal education should have a positive impact for controlling corruption. Darden (2013) and Uslaner (2002) argue that universal education creates strong social bonds among different groups in a society. In turn this makes cleavages based upon clientelism and corruption less likely. The

introduction of universal education created a sense of citizenship and loyalty towards the state (Weber 1976; Boli 1989; Green 1990). The American founders believed that universal education lay at the heart of the "republican virtue of an open and common system" for self-government (Goldin and Katz, 2008, 135-36). More educated people are more likely to complain about corruption, even in authoritarian states (Botero, Ponce, and Shleifer, 2012, 6).

Second, the introduction of free universal education should lead to a "virtues cycle" between widespread education and increased socio-economic equality. High levels of inequality enable the elite to undermine the legal and political institutions and use them for their own benefit. If inequality is high, the economic elite is likely to pursue socially harmful policies, since the legal, political, and regulatory systems will not hold them accountable (Dutta and Mishra, 2013; Glaeser *et al.*, 2004, 200; You, 2008).

Third, access to education provided more people with the skills to find gainful employment so they did not have to rely on corrupt, or clientelistic structures of power (Goldin and Katz, 2008, 29, 133; Uslaner, 2008, 239-241). Over time the educational inequalities between the rich and the poor in countries that established universal education were sharply reduced, though not eliminated (Morrison and Murdin, 2010).

Fourth, more widespread education was critical for increasing gender equality. Nineteenth century school enrollments were highest where girls had access to education, notably the United States and lowest when girls were excluded (Goldin and Katz, 2008, 21, 133; Benavot and Riddle, 1988, 201 1971, 6). Gender equality is strongly related to lower levels of corruption (Wängnerud 2012, Grimes and Wängnerud 2010).

Fifth, some have argued that a free press with a broad circulation is important for curbing corruption (Adserà, Boix, and Payne, 2003; Brunetti and Weder, 2003). The effectiveness of a

vigilant press for curbing corruption depends on widespread literacy. If most people cannot read, there will be fewer newspapers sold and the popular knowledge about corruption and the demand for accountability and “clean government” will be lower.

We draw from these arguments a framework in which reforms such as free universal education is an important *signal* from the state to its citizens, sending a message that the state serves more than the particularistic interests of the economic and political elite. The introduction of free universal education implies that the state is also an operation built on universal principles promoting a “common good.” Mungiu-Pippidi (2006) conceptualized such policies as a change from corrupt particularism to ethical universalism—what North et. al (2009) call the transition of the state from a “limited access order” to an “open access order.” However, the frameworks of Mungiu-Pippi and North *et al.* lack an operational device that explains what type of institutional change will a society on the path away to universalism/open access order. We argue that the introduction of universal education can serve as such a device.

Religion, Colonialism and Equality

In Western Europe, North America, Australia, and New Zealand, the movement for widespread education had an important ally in expanding education: Protestant churches wanted people to be educated so that they could read the Bible. In contrast, the Catholic church generally feared that literacy might challenge its authority (Woodberry, 2011). Education empowered people not just to read the Bible, but to excel in other areas of learning. Protestant countries, largely because of their higher levels of education, had lower levels of land inequality than did Catholic countries in the 19th century (Frankema, 2010, 426)

In most colonial settings local political communities did not have the resources to create mass education. Colonial powers did little to advance the lives of the people they ruled. Local leaders in colonies and weak states would finance schools for a handful of young people (and rarely for girls)—except when the lands became home to people from the colonial powers. We show below that the Protestant share of the population shaped school enrollments in independent countries while the European share of the population mattered more in colonies.

It was not just strong states that promoted public education. Countries with more equal distributions of land had citizenries who could make greater demands on the state, notably for education. It was economic equality, not political equality (Acemoglu and Robinson, 2012), that led to greater literacy. As we show below, democracy did not lead to greater levels of education. Wealthier countries were more likely to have higher levels of education, but the level of affluence mattered less than equality.

The Data and the Results

We first examine the roots of contemporary corruption by analyzing the linkages with measures of educational attainment, inequality, and democratization in the 19th century. Our measure of corruption is the widely used Corruption Perceptions Index (CPI) of Transparency International for 2010, which is based on expert surveys.² We cannot measure corruption directly, so we rely upon a measure of perceived corruption. The most corrupt countries have the lowest scores on the 10 point scale. We use new data sets on historical levels of education developed by Morrison and Murtin (in press) and on historical income levels by Bourginon and

² Other measures would not change the results. different expert based measures of “good governance” correlate at a 0.9 level (Holmberg et. al. (2009). The expert based measures correlate with measures from surveys of citizens at an almost equally high level (Bechert and Quandt 2009, Svallfors 2012).

