Landed Elites and Education Provision in England and Wales. Evidence from School Boards, 1870-99*

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Abstract

This paper studies how landownership concentration affected the introduction of national education in late-nineteenth century England and Wales. England and Wales is an interesting laboratory given that public schooling lagged behind Prussia and the United States by nearly half a century, that education provision was highly decentralized, and that it was funded through property taxes, borne mainly by landowners. Exploiting the reports from the Committee of Council on Education (1870–99), I find that counties where landownership was more concentrated raised fewer funds for education, built fewer schools, and as a result, their students were less likely to pass the national exams. I identify the mechanism through which land affects education provision to be a political one: the correlation is stronger where land is concentrated in the hands of peers controlling most public offices. Furthermore, exploiting variation in the distance to the peer's seat across 1,495 boroughs and parishes, I find that those under the influence of wealthier peers raised less funds for education.

JEL Codes: I24, N93, N33, O15.
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1 Introduction

Universal primary education has been a central goal of the development strategies of most countries. However, the provision of public schooling is not always straightforward, particularly in countries with high levels of wealth inequality. Engerman and Sokoloff (2000) and Galor et al. (2009) famously showed that the opposition to education reforms may be particularly strong among landed elites, as there is a lack of complementarity between human capital and agrarian work and also to reduce the mobility of the rural labor force. This forces are of particular importance in explaining America's "reversal of fortune" between the north and the south (Coastworth 1993, Nugent and Robinson 2010, Vollrath 2009). In this paper, I examine whether this theory is also suited to explain why the provision of education in nineteenth century England lagged behind Prussia and the United States, nations that eventually overtook them as world's industrial leaders (McCloskey and Sandberg 1971).

England provides a unique setting to study the perverse effects of an unequal distribution of land. First, because land was heavily concentrated in a few hands. Around 1880, fewer than 5,000 landowners owned more than 50 percent of all the land (Cannadine 1990). Second, because the introduction of public schooling was highly decentralized. In response to a growing concern about Britain's loss of industrial leadership, the 1870 Forster's Education Act recognized for the first time that there was a role for the state in providing elementary education (Stephens 1998). In detail, School Boards were created in the districts and boroughs where there was a shortfall in education provision. Each Board could: (1) raise funds from a rate, (2) build and run public schools,[1] where existing Voluntary schools, that is, schools run by the church, were scarce, (3) subsidize these Voluntary schools, (4) pay the fees of the poorest children, and (5) create bylaws making attendance compulsory. In sum, School Boards had full powers to decide how much money to collect and how to spend it. This made them a good target for the entrenched landed elites, unwilling to subsidize the provision of public education

[1]These schools were commonly known as Board schools. To be precise, Public schools were fee-charging exclusive secondary schools, Eton, Rugby, or Harrow being the most known. Henceforth, for ease of exposition, I will refer to Board schools as public schools.

(Stephens 1998). Were these elites successful in taking over School Boards?

Figure 1 suggests the answer is yes. The chart plots the proportion of peer landowners in possession of 3,000 acres and upwards in a given county against the average funds raised from rates by School Boards between 1870–95, measured as shillings per capita. Clearly, counties where land was more concentrated in the peerage are associated with lower taxation and thus lower funds raised to invest in public schooling. As a result, less School Boards were created, expenditure in public schools was smaller, the system relied more on existing Voluntary schools, and, on average, less money was devoted to each scholar. This under-investment had its effects on the quality of education. In detail, children in counties where land was more concentrated presented miserable schooling results: they were significantly less likely to pass the national reading, writing and arithmetics exams. Standard measures of educational attainment, such as enrollment rates, were also affected.

The correlation between land concentration and educational outcomes is robust to the inclusion of many county-level controls that could also account for the provision of schooling. In detail, I include county-level occupational composition, income per capita, political ideology, or religiosity. Interestingly, the correlation between education and the share of manufacturing workers in a given county is of opposite sign than that of land concentration. This suggests that old landed elites and emerging industrialists clashed over the provision of public education in nineteenth century England, as suggested by Lindert (2004) and Galor and Moav (2006).

The second part of the analysis examines the mechanisms through which landownership concentration undermines education provision. The provision of education may be hampered by political or economic inequality (Acemoglu et al. 2007). Disentangling these two channels is a major empirical challenge, since economic and political inequality are usually correlated. To address this issue, I take advantage of the fact that, in contrast to continental Europe, British peers still retained a lot of political influence in the late nineteenth century (Allen 2009: p. 301), especially at the local level. Therefore, while landownership concentration in the hands of commoners is only associated with economic inequality, the landholdings of peers also reflect political inequality. In

a cross-section of English and Welsh counties, I find that the correlation between the provision of public schooling and landownership concentration is strong where land is in the hands of peers, but disappears for commoner landowners. Furthermore, exploiting variation across 1,495 School Boards in the distance to the peer's seat, I find that School Board exposed to wealthier peers systematically raised less funds for education. It would seem, therefore, that land inequality only affected the provision of schooling where the landed elite was sufficiently powerful and politically influential to effectively take over School Boards.

The remaining of the paper will be structured as follows. Section 2 reviews the literature and states the contribution of this paper. Section 3 depicts the expansion of education in nineteenth century England and the functioning of School Boards. Section 4 describes the data. Section 5 estimates the relation between land concentration and education. Section 6 examines the mechanisms behind this correlation in two ways. First, I disentangle landowners into peers and commoners to evaluate whether land affects education through a political channel in a cross-section of counties. Second, I exploit variation across School Boards in the distance to the peer's seat. Section 7 examines the robustness of the results. Finally, Section 8 concludes.

2 Literature review and contribution

This paper draws from various literatures. First, it relates to Unified Growth Theory. Human capital is at the spotlight of the transition from Malthusian stagnation to sustained economic growth. In particular, as the Industrial Revolution progressed to its second phase (1870–1914), human capital contributed both to the acceleration of technological progress and to the demographic transition (Galor and Weil 2000, Galor and Moav 2002). The idea behind this theory is that in coping with a rapidly changing economic environment, education became more attractive. Parents began trading "quality" for "quantity" in offspring, which eventually led to the demographic transition. The central role of human capital in explaining this transition has been established both theoretically (Galor and Moav 2002, Kogel and Prskawetz 2001, Jones and Run

2001, Hansen and Prescott 2002, Galor and Moav 2002) and quantitatively (Doepke and Zilibotti 2005, Fernandez-Villaverde 2007, Lagerlof 2006).

Given the importance of public elementary schooling for human capital formation, studying the process of its introduction is a key challenge for economists (Mokyr and Voth 2009). Galor and Moav (2006) formalize the argument put forward by Lindert (2004) that, due to a high degree of complementarity between human and physical capital, capitalists had an incentive to support and subsidize education, and therefore they lobbied for its provision. They support their theory by analyzing the vote for the 1902 Education Act. In particular, they find that MP's from more skilled-intensive districts were more likely to support the reform.[2] In this paper, I look at the other side of the coin by studying the reaction of the entrenched landed elite after Forster's Act (1870) recognized for the first time that there was a role of the state in providing public education.

My paper is also related to the seminal work by Engerman and Sokoloff (2000). They suggest that the "reversal of fortunes" between North and South America steams from geographically driven differences in inequality. One channel through which inequality dampens development is the provision of education. In detail, United States and Canada were well-suited for the production of grain and hence ended up with a more egalitarian land distribution. The absence of a powerful landed elite permuted North America to engage in the education of the general population already by the early nineteenth century. In contrast, in Latin America land was concentrated in the hands of a small elite engaged in the production of sugar, cotton, or coffee. There, funding the introduction of a public education system was far more challenging. This ultimately had terrible consequences for their long-run development prospects.

While Latin America provides the more distinctive set of evidence (Coastworth 1993, Engerman and Sokoloff 2000, Nugent and Robinson 2010, Easterly 2007), the literature relating land inequality and education provision also deals with the historical experiences of the United States and Europe. Galor et al. (2009) analyze the US "high-

[2]In a similar vein, Doepke and Zilibotti (2005) conclude that the introduction of child labor laws in England was also an institutional response to a raising demand for human capital.

school movement" in the early twentieth century. Land concentration is instrumented with variation in the relative price of crops subject to economies of scale — cotton and sugar cane — and with state specific climate conditions. Results suggest that land inequality had a significant adverse effect on educational expenditures. This finding is confirmed by Vollrath (2009), who nevertheless shows that differences in schooling between the north and the south of the United States cannot be entirely attributed to differences in farm size distribution. For Europe, Cinnirella and Hornung (2011) analyze the case of nineteenth century Prussia. Instrumenting land concentration with soil quality (Bhalla 1988, Bhalla and Roy 1988, Benjamin 1995), they find that a negative causal relationship between landownership concentration and school enrollment rates.

Finally, Clark and Gray (2014) analyze the case of England, and show that literacy rates between 1815–45 varied across regions, but due to culture, not to landownership inequality. In order evaluate the correlation between landownership concentration and the provision of public education in England, I focus instead in the post 1870 period, when a public education system financed through property taxes for the very first time. Before, the state did not even dip its toes on the provision of education. The elementary system was based on Voluntary schools, ran by the church, and funded only with local endowments, subscriptions, and bequests (Mitch 1992: p. 115). In this context, landowners might have subsidized education because of religious motivations, or because rivalry and emulation among their fellows (Hurt 1968). In any case, these motives are at odds with a landowner's willingness to be taxed for the provision of public schooling. As Thompson 1963 makes clear, the efforts of landowners "proceeded a little sporadically and lazily until galvanized into a sudden fury of action the 1870 Education Act." Thus, I see my paper as the first one to analyze the relation between land concentration and state-sponsored education for England and Wales.