Morrison as well as existing data on democratization, percent family farms, and percent Protestant.³ 1870 is the earliest date for which data about mean levels of schooling are available for a reasonably large set of countries (n=78). Some measures—gross national product per capita, the level of democracy, and family farm percentage—are only available for a small number of countries. So we estimate ordinary least squares regressions for equations in which we include these measures. We estimate models for corruption and for mean school years separately and then an instrumental variable regression for corruption. The exogenous variables predicting levels of education are colonial status and European share of the population.

More highly corrupt countries are also less likely to invest in higher education (Uslaner, 2008, 74-79). Investigating this is outside our agenda—and data. It makes no sense to "predict" 1870 education levels from contemporary corruption perceptions and there are no measures of corruption for the 19th century.

We did examine alternative predictors of education using measures of factor endowments (climates, farm animals, agricultural outputs; cf. Frankema, 2010; Sokoloff and Engeman, 2000)

³ The Morrison-Murtin data set is available at <http://www.fabricemurtin.com/> and the Bourginon-Morrison economic data are available at <http://www.delta.ens.fr/XIX/#1870> Since many of the countries in the Transparency International data were not in existence in 1870, we matched the regional/colonial codes in these data sets to contemporary nations. This increased the sample size of the Morrison-Murtin data set from 74 to 78 (see the Appendix for a list of countries and their levels of education in 1870). Glaeser *et al.*(2004) use Lindert's measure of education for 1900; it covers fewer countries. The correlation between the two data sets is very high (.86 and .96 for the 1870 and 1900 Morrison-Murtin data, N = 30). Other data sets we use are Vanhanen (1997) for percent family farms and democratization (available at <http://www.fsd.uta.fi/english/data/catalogue/FSD1216/>) and You and Khagram (2005) for 1980 percent Protestant, provided by Jong-sun You. We also estimated models with both Vanhanen's measure of democratization and with the Polity IV historical measure of democracy (Marshall and Jaggers, 2010, available at <http://www.systemicpeace.org/polity/polity4.htm>).. The results were similar using Vanhanen's measure.

and early technology (Comin *et al.*, 2010). None were significant. Secondly, we present qualitative evidence about the importance of state-building. Since there are no numerical measures of state power or bureaucratic quality available for the 19th century we depend upon qualitative evidence for this part of the analysis.

Our central result is the strong correlation between the mean number of years of schooling in a country in 1870 and its level of corruption in 2010 (see Figure 1). Moving from the fewest years levels of education (.01 for four African nations) to the most (6.07 in Switzerland) leads to an increase in the CPI of 7.0 which is the difference between Angola, the fourth most corrupt country, and Canada, the fifth least corrupt nation.

The level of education in 1870 shapes corruption far more than does GNP per capita in the same year ($r^2 = .542$). The mean number of school years and wealth are strongly related ($r^2 = .604$, $N = 46$), but one is not a proxy for the other. In the regression the most educated country in 1870 is 4.5 units less corrupt than the least corrupt country, while the wealthiest state is 2.5 units less corrupt than the poorest (see Table 1).