An important contribution of this paper with respect to the previous literature is that I examine the effects of landownership concentration on a broader set of outcomes beyond enrollment and literacy rates. To do so, I use a source that, to the extent of my knowledge, remains unexplored by economists: the reports of the Committee of Council on Education. This source contains information of School Board funding, expenditures,

and educational outcomes. In detail, the reports asses how much School Boards raised from rates versus how much they received from the Committee of Education. The reports state how this money was spent: number of elementary schools built, teachers hired, expenses for maintenance, average cost of each scholar in attendance, interests from loans, ... Interestingly, the reports can be also used to check whether students were actually learning something. In detail, the reports state the percentage of scholars passing the national reading, writing, and arithmetics exam, as well as standard measures of enrollment.

In an intriguing work, Acemoglu et al. (2007) suggest that economic inequality may be confounded with political inequality. Thus, the correlation between land distribution and education provision may work through more than one channel. Using micro-evidence from Colombia, the authors show that once one controls for the degree of monopolization of public office, land inequality is no longer negatively associated with school enrollment. This powerfully suggests the existence of a political channel. By comparing the effects of land concentration in the hands of peers versus commoners, I will also be able to disentangle "pure" economic inequality from political inequality. My results are in line with Acemoglu et al. (2007). In England and Wales, land inequality affected the provision of public schooling through a political economy mechanism.

My paper studies how the struggle between entrenched landed elites and emerging capitalists shaped the expansion of public schooling in England. This sheds light on the effect of social conflict on the adoption of superior institutions. On the one side, Bourguignon and Verdier (2000) argue that as long as political participation is determined by education, capitalists may oppose the provision of public schooling. Another stand of the literature suggests that interest groups not only limit the introduction of superior institutions such as public schooling. They also may block the adoption of new technologies (Mokyr 1990, Parente 2000, Acemoglu and Robinson 2006). In contrast, I argue that in England the provision of public schooling was in fact the result of an intra-elite struggle between capitalists and entrenched landowners, and not the result of the social conflict between masses and elites. A similar argument is made by Galor and Moav (2006) for the provision of public education, Lizzeri and Persico (2004) for

public services, and by Doepke and Zilibotti (2005) for child labor restrictions.

Finally, this paper is also tangentially related to the Victorian decline literature. The classic explanation for Britain's loss of industrial leadership in the late-nineteenth century is the so-called "entrepreneurial failure" (Landes 1960, Saul 1968, Aldcroft 1964). According to this view, entrepreneurs failed to adopt the best available techniques, did not understand the growing importance of science, over invested in old staple export industries, were bad salesmen, and were insufficiently aggressive to extract monopoly profits from the whole world. These claims have proved to be utterly inconsistent with the quantitative evidence (Coastworth 2004). Indeed, substantial cliometric research (reviewed in McCloskey and Sandberg 1971, Nicholas 2004) makes clear that the economy was growing as fast as it was allowed by exogenous constraints.[3] Institutional rigidity (Elbaum and Lazonick 1984), a rigid class structure (Weiner 1981), the gentrification of successful capitalists (Thompson 1994), or the predominance of Anglicanism over non-conformism (Berghoff 1990) may instead explain why the "industrial spirit" weakened in England.

Education has also been considered as a potential explanation. Despite the fact that the introduction of public education in England lagged behind Prussia and the United States by half a century (Sanderson 1995), the focus has not been on this delay but on the nature of education. Allen (1979) suggested that schools such as Eton, Harrow, or Rugby, instilled aristocratic values and taught the classics, but excluded science and technology studies from the curriculum. It is not clear, however, that the French and German schools were more conductive to commercial and industrial progress (Pollard 1989, Berghoff and Moller 1994, Cassis 1997). Independently of what was taught, what is clear is that these schools were truly public and had been at place for a much longer time than in England and Wales. My hypothesis suggests that the British aristocracy weakened the "industrial spirit" not (only) by encouraging gentrification of emerging capitalists, but (also) by depriving the masses of education. After years of blaming the

[3]The clearest example of this is to be found in the cotton textile industry: While New England entrepreneurs were switching to a new technology — ring spinning — as a method of spinning cotton, in the mills of Lancashire industries installed mule spindles. This decision to persist with mules was not the result of entrepreneurs' failure to adopt a new technique, but an optimal response to demand for high-quality goods, and to factor costs (Sandberg 1969, Leunig 2001).

entrepreneurs, perhaps it is time to turn our attention to this class of land *rentiers*.

3 Historical background

Alonzo Potter, an American educator in the nineteenth century, came back from his trip around England shell-shocked. He wrote that "England has neglected the education of her laboring population, and the consequence is that the land swarms with paupers and vagabonds."[4] The introduction of public education in England and Wales lagged behind west Europe and the United States by fifty years (Sanderson 1995). While Prussia pioneered the development of national education in the eighteenth century, it was not until 1870 that a public system was established in England. Compulsory schooling was not effective until the 1880's (Green 1990). The state of Pennsylvania abolished tuition fees in 1834 (Cubberley 1934), but English elementary schools only became entirely free by 1891. Most notably, secondary schools remained exclusively private until the Balfour's Education Act of 1902. In contrast, Napoleon had created the state *lycee* exactly a century before (Moody 1979). As a consequence, in 1851 30 to 33 percent of the English adult population could not read nor write, in contrast with a 20 percent in Prussia (in 1849), and 9 percent of white Americans (in 1860). Although in 1878 adult illiteracy had reduced to 23 percent in England, it still lagged behind Germany and the United States, with 12 and 9 percent respectively.

It would be an over exaggeration to state that England did not create something like a network of elementary schools in the nineteenth century, but certainly it did so without state intervention. The system was based on Voluntary elementary schools and fee-charging secondary institutions like Eton, Rugby, or Harrow. The state barely dipped their toes in the management of Voluntary elementary schools. They were run chiefly by the National Society (Church of England) and the British and Foreign School Society (non-conformists), who did not receive local tax moneys (Green 1990).

In the 1867 Interntional Exposition in Paris, it became crystal-clear that this *laissez-faire* policy was damned. After winning most of the prizes in the Crystal Palace

[4](Potter and Emerson 1989: p.116).

Exhibition of 1851, the performance in 1867 was rather disappointing: in all of the ninety classes of manufacturers, England only dominated ten. According to Lyon Playfair, member of the jury, England fell behind other nations because "France, Prussia, Austria, Belgium and Switzerland possess good systems of industrial education and England possesses none."[5]

Forster's Act (1870) was the response to this perceived need for England and Wales.[6] There were objections to the concept of universal education, though. The main fear was that education would make laboring classes "think" and revolt once they realized how miserable their life conditions were (Stephens 1998). Perhaps because of this Forster's Act was never meant to fully break with the existing voluntary system. By 1881 there were only 3,692 (national) public schools against 14,370 Voluntary schools. By the turn of the century, only 50 percent of children attended public schools (Green 1990: p.7). In any case, the Act recognized that the establishment of elementary schools was the responsibility of the state, and it is considered the first attempt to introduce a national school system in England and Wales.

In particular, Forster's Act declared that the ratepayers of each Poor Law Union or borough could petition the creation of a School Board if the district suffered from a substantial shortfall in education. Board powers included: Raising funds from a rate; Building and running public schools, where existing Voluntary schools; Subsidizing Voluntary schools; Paying the fees of the poorest children to attend Voluntary schools; and Creating by-laws making attendance compulsory.

School Boards financed these policies by local rates, that is, property taxes.[7] They

[5]Quoted in Green (1990), p. 296.

[6]A similar act was passed in 1872 for Scotland. In opposition to England and Wales, it required compulsory attendance from the start, although fees still had to be paid until 1890, only one year before the Free Grant Act virtually established free education in England. The challenges faced by School Boards in Scotland were somehow different to those in England. In particular, problems arose where teachers who spoke no Gaelic attempted to teach children who did not know English (Tod 1873). Another important difference is that, in Scotland, the churches made a great contribution to the new system by handing over their schools without charge to the School Boards (Tod 1873). Instead, in England church leaders managed to be voted onto some boards, restrict the building of public schools, or divert the funds raised from rates to church schools (Stephens 1998). Finally, Scottish School Boards were coordinated by the Scotch Education Department, with no intervention from the English administration. Therefore, although the 1872 Scottish Education Act resembles Forster 's Act 1870, the English and Scottish experiences are too different to be included in the same analysis.

[7]Rates are a type of property tax system in the United Kingdom. The system of rates had their

were also eligible for grants from the central Education Committee. Grants were given on the basis of the performance of public schools in the national reading, writing, and arithmetics exams. This "Payment by Results" policy was accused of limiting elementary education to the three "Rs"[8] (Green 1990: p.7). Finally, School Boards also gathered some money from school fees and books sold to children.

According to Galor and Moav (2006), we should expect landowners to be less willing to pay these rates for the provision of education. The election system of Board members suggests that landowners could effectively undermine the provision of schooling. First, because Board members were elected only by ratepayers. Only those paying an annual rent of £10 or holding land valued at £10 could vote.[9]

In addition, the voting system was cumulative voting. Each voter could choose three (or more) Board members from a list of candidates, and those with the highest number of votes were chosen. This system ensured landed and religious minorities some representation on the Board (Stephens 1998).

Between 1870 and 1899, several Education Acts enforced and extended the principals of Forster's Act. Table 1 presents a timeline of the reforms. Importantly, attendance was made compulsory in 1880, but free elementary schooling was not established until 1891. The School Attendance Acts expanded the age of compulsory schooling until 11 and then 12 years.

School Boards were finally abolished by the Balfour Education Act (1902), which replaced them with around 300 Local Education Authorities. Between 1870–1902, School Boards created 5,700 public schools, providing education for 2.6m pupils (Stephens 1998). Was this sufficient to overcome England's education shortfall? Did entrenched landed elites gain control of School Boards where they were more powerful? The next section describes the data sources that I will use to answer these questions.

origin in the Poor Law Act 1601, for parishes to levy rates to fund the Poor Law. Forster's Education Act dictated that School Boards would finance themselves by a precept (a requisition) added to either the local poor rate or the municipal rate (Stephens 1998).

[8]That is, reading, writing, and arithmetics.

[9]The franchise was somewhat different from national elections, since female householders could vote and stand for office.

4 Data

The data for this project comes from four main sources, three of which are newly computerized. To measure the provision of public schooling, I exploit a rich source which, to the extent of my knowledge, remains unexplored by economists: the reports of the Committee of Council on Education. This reports contain information on School Board funding, expenditures, and various educational outcomes beyond traditional measures such as literacy rates. To measure landownership concentration, I will draw evidence from Bateman's *The Great Landowners of Great Britain and Ireland* (**?**). I complement this evidence with the family seats of great lords, which where computerized and geo-coded from Burke's *Heraldic Dictionary* (1826). Finally, to control for alternative determinants of schooling provision, I use Hechter (1976) UK county data, 1851–1966.

4.1 Reports of the Committee of Council on Education

In 1839 the Committee of Council on Education was created to replace the Church of England and Non Conformist societies in the duty of allocating school grants. The annual reports of this Committee stand as "the most significant single source in existence for the study of elementary education, particularly on State interest in public education, during virtually the whole long reign of Victoria" (Stephens 1997). Importantly, the Committee reports are suited for analysis both at the national and at the regional and local level, since most of the evidence is broken down by counties and districts. A great deal of quantified data is provided, especially for the period 1854 to 99. In detail, the data comprises three dimensions of schooling: School Board funding, that is, the money raised to provide public education, School Board expenditures, and education outcomes, the results from these polices.

Figure 2 illustrates the evidence on School Board funding. For the sake of illustration, I extract the information of School Boards located in Berkshire from the 1883–84 report. The three main sources of income for School Boards are reported: grants from the Committee (column 1), funds raised from local rates (column 2), and school fees (column 3). Also, the reports state the School Board endowment, the funds raised from

loans, and finally the income arising from other sources. Note that all this information is presented at the School Board level.

Similarly, the reports account for how School Boards spent these funds (Figure 3). In particular, there is information on how much was spent on election or on salaries. The reports also state the fraction of income devoted to running and maintaining Public and Industrial schools. The first were the schools created in districts where Voluntary schools were insufficient, the latter consisted in secondary institutions aimed at educating future industrialists. Finally, building and furnishing expenses, legal costs, interests on loans, and School Board indebtedness are reported.

Interestingly, I can assess whether these funds and these expenditures actually helped the children to learn something. From 1879–95, the reports state how many kids passed the reading, writing, and arithmetic national exams. The number of examinees is broken down by standards, from copying a manuscript and simple additions to writing a letter and mastering fractions.[10] These exams were used by inspectors to evaluate the task of School Boards. Committee grants were given as a function of results. This was known as "Payment by Results." Of course, there was an incentive to limit education to the three "Rs" (Green 1990: p.7), which may explain the high success rates. Finally, the reports also provide information on traditional education "outcomes" such as enrollment rates and school attendance.

I have computerized all the information on School Board funding, expenditure, and schooling outcomes at the county level for a sample of reports between 1870 and 1895[11]; and funding at the School Board level between 1872 and 1878. In sum, I have information of School Board funds from over 1,000 county-year observations and over 1,700 School-Board-year observations.

Table 2 presents some descriptive statistics of the computerized variables. School Boards mainly financed their activities by raising funds from rates. This property tax

[10] See Table A1 in the appendix for a detailed description of the standards.

[11] The omitted reports are those not digitized by the library at Northwestern University: 1870-71, 1870-71, 1887-88, 1889-90, and 1892-93. For School Board expenditures, the reports from 1872-73 to 1877-78 are also omitted as the data was not aggregated by counties. National examination results are not listed for 1871-72, so that report is also omitted when evaluating the relation between landownership concentration and schooling results. See Table A2 in the appendix for details.

collected, on average, 11 pence per capita, an order of magnitude higher than what School Boards received from the Committee of Council on Education (7.1 pence p.c.), and much more than what was collected from fees and books sold (2.4 pence p.c.). Funds from rates present the larger standard errors, suggesting that while some counties were eager to collect money for education from property taxes, others were not so keen to this possibility. While School Boards in Essex collected 44.8 pence p.c. in 1894–95. In contrast, Rutland only raised 2.3 pence p,c. from rates the same year.

For a more comprehensive comparison, Figure 5 plots the evolution of the funds raised from rates for two different groups of counties: those at the top 10 percent of the distribution in terms of average funds from rates (Merionethshire, Monmouthshire, Warwickshire, Cardiganshire, and Glamorganshire), against those in the bottom 10 percent (Oxfordshire, Wiltshire, Dorset, Rutland, and Chestershire). The patterns could not be more different. While both sets of counties see an increase in the funds raised from rates overtime, in the top 10 percent counties it is much more pronounced. In particular, although in the first five years after Forster's Act (1870) differences are not great, by 1890's, the top 10 percent counties collects 30 more pence per capita, that is, 7 times more funds from rates.

In terms of expenditures, Table 2 shows that School Boards were mainly committed to the maintenance of Public elementary schools. On average, more than 60 percent of the money was spent on these institutions. Again, the standard errors are large, suggesting that depending on the county where it was located, a School Board devoted different efforts to building and running public schools. Following our previous example, in 1894–95, School Boards located in Essex spent, on average, 58.8 pence per capita in public schools, while Rutland only devoted 2.6 d. Note also that the contribution to Industrial schools is negligible, suggesting that these institutions were not taken very seriously in late-Victorian England.

Finally, the high percentage of scholars passing the writing, reading and arithmetics exams reflects the "Payment by Results" policy. The high success rates are explained by the fact that grants were given as a function of exam results. However, there is still some variance, both across exams and across counties. The writing, and especially, the

arithmetics exam seem to be harder to pass. Also, as Figure 6 makes clear, not all counties performed equally. The chart plots the kernel density of passes across counties for each of the exams. For example, in arithmetics, the percentage of passes ranges from 61 percent (Suffolk in 1880–81) to 89 percent (Lancaster in 1890–91). This suggests that cross-county variation in examination results can be useful to evaluate differences in educational attainment.

4.2 Bateman's *Great Landowners*

Bateman (1883) consists on a list of all owners of 3,000 acres and upwards by 1876, worth £3,000 a year. Also, 1,300 owners of 2,000 acres and upwards, in England, Scotland, Ireland, and Wales are included. In the appendix, the book provides a table for each county showing the number of landowners and cumulative acreage, all divided into eight classes according to acreage and social status: peers or peers' sons (3,000 acres and upwards), commoner great landowners (3,000 acres and upwards), squires (1,000 to 3,000 acres), greater yeomen (300 to 1,000 acres), lesser yeomen (100 to 300 acres), small proprietors (one to 100 acres), cottagers (less than one acre), and public bodies.

Bateman's data is particularly suited for the purposes of this paper. First, it allows me to measure landownership concentration as the share of a county under large landholdings (over 3,000 acres), instead of using the Gini coefficient. I argue, like Cinnirella and Hornung (2011), that political power in nineteenth-century England was associated with the size of land property. Therefore, my measure captures better the effects of "political inequality" than the standard Gini measures of inequality. Moreover, the Gini index measures both between group and within group inequality. The latter, excluded by my measure of land concentration, is not necessarily associated with an unwillingness to pay for education.

The second advantage of Bateman's data is that it distinguishes between peers and commoners. All landowners had the incentive to oppose the provision of public education, but peers were the ones holding most of the political power, specially but not only in the House of the Lords. Therefore, disentangling land concentration with

respect to the status of the landowner I will be able to disentangle economic from political inequality as in Acemoglu et al. (2007).

The greatest shortcoming of Bateman's evidence is that it is a cross-section survey. It was only done in 1876, so I will not be able to exploit time variation in land concentration. However, Britain's land distribution, especially with respect to the largest estates, was quite stable by the end of the nineteenth century. According to Beckett (1977), "since the publication of Sir John Habakkuk (1939) seminal article on English landownership it has generally been held by historians that in the later seventeenth and eighteenth centuries there was a discernible trend of change in the pattern of landownership, which produced a period of stability from about 1750" (p. 567). In sum, Bateman's survey on 1876 can be taken as representative for the whole Victorian period.

Table 3 shows the distribution of land for the average county. On average, the largest share of a county is on the hands of large landowners. In particular, 30 landowners own 260 thousand acres out of a total of 630 thousand acres. That is, on average, around 40 percent of a county is on the hands of a small group of large landowners. In opposition, 12,000 cottagers only own 2,6 thousand acres, less than 0.5 percent of the total. Figure 7 plots the corresponding Lorenz curve.[12] The Gini index is 0.94, which gives a clear idea of how unequal the land distribution was in England and Wales in the late nineteenth century. Disentangling large landowners into peers versus commoners, it would seem that both groups were in possession of similar amounts of land (106 to 152 thousand acres). However, a peer landowner held 14 thousand acres of land on average, while each commoner large proprietor was "only" in possession of 6.5 thousand acres.

Table 3 suggests that the lion's share of land was on the hands of the aristocracy. However, across counties there was a meaningful variation in landownership concentration. Figure 8 shows the geographical distribution of peer landownership. In Lancashire, the cradle of the Industrial Revolution, and in the rich South East, peers hold a lower share of land. Between 5.1 and 14.4 percent of all landowners are peers in these counties. In contrast, in the West Midlands, Yorkshire and the Humber and the North East

[12]Calculated excluding public bodies and waste.

region, land seems to be more concentrated in the hands of the peerage. In Rutland, an extreme case, almost a half of the land belonged to members of this class!

5 Baseline results

Is landownership concentration associated with the delay in education provision in England and Wales? To answer this question I exploit cross-county variation in land concentration. In detail, I check whether School Boards located in counties were land inequality was high systematically under-provide education between 1870–1895.