Figure 1: Corruption 2010 by Mean School Years 1870

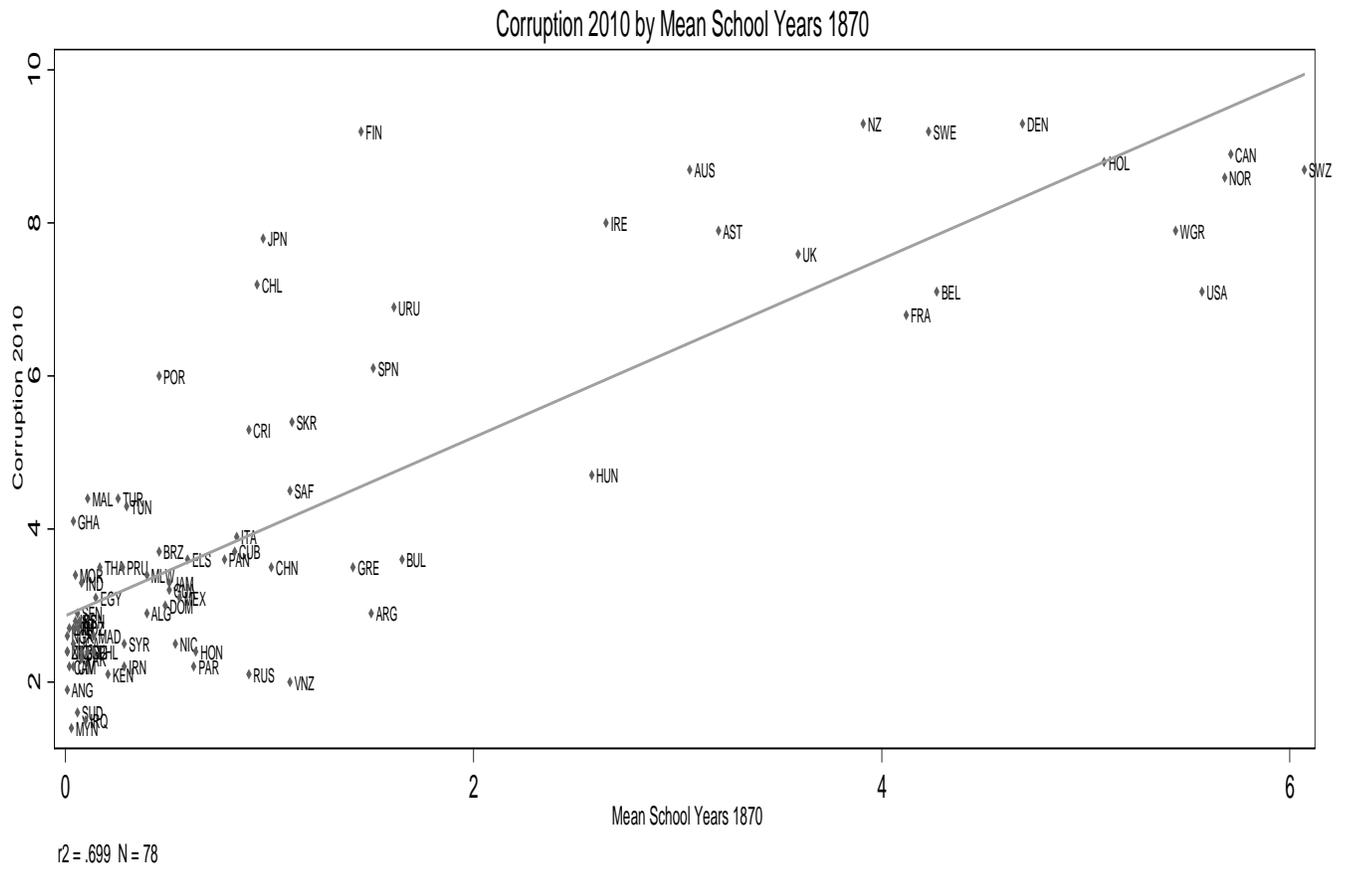


Table 1: Regression of 2010 Corruption by 1870 Mean School Years and GNP Per Capita

Variable	Coefficient	Standard Error	t Ratio
Mean School Years 1870	.738**	.174	4.22
Gross National Product Per Capita 1870	.001*	.0004	2.07
Constant	2.710**	.422	6.42

$R^2 = .677$ R.M.S.E. = 1.433 N = 46. ** p < .01 * p < .05

Is it all about long-term effects? Mostly, though not completely. Countries with high levels of education in 2010 also had more educated publics 140 years ago ($r^2 = .578$). Sixteen of the countries with the greatest increase in mean school years were in the 20 most educated countries in 1870; 17 of the 20 countries with the smallest growth in education were among the least educated third in 1870.

Our regression predicting 2010 levels of corruption from both 1870 education levels and changes in schooling over 140 years shows that both are significant (details available upon request). The impact of historical levels of education is 2.5 times that of change in education (6.36 units of the CPI corruption index compared to 2.71; t ratios of 12.23 and 3.88, respectively, N = 78, $R^2 = .750$). There is evidence of a catch-up effect. Countries with the fewest years of schooling in 1870 (less than two) had stronger growth in education levels—but, even here, the countries that were at the “top of the bottom” experienced the greatest growth rates in schooling ($r^2 = .376$). But history matters: The simple correlation between contemporary corruption and

levels of education in 1870 is higher ($r = .836$) than between corruption and contemporary mean school years ($r = .760$).

We reestimate this model including the Polity IV measure of democracy in 1870. The sample size is reduced to 40 countries ($R^2 = .734$). The coefficient for democracy is insignificant; going from the least to the most democratic nation increases transparency by a mere .27 points on the ten point scale, compared to 5.95 and 2.96 for mean level of education and education change. This is not an issue of collinearity. The correlation between mean school years and democracy in 1870 is just .435 and the simple r between democracy in 1870 and corruption in 2010 is only .421. The small effect may reflect the fact that there were few democratic regimes in the latter part of the 19th century. Green (1990, 31f) provides qualitative support: “One of the great ironies of educational history is that the more 'democratic' nineteenth-century powers like France, England and the USA, ..., were forced to look to the autocratic German states for examples of educational reforms to adopt at home.”

Western Europe: Mass Education and the Need for State-Building

The question of why and when universal and free mass education was established in Europe during the 19th century comes with a number of surprises. One is that the most economically developed country, England, was a latecomer in this process. In 1806 Prussia became the first country to introduce universal mass education, almost a hundred years before England did.

Green (1990) shows that sociological theories that stress the importance of urbanization, working-life conditions and changing family structures cannot explain why France and Prussia (and Denmark and Sweden) developed universal mass schooling well before England. Instead

Green (1990) as well as Boli (1989) and Weber (1976) point to the political elite's perceived need for state-building and national unity as the main driving force. Prussia, Sweden, and France developed universal mass education as a mean for creating "new citizens" with a strong national identity which, in its turn, was seen as needed for effective state building. The French system of mass education was established not only to make "peasants into Frenchmen" but more important to to teach them "national and patriotic sentiments" (Weber, 1976, 332).. As Green (1990, 79) argues, the new systems for mass education

...signaled a decisive break with the voluntary and particularistic mode of medieval and early modern education, where learning was narrowly associated with specialized forms of clerical, craft and legal training, and existed merely as an extension of the corporate interests of the church, the town, the guild and the family. Public education embodied a new universalism which acknowledged that education was applicable to all groups in society and should serve a variety of social needs. The national systems were designed specifically to transcend the narrow particularism of earlier forms of learning. They were to serve the nation as a whole.

The new systems of mass education that arose in Denmark, France, Prussia, and Sweden were built on new principles that citizenship should be based on universality and egalitarianism: one of the most striking aspect of the universalism" of the law that established free mass education in Sweden in 1842 was that boys and girls would be treated equally in the new system and that they were to be thought together (Boli, 1989, 34, 232).

Can particular historical cases of the development of mass education be traced to contemporary levels of corruption? Today's Germany has a comparatively low level of

corruption while Italy is the opposite case. Can this huge difference in levels of corruption between Germany and Italy be traced back to variations in efforts in mass education during the second half of the 19th century? The answer seems to be a resounding yes.

Ramirez and Boli (1987) argue that nation building was the primary reason Prussia introduced mass education. Schooling was a mean “to construct a unified national polity, where individuals would identify themselves with the nation.” Sponsoring mass schooling was a strategy for the state to avoid losing power in the interstate system by using it as the means of “national revitalization.” Prussia was a “state without a nation” while a strong central bureaucracy was in place. Its polity was dominated by local interests. Frederick II wrote the famous directive “General Regulations for Village Schools” (Ramirez and Boli 1987). Through state-directed education, “... all children were taught to identify with the state and its goals and purposes rather than with local polities (estates, peasant communities, regions, etc.).

In 1806 Napoleon triumphed over Prussia. The humiliation the Treaty of Tilsit provoked the Germans towards patriotism which would be fostered by mass education. According to the lectures of Fichte “...universal, state-directed, compulsory education would teach all Germans to be good Germans and would prepare them to play whatever role – military, economic, political – fell to them in helping the state reassert Prussian power.”. A *Bureau of education* was established, ten years later a department of education was created. Between the years 1817-1825 a state administration of education was established, and taxes were imposed in order to finance the school system (Ramirez and Boli 1987; cf. Green 1990). In Prussia, Denmark, France and Sweden the introduction of universal education reforms was a response to a sense of national crisis seen to stem from a fragmented social order. (Boli 1989, 218; Weber 1976).

A different case is Italy, which introduced a law about universal education in 1859. Italy was not a unified nation state but instead had strong regional differences. The implementation of the school reform was much more efficient in the northern regions whereas little was done in the southern regions before 1900. According to Smith (1997, 51):

Virtually, the whole southern agricultural population was illiterate. Yet it was impossible to apply the (...) law of 1859 which had specified two years' compulsory education, because parents would not have co-operated even if the teachers and schools could have been found.

Putnam (1993) found great regional differences in institutional effectiveness between northern and southern Italy. These regional differences in corruption and the quality of government institutions persist (Charron, Lapuente and Rothstein 2013). As late as 1911, half of the Italian population was illiterate (Smith 1997). There was a lasting impact of what took place in national systems of education during the late 19th century and contemporary levels of “good governance” not only between states but also between regions within states.

The Protestant churches in Western Europe supported public education more than the Catholic churches. Before the twentieth century regions with more Protestants had higher literacy rates (Woodberry 2011). Scandinavia, lowland Scotland, and Iceland were all very poor and yet had broad-based literacy already in the early 19th century. The Protestant churches funded religiously financed literacy campaigns and supported public education.

The Catholic Church invested in education, but only where it faced competition (such as in Ireland, North America and in the British colonies) or when facing a secularizing state such as France. Where competition was lacking—in Southern Italy, Spain and Portugal—education was

not a priority. The Catholic Church also feared literacy as this was seen as a means to a Protestant reformation (Gill 1998).

In England and the Nordic countries the church became an official part of the state. This made it easier for these states to use the schools that were run by the local parishes or heavily influenced by the clergy as instrument for state building, not least by influencing the content in disciplines such as history and literature (Weber, 1976, ch. 18; Tingsten, 1969). While the clergy ran the schools, the financing came from the state (or was mandated for the local municipalities by law). Universal mass education in Denmark, France, Prussia and Sweden during the 19th century should not be seen as a mere extension of earlier forms of church dominated education (Boli,1989, 209-212; Weber,1976, 362-364; and Green, 1990). Instead, as Green (1990, 29) argues:

What characterized the national education system was its 'universality', and specific orientation towards the secular needs of the state and civil society.