Figure 9 suggests that, in fact, land inequality had a negative impact on education provision. The chart plots the kernel density function of funds raised from rates, the major source of income for School Boards, for two different sets of counties: Counties with large (above median) versus small (below median) land concentration. Land concentration is measured here as the share of a county in the hands of landowners in possession of 3,000 acres or more. Clearly, the estimated distributions are different. Between 1870–95, School Boards in counties with low levels of land concentration raise more funds for public education. The distribution for this counties is concentrated at 80 pence p.c. Instead, where land is largely concentrated property taxes only collected between 0 and 40 pence per capita.

The threats to this simple identification strategy are evident. One could argue that an omitted variable may be driving both land inequality and education measures. For example, counties with large landownership concentration might be poorer or less industrial, factors also affecting education provision. To account for that, my regressions will include a rich set of county-level controls such as income, occupational structure, religious composition, or political preferences (Hechter 1976). Formally, I specify the following relation between land inequality and schooling provision:

$$edu_{c,t} = \alpha + \beta\ land_c\ +\ \gamma manu_{c,t}\ +\ \mathbf{V}'_{c,t}\delta\ +\ \epsilon_{c,t}\ , \tag{1}$$

where $edu_{c,t}$ is an education measure in county c at decade t (e.g.. funds raised from

rates, expenditure in public schools, examination results, ...); *land* stands for landownership concentration. In detail, it is the share of county c in the hands of large landowners, that is, those in possession of 3,000 acres and upwards; *manu* is the share or employment in manufacturing, which intends to capture the support of industrialists to education reforms; and $\mathbf{V}_{c,t}$ is a vector of county-decade controls, including income, ideology,[13] percent non-conformists, religiosity, and a dummy for Wales.

Since Hechter (1976) county-level data only varies by decade, I use decade averages for my education measures rather than their annual values. Unfortunately, my measure of land concentration does not vary over time. This is not a great concern, since Britain's land distribution was quite stable by the end of the nineteenth century. In any case, to deal with this concern I adjust standard errors for clustering at the county level.

Table 4 shows the relation between landownership concentration and education funding. School Boards located in counties where land was more concentrated raised less money to invest in public education: they raised less funds from rates, received scarcer grants from the central Education Committee, and also extracted less from fees and books sold. Note that the effect is particularly strong for rates: every percentage point increase in land inequality is associated with 0.12 pence p.c. fewer funds raised from rates. It would seem, therefore, that the largest landowners could effectively oppose paying for education with taxes on their properties.

Results are robust to the inclusion of controls. As expected, more industrial counties raise more funds. In particular, one percentage point increase in the share of employment in the manufacturing sector is associated to increases in education funds by 0.4 pence per capita. The fact that landownership concentration and manufacturing employment have opposite signs hints a clash between landed and industrial elites for the provision of public education in late-Victorian England (Lindert 2004, Galor and Moav 2006).

Political ideology has a smaller effect than the percentage of non-conformists in a

[13]Ideology is measured by the percentage voting conservative in MPs elections in each decade. Hechter (1976) does not provide the evidence for the 1871-80 decade. I take the values of the following decade.

county. This is consistent with the traditional view that non-conformists were more willing to support public, non-denominational education (Galor and Moav 2006). Finally, income is positively associated with education funds in the full specification.

One should expect counties raising less funds to under-provide education. Table 5 shows that, where land was more concentrated, lower funds implied that the educational system relied more heavily on existing Voluntary schools than on newly built public schools (column [3]). In detail, one percent increase in the share of large landholdings is associated to a decrease by 0.64 in the ratio of public over Voluntary schools. Not only the number of schools built is affected by landownership concentration, but also the money spent on them. Every percentage point increase in land concentration is associated to a drop by 0.3 pence p.c. in the money spent on running and maintaining public schools (column [7]).

The effect, however, seems to be negligible for industrial schools. These were the only free secondary schools at the time. Their aim was to educate future industrialists. However, it does not seem they were taken very seriously anywhere in England and Wales, independently of the level of land concentration.

The number of teachers and the average cost per scholar were lower in counties where land was more unequally distributed. The coefficient is significant for female assistants. It would seem, therefore, that entrenched landed elites were opposed to spend money on infrastructure as well as to hiring and training teachers.

Again, control variables indicate that School Boards spent more in building and running schools non-conformist counties. The coefficient for income is negative and significant for the ratio of public to Voluntary schools. This result is consistent with the hypothesis that richer counties were already in possession of an acceptable education network based on Voluntary schools, and thus did not require to build as many Public Schools. On the contrary, there seems to be a positive relation between income and the number of certificate teachers in a county, although again the coefficient is not statistically significant.

Finally, Table 6 shows the effects of under-investment in education on educational outcomes. It seems that children from counties where land was highly concentrated were

less likely to pass the reading, writing and, especially, the arithmetics exam. Every 10 percent point increase in land concentration is associated to lower chances of passing the reading and writing exams in 0.7 percent, and the arithmetics exam in 0.9 percent. Given the high success rates — explained by the "Payment by Results" policy — these marginal effects are considerably large.

In opposition, the traditional measures of educational attainment — scholars in attendance and enrollment rates for exams — are not significantly affected by landownership concentration, although coefficients point in the expected direction. The lack of statistical power could be explained by the fact that in 1880 education was made compulsory for all children aged 5–11. This result suggest that previous studies focusing on enrollment rates might be missing part of the picture.

Finally, note that counties where manufacturing was important display higher success rates in the national exams, more students presented for examination, and also higher enrollment rates.

6 Mechanisms: political economy channel

In the previous section I showed a robust negative association between landownership concentration and funds raised for public education in late-Victorian England. As a consequence, investment in education infrastructure was low and schooling results miserable. This relation, however, might be driven by factors other than the political opposition of landowners to pay for the provision of education with taxes on their properties. Economic inequality may also interact with imperfect capital markets (Banerjee and Newman 1993 and Galor and Zeira 1993) or distort the composition of aggregate demand (Murphy et al. 1989). This may have affected indirectly the provision of public education.

Disentangling these channels is a major empirical challenge, since economic and political inequality are usually correlated. To address this issue, I take advantage of the fact that political power in nineteenth century Britain was heavily concentrated on peers. According to Douglas Allen,

> It is hard to exaggerate the extent to which the aristocracy ruled Britain through its control over what we now call public offices. Both houses of Parliament were controlled by them until the turn of the twentieth century. The King 's household, which evolved into the executive arm of the government, was the domain of the aristocracy, as were the great offices and tenures of state. The army and navy officers were drawn from the aristocracy, as were the judges, justices of the peace, and other local administrators. (Allen 2009: p. 301)

Thus, if landownership concentration affects the provision of education through a political channel, the status and political influence of landowners should matter. In detail, the negative effects on education funds, expenditures of School Boards, and educational outcomes should be greater in counties where land was heavily concentrated in the hands of peers. Bateman (1883) allows me to distinguish what fraction of large estates was owned by members of the aristocracy, and what fraction was owned by commoners.

Figure 10 illustrates the argument. I plot the average per capita funds raised from rates overtime for two groups of counties: those where the relative number of peer landowners is above versus below the median. The right panel does the same for commoner in possession of 3,000 acres and upwards. Clearly, funds raised from rates were larger in counties with fewer relative number of peers (left panel). Instead, a greater concentration of landownership in the hands of commoners does not seem to affect much the capacity of School Boards to raise funds for education (right panel).

Was land concentration, especially in the hands of a political elite, a threat to the expansion of education in late-Victorian England? In the following sub-sections I answer this question using cross-county variation in education provision in 1870–99 and variation at the School Board level between 1872 and 1878.

6.1 Cross-county variation (1870–99)

To isolate the political component of land inequality, I exploit cross-county variation. Formally, I run the same specification as in equation (1) but disentangling landowner-

ship concentration by the status of the landowner: peer vs. commoner.

$$edu_{c,t} = \alpha + \beta_1 \; land_peer_c + \beta_2 \; land_commoner_c \; + \; \gamma man_{c,t} \; + \; \mathbf{V}'_{c,t}\delta \; + \; \epsilon_{c,t} \; , \qquad (2)$$

where $land_peer$ is the share of county c in the hands of peers in possession of 3,000 acres and upwards and $land_peer$ is the corresponding measure for commoners. The former should reflect political inequality, while the latter should reflect economic inequality.

In Table 7, I present the results of running equation (2). The effect of land concentration on education provision is driven mainly by peer landownership. School Boards in counties where land was heavily concentrated in their hands raise less funds from rates and receive less grants from the Education Committee. For example, one percent increase the share of peer landownership decreases by 0.17 pence p.c. the funds raised from rates. For land concentration in commoner hands, the effect is much lower (0.05 pence p.c.) and not statistically significant.

Where the peerage held the lion's share of land schooling funds were low. Table 8 shows that this affected the provision of public schooling. Where land was heavily concentrated in peerage possessions, fewer elementary schools were built and fewer School Boards were established. Commoner landownership actually had the opposite effect. This is also true for the number of certificate and female teachers. A Wald test rejects the null hypothesis that peer and commoner landownership have the same effect on the number elementary schools built and the number of certificate and female teachers. Finally, the average expense per scholar decreased in 0.88 pence per capita for every additional percentage point land concentration in the hands of peers. Where large landholdings had commoner proprietors, the effect is more than halved and not statistically significant.

Finally, where the peer-commoner difference is perhaps clearer is in terms of education outcomes (Table 9). In counties where most great lords were peers children where less likely to pass the writing, arithmetics, and reading national exams. In particular,

every 10 percent increase in the share of large landholdings owned by peers decreased by 1 to 1.2 percent the chances for examinees to pass these exams. Instead, the coefficients for commoner landownership are close to zero and do not have any statistically significant effect.

Peer and commoner landownership had opposing effects on school attendance and the number of examinees presented. In counties where land was concentrated in the hands of peers, enrollment rates were lower; in contrast, where commoners were in possession of the lion's share of land, more scholars attended school and presented for the national exams. Wald tests reject that peer and commoner landownership have the same effect on these measures. This suggests that the results of previous studies using evidence on enrollment rates alone may miss part of the picture: enrollment rates crucially depend not only on landownership concentration, but also on the status of the landowner.