As a signal of “universalism” and “open access”, free mass education was introduced several decades before universal welfare state programs such as public pensions or health insurance. The underlying mechanism behind Weber's Protestant ethic, Becker and Woessmann (2009) argue, is not the religious message of hard work, but the greater literacy where Protestantism was dominant.

Fewer Educational Opportunities: Outside the Independent Nations

For the contemporary or former colonies in 1870,⁴ the mean level of education was .42,

⁴ Fifty-one of 57 countries were colonies or former colonies. The exceptions are Bulgaria, China, Iran, Hungary, (South) Korea, Thailand, Russia, and Turkey.

less than a half a year of schooling, compared to 2.88 for the developed and independent nations. The publics in only five Western countries (Portugal, Italy, Japan, Greece, and Finland, in descending order) had average schooling less than half a year in 1870, while only two (former) colonies (Argentina and Uruguay) had publics with that much education.

The major powers ruling colonies in our sample were Great Britain (19 countries) and France (9). The British and French did little to provide education for their colonies, which had .17 and .11 school years each in 1870. The data set includes a diverse set of independent nations, with some countries (Bulgaria and Hungary) having education levels just below levels in Western Europe, and others (China, Japan, Russia, and South Korea) with schooling comparable to many former Spanish colonies, and a third group (Iran, Thailand, Turkey) in the bottom third of nations.. The ten independent nations averaged 1.2 years of education in 1870, still well below levels in Western Europe and the four English speaking countries outside Europe (3.68) but greater than the former colonies of Britain (.99), and Spain/Portugal (.66).

Throughout the British and French colonies, the vacuum in state-provided education was left to missionaries, settlers, or local authorities (Bledsoe, 1992, 188; Heggoy, 1973, 183; Malinowski, 1943, 649; Mpka, n.d.). Each had limited resources and often less commitment to educating the native populations (Maddison, 1971, 6-8); Mpka, n.d.).

Indian schools were designed to “Anglicize” the population. All instruction was in English (Mantena, 2010; Maddison, 1971, 6). In North Africa, French colonialists met with resistance, as people often refused to send their children to the handful of schools, which emphasized French language and culture and did not permit any instruction in Islam (Balch, 1909; Heggoy, 1973). Spanish colonialism—and to a lesser degree Portuguese rule in Brazil—placed a greater emphasis on providing education (and other services) to the population than did

the British and the French. Premo (2005, 81) argued that Spanish colonial rule in Peru emphasized education: “[schools] served as social workshops in which early modern Iberian culture, religion, and political ideologies were reproduced among a colonial populace, and particularly a young colonial populace.” The Spanish parliament (Cortes) decreed that universal free public education be made available to every community in Cuba with at least 100 residents; 21 years later a plan was adopted shifting all education from private to public control (Fitchen, 1974, 109, 111)

Uruguayans were the most educated Latin American population in 1870, with an average of 1.61 years of schooling. Yet, “...the small aboriginal population had been almost liquidated long before [1850] and a strong immigration from Europe was taking place” (Arocena and Sutz, 2008, 1-2). Where the indigenous population remained dominant, the Spanish colonial regime exploited indigenous labor and provided much lower levels of education.

In many independent countries outside the West (such as Turkey, China, Japan, and Korea) the state did not assume responsibility to provide education. Only a small share of the population received education provided by the military, religious authorities, or local nobles (Adams, 1960; Dore, 1964; Frey, 1964, 209, 218; Kilicap, 2009, 100-101). Hungary and Bulgaria, with the highest level of education among the independent nations, had state-supported secular education by the middle of the 19th century (Ministry of Education and Culture [Hungary], 2008, 7; Bulgarian Properties, 2008).

The share of Europeans in a country’s population matters for education because: (1) Europeans took the lead in the provision of widespread schooling; and (2) public education outside Europe largely took place where colonial powers permitted—and encouraged—migration from Europe. Engerman and Sokoloff (2002) argue that colonial powers in the

Americas extracted resources when they were available—either coercing natives to mine gold and silver or slaves to work the large farms producing sugar and cotton. Immigration was sharply restricted in these colonies. Where there were sparse native populations, the colonial powers encouraged immigration from Europe, as in the United States, Canada, Australia, New Zealand, Argentina, Uruguay, and (to a lesser extent) Chile. Diseases contracted from contact with European settlers (Easterly and Levine, 2012) and climates better suited to small-scale farming both led to lower shares of indigenous populations. Easterly and Levine (2012) show that the European share of the population at colonization explains more than half of the variance of contemporary per capita income across 112 countries; the effect, they posit, reflects historical levels of education. Outside the New World, there were few European immigrants (and little public education).

The Roots of Education Levels

To account for the development of education across nations, we consider the effects of equality, democratization, colonial history, Protestant population, and European background. We use Vanhanen's (1997, 48) estimates of the percent of family farms in a country in 1868, the share of all farms that are owned and operated by small farmers (with no more than four employees), as our indicator of equality. Boix (2008, 207) argues: "The percentage of family farms captures the degree of concentration and therefore inequality in the ownership of land." Easterly (2006, 15) holds that "...the family farm measure from earlier dates since 1858 is a good predictor of inequality today" (cf. Rueschemeyer, Stephens, and Stephens, 1992, 139-140; Galor, Maov, and Vollrath, 2009, 144).

We report the regressions for all countries, independent nations, and (former) colonies in Tables A-1, A2, and A3 in the appendix. These estimations are based upon *very* small samples (35 overall, 21 independent countries, and 14 colonies), largely because family farm percentage is only available for these 35 countries. So we urge caution in interpreting them. However, the story they tell confirms our expectations.

There are two critical differences below between current or former colonies and independent states. First, the Protestant share of the population led to higher levels of education *only for independent states*. Second, the European population share is the most important factor shaping education levels in 1870 in colonies but is insignificant in independent states. The bivariate correlations for larger sample sizes confirm these estimates. The Protestant share is strongly related to 1870 education levels for independent states ($r = .733$, $N = 27$) but not for colonies ($r = .182$, $N = 51$). Education and the European share are strongly linked in present and former colonies ($N = 49$, $r = .857$).

Higher levels of democracy do not matter in either colonies or independent states. Land inequality is significant in both, but more in independent states, largely because there was less variance in both land inequality and mean school years for colonies.

Countries with a larger share of European stock also were more equal ($r^2 = .235$). Our story of state capacity in Northern Europe above fits the story of equality as well. While Prussia had relatively low levels of land and income inequality (see above), Britain had a highly unequal distribution of land: Only five percent of farms were owned by individual families in 1868, a level comparable to most Latin American countries and far lower than their former colonies in North America, where 60 percent of farms in the United States and 63 percent in Canada were family owned (ranking only behind Norway). Inequality was lower when the Protestant share of

populations was greater ($r^2 = .410$). The factors shaping the provision of education—and ultimately low corruption—were part of a larger syndrome.

Finally, we estimate an instrumental variable model for contemporary corruption with mean levels of education in 1870 endogenous (see Table 2). The instruments for mean education levels are the Protestant share of the population, the European share, and colonial status. All are significant at $p < .01$.⁵ The model includes the instrument for mean school years, mean school year change, gross national product per capita adjusted for purchasing power parity (for 2000 from the Penn World Tables), the Polity IV democracy index, Solt's net Gini index, and Freedom House's Press Freedom index for 2002 (from Daniel Treisman's Decentralization data set).⁶

In the regression for 67 countries, neither wealth, inequality, nor democracy are significant. What matters most are historical levels of education and to a lesser extent change in education levels.

The estimated effect of the mean school year instrument on corruption perceptions in 2010 is 13.7, which is greater than the full range of the CPI. For the mean school year measure without instrumentation, the estimated effect is 4.6, which amounts to the difference between Denmark (the least corrupt country) and Hungary. For mean school year change, the effect is

⁵ The weak and underidentification tests can be rejected at conventional levels.

⁶ Available at

<http://www.sscnet.ucla.edu/polisci/faculty/treisman/Pages/unpublishedpapers.html>. The highest scores are for the countries that have the most regulation on the media, as well as the greatest number of political and economic pressures on the media, (<http://www.freedomhouse.org/report-types/freedom-press#.U81AbvldXh4>).

half as great (2.3). For press freedom it is 2.88, it is the difference between Denmark and France. But press freedom may not be a simple institutional solution to corruption. Färdegh (2013) shows that press freedom reduces corruption *only* in "...well-established electoral democracies." So the belief that you can engineer lower corruption may be misplaced. Freedom of the press is strongly related to historical levels of education ($r = -.648$ and $-.807$ with the instrument). Press freedom can help combat corruption, but the power of the press depends upon a literate public.

Our results extend Glaeser *et al.* (2004), but differ from those of Acemoglu and Robinson (2012, 18-19, 27), who argue that English colonial rule led to better contemporary outcomes than did Spanish colonization. Spanish rule was more based on "looting, and gold and silver lust" while English colonies were less extractive. We find that this dichotomy is too simplistic. Nor does the Protestant-Catholic religious distinction matter in the colonies. Spanish and English colonies with large European populations had high levels of education, while territories with few colonials (including English dependencies in Africa and Asia) lagged behind. Nor is there evidence that democracy led either to greater education in the 1870s or to less corruption today.