These results suggest that landowners in general opposed the provision of public schooling, but could only do so effectively if they held sufficient political influence. In particular, in counties where land was highly concentrated in the hands of peers, this elite managed undermine the introduction of an effective public education system. This is how England and Wales failed to educate their workforce.

6.2 Cross-district variation (1872–78)

Another way to identify this political economy mechanism is by exploiting variation in exposure to a great lord across School Boards. To illustrate my strategy, let me use an example: Claverdon, a civil parish about 5 miles from Wawrwick. Claverdon is really close to Stoneleigh Abbey, a very nice country mansion which was the seat of the Barons of Leigh. William Henry, 2nd Baron Leigh at the time, held the office of Lord-Lieutenant of Warwickshire, the office of High Steward of Sutton Coldfield (two times), the office of Justice of the Peace (J.P.) for Gloucestershire, and was invested as

a Privy Counsellor (P.C.). He was in possession of 21,000 acres, which by 1870 reported him £32,000 per year (Bateman 1883). How did the Claverdon School Board fare which such a great Lord next to them? They raised £150 in 1875, £73 in 1876, and £0 in 1877 from property taxes.

I match each School Board to the closest great lord. The idea is that the exposure of each School Boards to a Lord depends on the distance to the Lord's seat and on his power. I exploit geographical variation across 1,495 School Boards operating in England between 1872–78. Figure 11 illustrates their geographical distribution together with the location of the family seats of peers in possession of 2,000 acres and upwards. Formally, I regress the acreage of the closest Lord's on the funds raised for education each year by each School Board.

$$edu_{b,c,y} = \alpha + \beta\ lord_a creage_b + \ \gamma manu_{c,y}\ +\ \mathbf{V}'_{c,y}\delta\ + \theta_y + \ \epsilon_{d,c,y}\ , \tag{3}$$

where $edu_{b,c,y}$ are the funds raised for education by school board b in county c in the year y. $lord_a creage_b$ is the total amount of acres owned by the great lord living closest to school board b. To control for potential confounders, I follow two strategies: in one specification, I include Hechter (1976)'s county level controls. In the other, I use county fixed effects. All regressions include year fixed effects.

Table 10 presents the results. There is almost a one-to-one relationship: Increasing in 1 acre the landholdings of the closest Lord is associated with a reduction of funds raised from rates by the average School Board by almost 1 pence. The magnitudes are slightly lower for grants from the Central Committee (half pence) and for fees and books sold (a quarter of a pence). The share of workers employed in manufacturing also seems to play a relevant role, suggesting again that while entrenched landowners oppose education reforms, industrialists may be more supportive.

In sum, School Boards closer to a wealthier peer significantly raised less funds for education than School Boards operating further away from the influence of a great lord.

These results further support the hypothesis that landowners with sufficient political influence undermined the provision of public schooling in England and Wales.

7 Robustness checks

In this section, I stratify my dataset to identify the regions of England where the association between landownership concentration and under-investment in education is stronger. In addition, I gauge the potential effect of unobserved variables in this association using the insights from Altonji et al. (2005).

7.1 Geographic factors: North vs. South

One of the threats to interpreting my estimates as causal effects is that landownership concentration may be correlated with geographical factors or with the social structure of a particular county, factors affecting education provision. To explore this possibility, I exploit Cultural, political, and economic differences between the north and south of England. Clark and Gray (2014) argues that, by the nineteenth century,

> [t]here was a marked difference in social structure across regions. In the south-east of England a large proportion of the population in rural areas comprised landless labourers, working for wages. In the north-west the majority of the rural adult male population comprised independent farmers, working for themselves. Even in the small compass of rural England there were differences in social structure that echoed those between pre-industrial North America and the Caribbean and Latin America. (p. 6).

Table 11 gauges the extent to which my results are driven by these stark geographic and social differences between the North and the South. I stratify my sample in three regions: South and Midlands, North, and Wales.[14] To correct for the small number of clusters (e.g., the North only has 7 counties), I report confidence intervals computed

[14]South and Midlands are all English counties south of Cheshire, and Yorkshire (West Riding and East Riding). Northern counties are Cheshire, Cumberland, Durham, Lancashire, Northumberland, Westmoreland, and Yorkshire.

using the wild-t cluster bootstrap method of Cameron et al. (2008).

The association between landownership concentration and funds raised for education is broadly similar when I subdivide the sample into northern versus southern counties: both in the North and in the South, School Boards in counties where land was more concentrated raised less money for education. For example, one percent increase in land concentration in the hands of peers decreased by about 0.17 pence p.c. the funds raised from rates in the South and the Midlands and by 0.13 pence p.c. in the North. Only in the case of Wales I do not find statistically significant effects. I account for this including an indicator variable for Wales in all the specifications.

Finally, note that both in the industrial North and in the South of England, the percentage of workers employed in manufacturing has the opposite effect to landownership concentration. A larger share of workers in manufacturing is associated with more funds raised from rates. This reflects a widespread clash between landed and industrial elites for the provision of public education all over England.

In sum, the evidence suggests that my results are not driven by omitted covariates such as geography or social structure. This strengthens the case for interpreting the estimated coefficients in Tables 4 to 9 as causal effects.

7.2 Assessing selection on unobservables

Even if geography and social structure do not seem to drive my results, it may still be the case that some unobserved factor is correlated both with landownership concentration and with education provision. To assess the potential effect of unobservables in a systematic way, I use the insight from Altonji et al. (2005) that selection on observables can be used to gauge the potential bias from unobservables. The strategy consists in examining how much the coefficient of interest changes as control variables are added, and then infer how much strong the effect of unobservables has to be to explain away the estimated effect. Formally, consider two individual regressions of the form $edu_{c,t} =$

$\alpha + \beta land_c + \mathbf{V}'_{c,t}\gamma + \epsilon_{c,t}$. In one regression, $\mathbf{V}_{c,t}$ only includes a subset of all control variables. Call the coefficient of interest in this "restricted" regression β^R. In the other regression, covariates include the "full set" of controls. The corresponding coefficient is β^F. The ratio $\beta^F/(\beta^R - \beta^F)$ reflects how much selection on unobservables needs to be (relative to observables) for results to become insignificant.

Table 12 presents the Altonji et al. ratios. Of the 96 ratios reported only 4 are less than one. In absolute values, the mean ratio is 5.9. Unobserved heterogeneity seems to be a serious issue only for expenditures in Industrial schools. The rest of the ratios range from 0.9 to 95.3. In terms funds raised for education the ratios are larger when landownership concentration is defined as land in the hands of the peerage only. For example, consider the baseline specification and a restricted regression with no controls. In this case, the effect of unobservables would have to be 5 times larger (and act to the opposite direction) than the effect of the covariates to explain away the negative impact of peer-landownership on funds raised from rates. The ratios are also large for education expenditures (Panel B) and schooling results (Panel C).

In my view, these results make it less likely that the estimated effect of landownership concentration on education provision is fully driven by unobservables.

8 Conclusion

In the late nineteenth century, England and Wales failed to educate their workforce. In this article, I demonstrate that this was the result of the opposition of entrenched, landed elites to education reforms. In counties where landownership was more concentrated School Boards — the public bodies in charge of providing education — raised less funds from property taxes, received less money from the central Education Committee, and even collected less from school fees and books sold. As a consequence, investment in education provision (schools built, teachers hires and trained, etc.) was

scarce, and the system relied more on existing Voluntary schools run by the Church of England and non-conformist societies. This under-investment in education had important consequences for schooling achievement. Children raised in counties with more land inequality were less likely to pass the reading, writing, and arithmetics national exams.

Engerman and Sokoloff (2000) and Galor et al. (2009) famously argued that an unequal distribution of land may slowed down the implementation of public schooling. Several studies have confirmed this relation in numerous settings, particularly in Latin America (Coastworth 1993, Nugent and Robinson 2010) and the US South (Vollrath 2009), but also in Prussia (Cinnirella and Hornung 2011). My findings suggest that this theory is also suited for England. Although illiteracy did not seem to be correlated with landownership concentration before 1850 (Clark and Gray 2014), when the first public education system — funded with taxes on property — was introduced in 1870, it faced fierce opposition from landowners.

Interestingly, the correlation between education provision and the percentage of workers employed in the manufacturing sector is positive. The opposite effects of land concentration and manufacturing employment suggest that the provision of public education masks a clash between old landed elites and emerging industrialists (Galor and Moav (2006)). While emerging capitalists might be willing to support and subsidize education, entrenched landowners oppose educational reforms because human capital and agrarian work are not complementary, and to reduce the mobility of the rural labor force.

Further, I find that the relation between landownership concentration and education provision depends on the status of the landowner. In counties where land was concentrated in the hands of peers there was a significant underinvestment in education, while I do not observe significant effects in counties where land is concentrated but landowners are commoners. Furthermore, exploiting variation across 1,495 School Boards in the

distance to the peer's seat, I find that School Board under the influence of wealthier peers systematically raised less funds from property taxes for education. Given that in the late nineteenth century peers had an enormous political power, especially but not restricted to the House of Lords (Allen 2009), it would seem that landowners may had in general opposed the provision of public schooling, but could only do so effectively if they held sufficient political influence. This finding is consistent with Acemoglu et al. (2007), who conclude that political inequality, rather than economic inequality, is the key mechanism through which landownership concentration affects education provision.