Table 2: Instrumental Variable Regression of Corruption Perceptions 2010

Variable	Coefficient	Standard Error	t Ratio
Mean School Years 1870	.760***	.144	5.26
Mean School Year Change 1870-2010	.211***	.063	3.35
Press Freedom	-.040***	.012	-3.34
GNP per capita PPP (x 10000)	.066	.042	1.58
Democracy Polity IV	-.091	.075	-1.22
Net Gini 2004 Solt	-.026	.020	-1.31
Constant	5.225***	1.212	4.31

$R^2 = .813$ R.M.S.E. = 1.02 N = 67

*** $p < .0001$

Is Path Dependence Forever?

Our answer is “not necessarily”, the past is not set in stone. Three nations with middle-to-low levels of education in 1870 showed the largest increases over time: Finland (10.6 year increase), South Korea (11.8), and Japan (12.2). Contemporary Finland ranks among the four very least corrupt countries at 9.2. Japan is tied for 17th and South Korea is tied for 39th place. These are all much higher transparency scores than we would expect based upon their 1870 levels of education.

These three “deviant” cases increased mass education in a way that fits our theory about state capacity and equality. The movement for universal education in Korea first came as a reaction against the Japanese occupation that ended 1945. The Japanese rule limited access to education in Korea, but reform attempts were put aside when China intervened on behalf of North Korea and started the Korean War in 1949. When the war ended in 1954, education spending soared as the political elite saw education as the key to economic development.. Free compulsory primary education was adopted in 1954 and was achieved by 1959.

An expanded public education system including free textbooks was implemented by 1971. In 1968 the state replaced the comprehensive examination system for middle school admission with a more egalitarian lottery. By 1980, 96 percent of students in primary schools went on to middle schools and 85 percent of middle-school graduates went to high school (Ihm, 1995, 125, 129; Kim, 2002; Kim and Lee, 2003, 13). The trigger events for mass educational policies were the need for state building coming from the threats from the conflict with North Korea (You, n.d., 23- 29; You, 2005, 118).

Japan’s rise in education levels was more directly a response to external events. After Japan lost World War II, the United States Occupation Government drew a new constitution to

create a liberal democracy. The United States Education Mission to Japan, 27 prominent scholars, had the task of “develop[ing] a new education appropriate to a liberal democratic state” (Cummings, 1980, 30-31). The Occupation Government dictated that Japanese schools eliminate militarist and nationalist materials. Schools emphasized equal opportunity for all students and adopted a learning style in which children of different abilities and personalities worked together in small groups to promote equality. In the 1960s and 1970s, a public movement of “High schooling for everyone who desires it” lay behind a strong increase in mean school years. The public was involved, but the initial push toward more equality in schooling came from an external source, the United States (Okano and Tsuchiya, 1999, 30-40, 59).

The Finnish history is a combination of external threat, internal strife, and an ambition, after independence from Russia in 1917, to orient the country towards Western Europe and especially towards the other Nordic countries. Finland had been an integrated part of Sweden for 600 years until 1809 when Sweden’s defeat against Russia meant that Finland came under Russian rule. However, Finland never became an integrated part of the Russian empire but managed to keep some autonomy and the right to follow its own (that is, the Swedish) laws as a Grand Duchy (Kirby 2006; Meinander and Geddes 2011). Swedish was then the “official” language, mostly spoken by the ruling elite. From the 1860s onwards, a strong Finnish nationalist movement appeared very much centered on the language issue. In 1892 the Finnish language, spoken by peasants and workers, achieved equal legal status with Swedish. Since Swedish and Finnish are completely different languages, the language issue delayed the introduction of broad based schooling (Kirby 2006: 89).

After declaring independence from Russia in 1917, class-based political conflicts escalated into a gruesome civil war in 1918 (Ylinkangas 1998; Meinander 2011). The lack of full

nationhood until 1917, the difficult language question and the civil war all served to delay the introduction of mass education in Finland compared to the other Western European and especially Nordic countries. The rapid increase of education between during the 1920s and 1930s can be explained by a combination of the threat felt from the Soviet Union and a strong willingness to orient the country to Western Europe and the Scandinavian countries.

Thus, our three “deviant” cases follow the pattern of our theoretical model stressing mass education as a result of increased ambitions for state building following a perceived threat to the nation (cf. Aghion *et al.* 2012) . This is consistent with Uslaner’s (2008, ch. 7) account of curbing corruption in Hong Kong, Singapore, and Botswana—Hong Kong and Singapore faced perils from China and Botswana from South Africa and with the account of how Napoleon's conquest of Prussia led Ferdinand II to promote education.

Conclusion and discussion

The historical records show that the need for state building and increased state capacity are key factors in the widespread provision of public education. State capacity depends upon citizens who are more educated and more loyal to the state. Before free universal education was established, the state was for most citizens an organization that was dangerous and should be distrusted and avoided. It took people’s money and sons to fight wars, it catered mainly to the interests of a small elite and it usually did not provide much protection or other forms of public goods to ordinary people.