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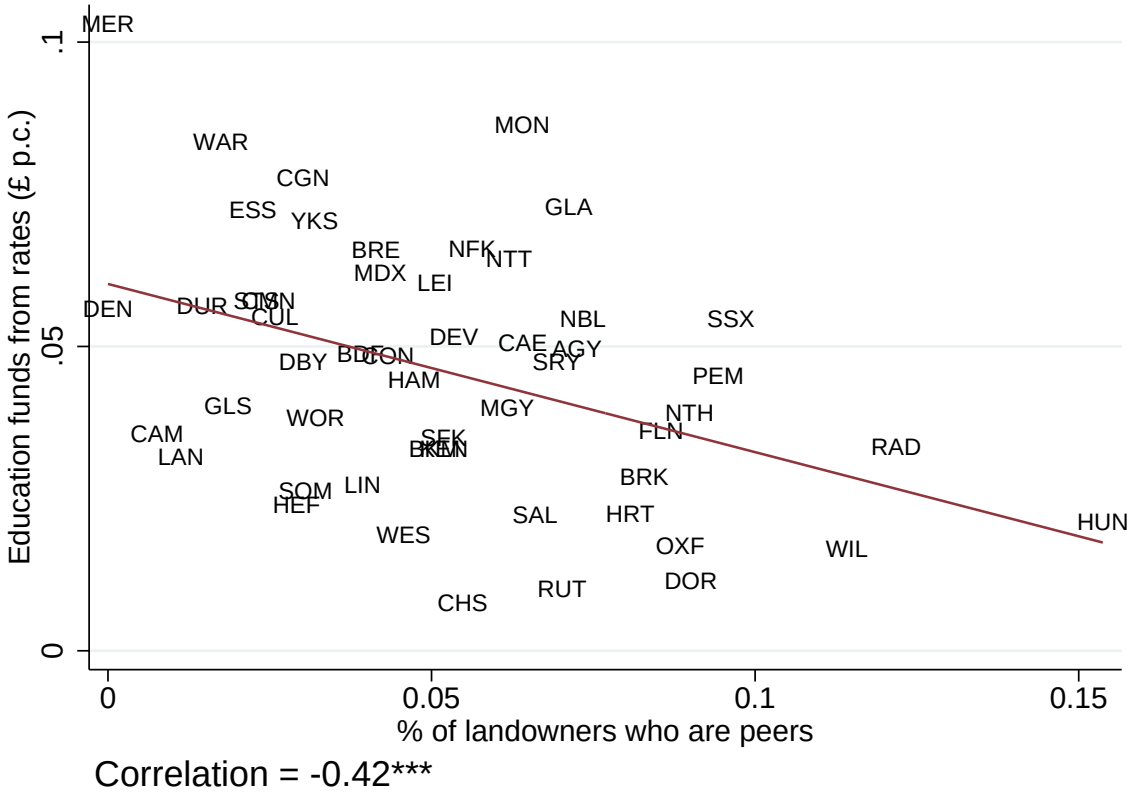
9 Figures and tables

Figure 1: Land concentration versus Funds raised from rates



Note: The sample is all counties in England and Wales. The X-axis is the proportion of landowners in a county who are peers and own 3,000 acres and upwards. The Y-axis are the average funds raised from rates by School Boards between 1871–95, measured as shillings per capita.

Figure 2: School Board funding, Berkshire (1883–84)

School Board and County.	INCOME. 1. Grants from the Committee of Council on Education.	2. Amount paid to the Treasurer by the Rating Authority.	2. Equivalent to a Rate per £ on the Rateable Value of the District, of	3. School Fees, and Books, &c. sold to Children.	4. Endowment.	5. Contributions in aid of Industrial Schools.	6. Loans.	7. Income arising from other Sources.	Total Receipts.
BERKS.	£ s. d.	£ s. d.	d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Reading -	1,576 12 3	4,600 0 0	7·	646 11 7	- -	- -	4,104 0 0	- -	10,927 3 10
Balking - -	50 0 6	40 0 0	1·75	11 8 7	- -	- -	- - -	- -	101 9 1
Chieveley -	116 5 0	180 0 0 43 15 0	6· —	41 18 0	22 7 11	- -	- - -	1 9 6	405 15 5
Cholsey - -	151 14 4	120 0 0	2·25	71 11 5	- -	- -	- - -	- -	343 5 9
Earley - -	421 19 9	850 0 0	8·75	153 13 6	- -	- -	- - -	- -	1,425 13 3
East Ilsley -	80 18 1	60 0 0	3·5	31 8 10	- -	- -	- - -	4 2 5	176 9 4
Inkpen - -	65 10 0	130 0 0	9·5	33 10 10	- -	- -	- - -	4 8 3	238 9 1
Leckhampstead - -	30 5 0	60 0 0	6·	12 8 10	12 7 11	- -	- - -	17 1	115 18 10
SuttonCourtney -	- - -	20 0 0	1·	- - -	- -	- -	- - -	- -	20 0 0
Tilehurst -	172 1 0	300 0 0	2·75	96 7 3	- -	- -	- - -	- -	568 8 3
Total -	2,665 5 11	6,403 15 0	- -	1,098 18 10	34 15 10	- -	4,104 0 0	10 17 3	14,317 12 10

Source: Report from the Committee of Council in Education, 1883–84.

Figure 3: School Board Expenditures, Berkshire (1883–84)

Expenses	EXPENDITURE. 1. of Administration.		2.	3.	4. Capital Charges.		5. Loans.		6.		Liabilities on 29th September 1883.	
Election Expenses.	Salaries of Officers of the Board.	Legal and other Expenses of Administration.	Expenses of Maintenance of Public Elementary Schools.	Contributions towards, or Expenses of, Industrial Schools.	Purchase of Land, and Erection, Enlargement, or Alteration of School Buildings.	Furnishing School Buildings.	Repayment of Principal of Loans.	Interest on Loans.	Expenses not included under foregoing Heads.	Total Expenditure.	For Loans.	Other Liabilities.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
10 13 6	369 14 4	127 2 5	5,038 15 8	22 16 6	3,499 9 0	608 15 8	418 15 10	850 19 2	- -	10,947 2 1	25,646 14 10	—
- -	10 0 0	3 4 10	91 18 8	- -	- -	- -	- -	- -	- -	105 3 6	- - -	18 3 7
- -	22 10 0	26 4 11	376 5 2	- -	2 18 0	- -	- -	- -	- -	427 18 1	- - -	43 8 3
- -	37 6 8	7 14 6	239 6 4	- -	- -	- -	15 11 6	52 12 6	- -	402 11 6	1,468 0 0	15 17 9
- -	95 0 0	13 16 7	1,036 0 0	- -	- -	- -	51 1 9	142 4 6	- -	1,338 2 10	4,025 2 8	—
- -	4 0 0	3 1 1	137 18 10	- -	- -	- -	- -	- -	- -	144 19 11	- - -	54 11 5
- -	10 0 0	2 5 6	160 3 8	- -	- -	- -	12 7 2	44 19 1	- -	229 15 5	1,271 18 6	—
- -	12 0 0	2 2 0	84 8 8	- -	- -	- -	4 2 5	14 19 7	- -	117 12 8	423 17 2	3 5 8
- -	10 0 0	4 3 7	- - -	- -	- -	- -	- -	- -	- -	14 3 7	—	—
- -	123 19 0	11 3 9	446 0 4	- -	- -	3 0 0	70 3 6	105 19 3	- -	740 5 10	2,596 9 6	—
10 13 6	674 10 0	200 19 2	7,660 17 4	22 16 6	3,502 7 0	611 15 8	572 2 2	1,211 14 1	- -	14,467 15 5	35,451 2 8	135 6 8

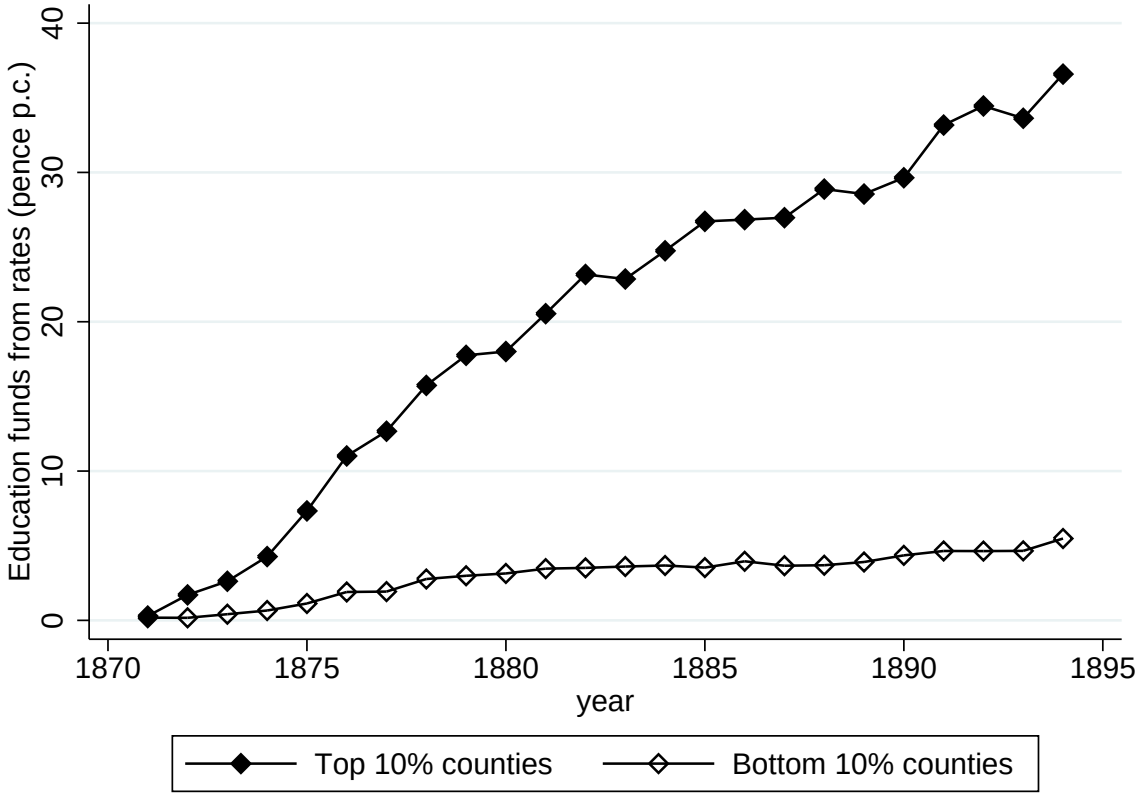
Source: Report from the Committee of Council in Education, 1883–84.

Figure 4: Schooling Outcomes, England (1883–84)

County.	Accommodation.	Number of Scholars on Registers.	Average Number of Scholars in Attendance.	Number of Scholars presented for Examination							Per-centage of Scholars who passed in		
				Under Ten Years.	Over Ten Years.	In Standards				Number of Scholars presented, Ex. Standard VI.	Reading.	Writing.	Arithmetic.
						I.—III.	IV.	V.	VI.	VII.			
Bedford	30,627	25,949	19,671	7,370	6,143	10,355	1,988	849	318	3	40	82·78	80·63	78·24
Berkshire	41,057	36,740	28,713	10,021	9,786	14,086	3,331	1,762	588	40	25	85·68	81·98	74·84
Buckingham	36,422	32,698	23,949	8,714	8,055	12,564	2,638	1,090	433	44	41	84·39	78·11	76·58
Cambridge	36,224	32,121	23,197	8,878	7,811	12,530	2,519	1,137	432	71	27	86·57	76·97	73·00
Chester	128,523	110,627	80,909	30,047	31,130	42,591	10,478	5,888	2,143	77	213	89·17	81·64	76·08
Cornwall	60,252	50,700	35,273	13,445	14,248	19,962	4,274	2,255	1,025	157	76	90·13	79·44	71·34
Cumberland	48,738	42,768	30,955	11,175	11,858	16,269	3,542	2,221	954	47	138	88·64	79·43	75·56
Derby	93,310	87,339	62,594	23,480	22,754	33,805	7,225	3,701	1,386	117	91	87·05	79·82	71·07
Devon	107,922	91,989	68,938	24,385	23,786	33,653	8,370	4,355	1,668	125	189	92·20	82·45	75·02
Dorset	38,650	32,013	24,034	8,528	8,109	11,468	2,909	1,475	690	95	36	91·71	80·33	75·28
Durham	158,528	158,493	116,613	41,883	42,006	60,994	12,841	7,081	2,734	239	304	89·49	83·04	81·65
Essex	99,135	92,964	68,753	25,120	24,464	36,267	7,904	3,753	1,557	103	94	88·21	77·72	73·35
Gloucester	97,820	84,982	61,761	22,150	21,652	31,791	7,355	3,433	1,123	100	91	87·69	78·04	75·28
Hampshire	93,501	88,171	63,038	22,341	22,694	32,468	7,440	3,658	1,392	77	102	89·45	82·59	75·80
Hereford	23,250	19,246	14,291	5,558	6,413	8,256	2,217	1,090	372	36	4	89·99	75·90	72·36
Hertford	40,217	34,617	25,803	9,328	8,508	12,906	2,952	1,320	594	64	57	87·05	76·87	69·23
Huntingdon	12,833	10,050	7,735	2,944	2,651	4,234	860	320	148	33	8	80·52	76·57	69·26

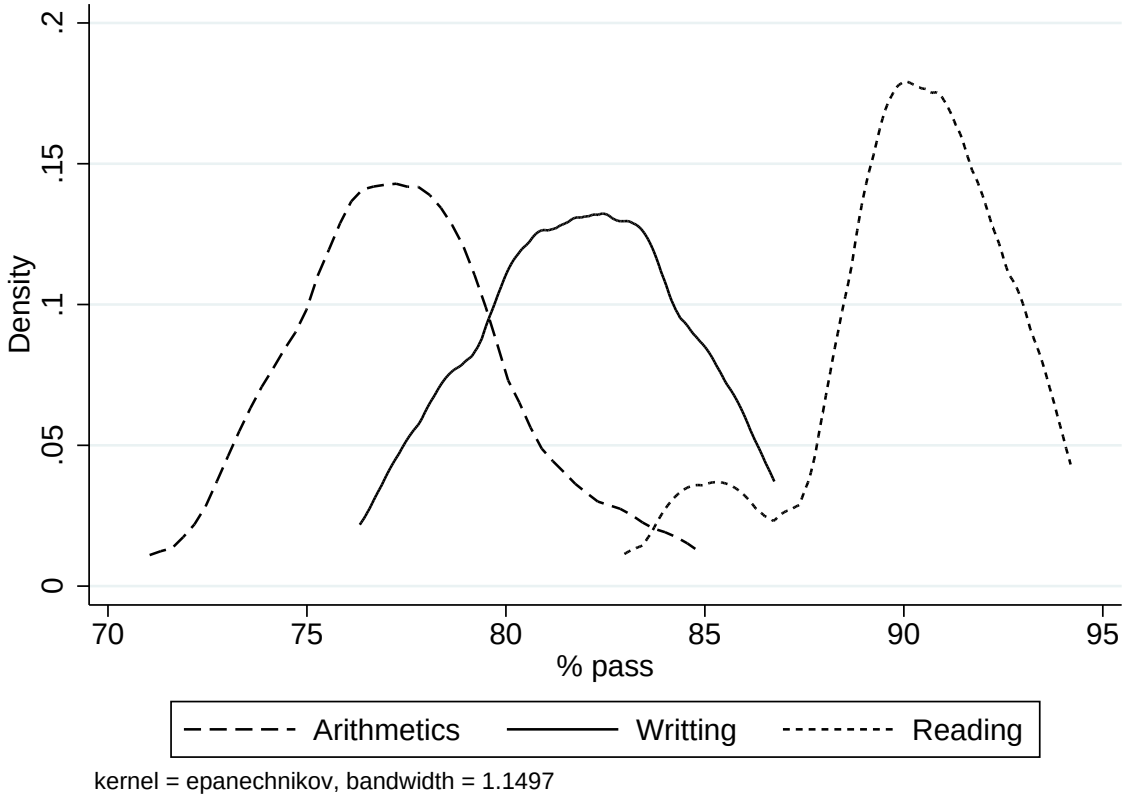
Source: Report from the Committee of Council in Education, 1883–84.

Figure 5: Funds from rates: top 10% counties versus bottom 10%



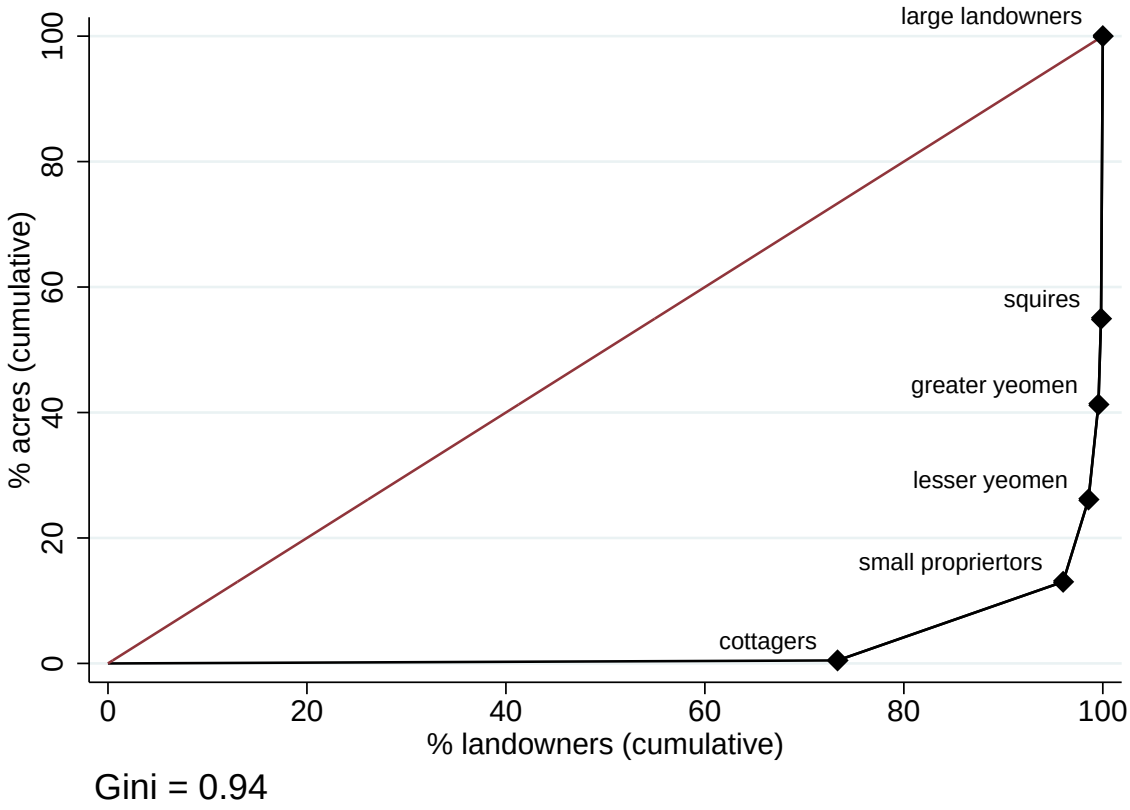
Note: The sample comprises the counties at the top and at the bottom 10% in terms of funds raised from rates in 1871–95. The top 10% counties are Merionethshire, Monmouthshire, Warwickshire, Cardiganshire, and Glamorganshire. The bottom 10% are Oxfordshire, Wiltshire, Dorset, Rutland, and Chestershire. The chart plots the average funds raised overtime, for both groups of counties. Funds raised from a rate are in pence per capita.