Establishing free universal education was often the first public policy provided in an impartial and equal manner (Ansell and Lindvall 2013). Free broad based education served as a signal sending a message that the state is not only, or primarily a “private good” for elite

domination but also caters to the principles of “universalism” and “open access” as stated by Mungiu-Pippidi (2006) and North et. al. (2011) as the main characteristic of institutions in societies with low corruption.

We show that state capacity is necessary but not sufficient to lead to the provision of public goods for a large share of the citizenry. Many strong states fare poorly in providing public goods. Strong states will provide collective goods when there is strong demand from citizens—and this will not happen when ordinary people have few resources. High levels of inequality mean that states are little more than means of extracting taxes to support the ruling elite. A strong state must attract the loyalty of citizens who perceive that they have reasons to be loyal.

Religion is also important but in a very specific way. When religious institutions worked *with* the state in the 19th century, as most European Protestant churches did, education flourished. When they themselves were the primary organization for providing education, they could not muster the necessary resources—or in some cases the interest—in providing universal education.

Policies for increased state capacity, and not democratization, initiated regimes to launch reforms for mass education. Prussia was the first country to launch free universal education, almost a century before the United Kingdom. While Prussia is often characterized as autocratic, semi-feudal and militaristic, newer results point to both high levels of family farms in the late 19th century and comparatively low Gini indices of economic inequality (Grant, 2005, 46, 308, 327-329).

Finally, our analysis show that state capacity is not in itself a sufficient explain the development of widespread education. The states that expended substantial resources to educate their citizens had the economic capacity to do so. Yet more equal distributions of income mattered more than wealth. The high levels of inequality in the countries that were colonies in

the late 19th century persisted over long periods of time—into the present. Even as these countries have democratized, they have not caught up to the more equal countries in levels of education—and they remain mired in high levels of corruption.

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APPENDIX

Table A-1: Mean School Years 1870 by Country

Country	Mean School Years 1870
Algeria	0.4
Angola	0.01
Argentina	1.5
Australia	3.06
Austria	3.2
Bangladesh	0.08
Belgium	4.27
Benin	0.07
Brazil	0.46
Bulgaria	1.65
Cameroon	0.02
Canada	5.71
Chile	0.94
China	1.01
Costa Rica	0.9
Cote d'Ivoire	0.04
Cuba	0.83
Denmark	4.69
Dominican Republic	0.49
Egypt	0.15
El Salvador	0.6
Ethiopia	0.02
Finland	1.45
Germany	5.44
France	4.12
Ghana	0.04
Greece	1.41
Guatemala	0.51
Honduras	0.64
Hungary	2.58
India	0.08
Indonesia	0.05
Iran	0.29
Iraq	0.1
Ireland	2.65
Italy	0.84
Jamaica	0.51

Japan	0.97
Kenya	0.21
Madagascar	0.14
Malawi	0.4
Malaysia	0.11
Mali	0.04
Mexico	0.56
Morocco	0.05
Mozambique	0.06
Myanmar	0.03
Netherlands	5.09
New Zealand	3.91
Nicaragua	0.54
Niger	0.01
Nigeria	0.01
Norway	5.68
Pakistan	0.08
Panama	0.78
Paraguay	0.63
Peru	0.28
Philippines	0.14
Portugal	0.46
Russia	0.9
Senegal	0.06
Sierra Leone	0.11
South Africa	1.1
South Korea	1.11
Spain	1.51
Sudan	0.06
Sweden	4.23
Switzerland	6.07
Syria	0.29
Thailand	0.17
Tunisia	0.3
Turkey	0.26
UK	3.59
USA	5.57
Uganda	0.04
Uruguay	1.61
Venezuela	1.1
Zimbabwe	0.01

Table A-2: Regression for Mean School Years 1870

	Coefficient	Standard Error	t Ratio.
Protestant % 1980	.025**	.009	2.90
European Share 1900	.016**	.006	2.56
Family farm % 1868	.039**	.013	2.90
Democracy Polity IV	.065	.102	.63
Colony (present or former)	-.061	.435	-.14
Constant	-.540	.836	-.65

$R^2 = .798$ R.M.S.E. = .960 N = 35 ** p < .01

Table A-3: Regression for Mean School Years 1870 by State Status

	Independent States		Colonies/Former Colonies	
	b	S.E.	b	S.E.
Protestant % 1980	.023*	.011	-.088	.071
European Share 1900	.013	.009	.023***	.007
Family farm % 1868	.044**	.019	.034*	.016
Democracy Polity IV	.118	.147	-.074	.092
Constant	-.934	1.186	.648	.585

Independent States: $R^2 = .737$ R.M.S.E. = 1.239 N = 21

Colonies: $R^2 = .656$ R.M.S.E. = .279 N = 14

*** p < .0001 ** p < .01 * p < .05