Figure 6: Kernel density of % scholars who passed the arithmetics, reading, and writing exams



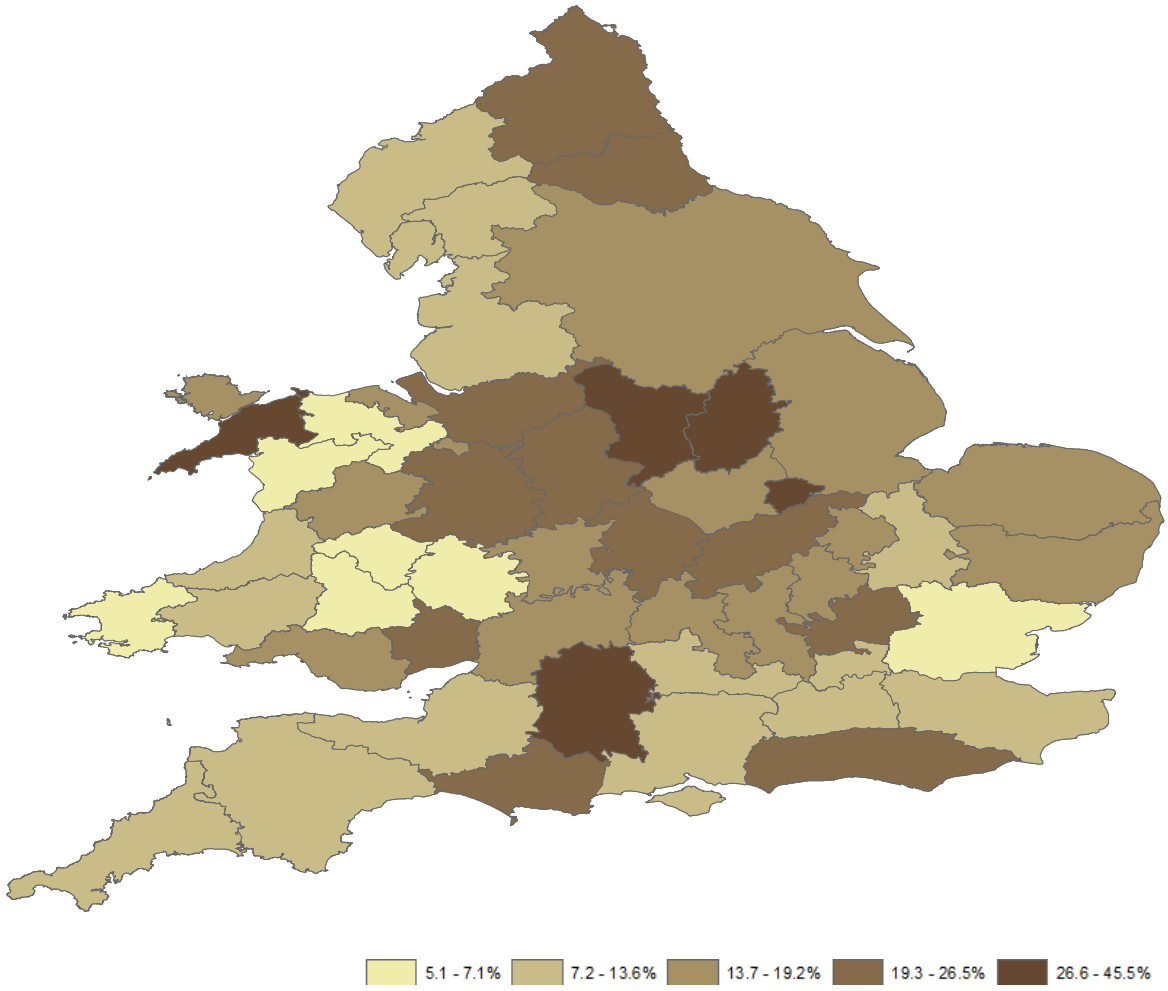
Note: The sample is all counties in England. Examination results are from the reports from the Committee of Council on Education between 1879–91. See Table A2 in the appendix for details. The chart plots the kernel for the distribution of the average percentage of students passing the writing, reading, and arithmetics exams in 1879–91.

Figure 7: Lorenz curve for the average land distribution



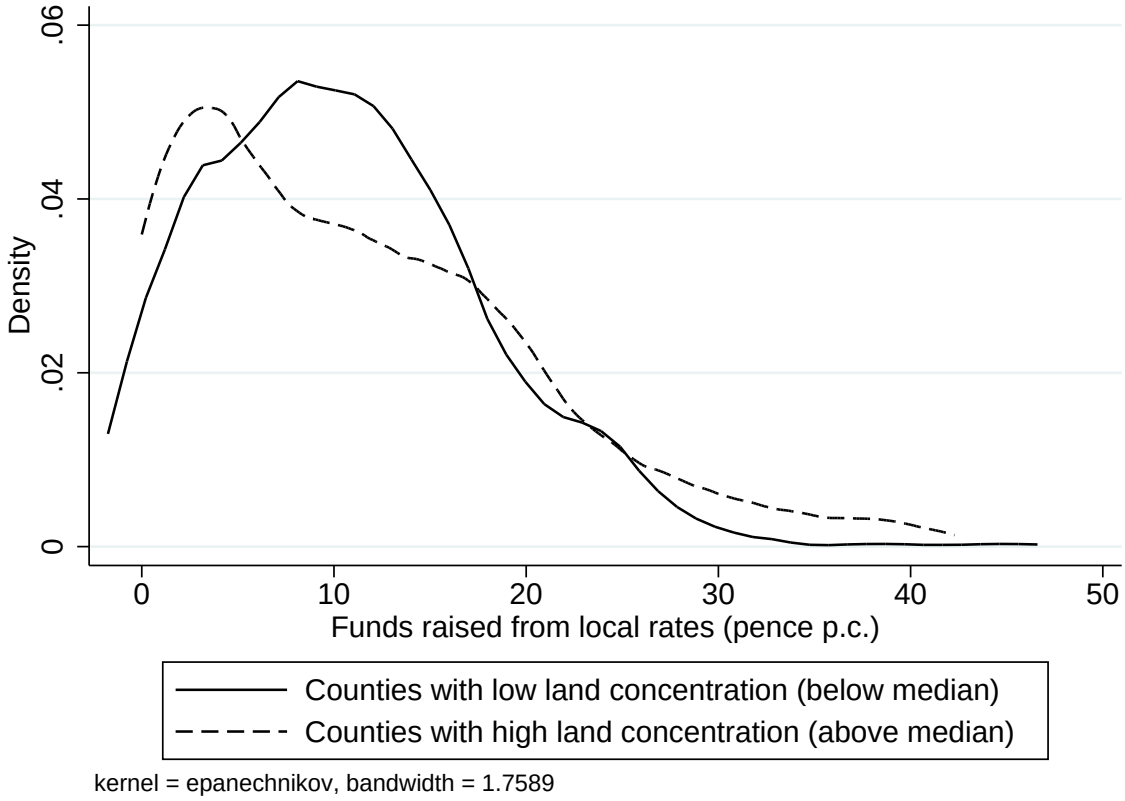
Note: The sample is all counties in England and Wales. The chart plots the lorenz curve for the average distribution of landholdings. The Lorenz curve is calculated excluding waste and land owned by public bodies. The figure also shows the Gini coefficient.

Figure 8: Share of land owned by peers



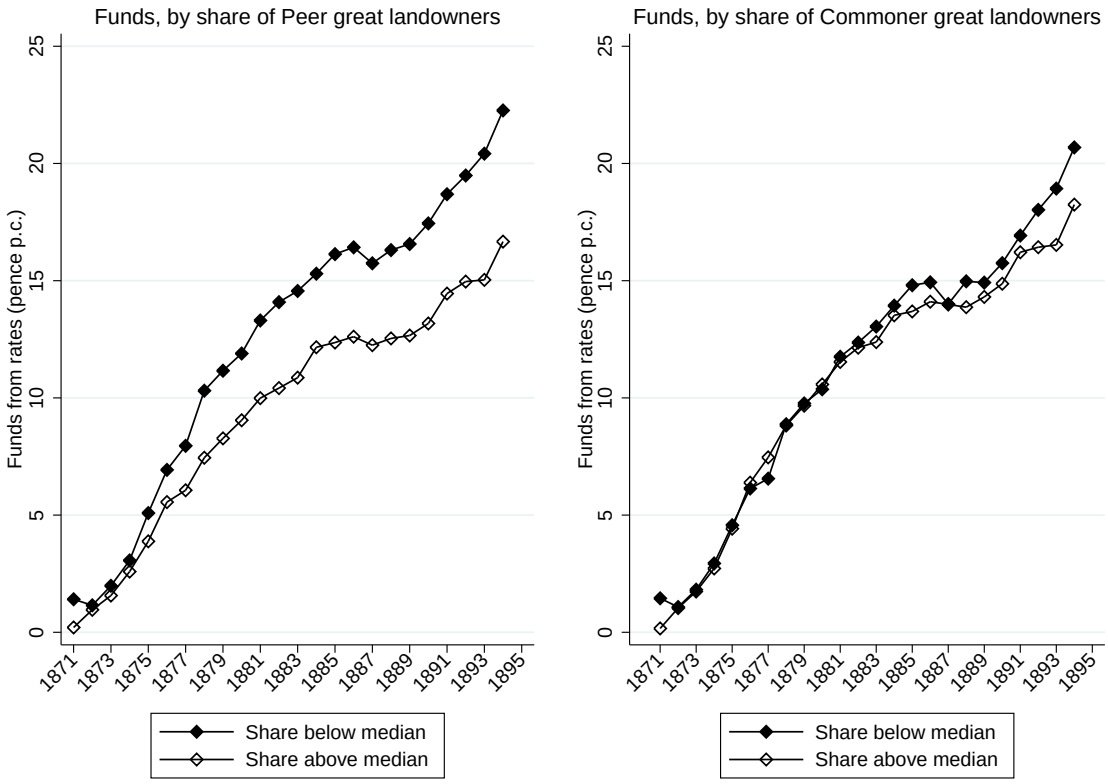
Note: The map plots the geographical distribution of landownership concentration. The latter is measured as the share of land in a county owned by peers.

Figure 9: Kernel density for funds from rates



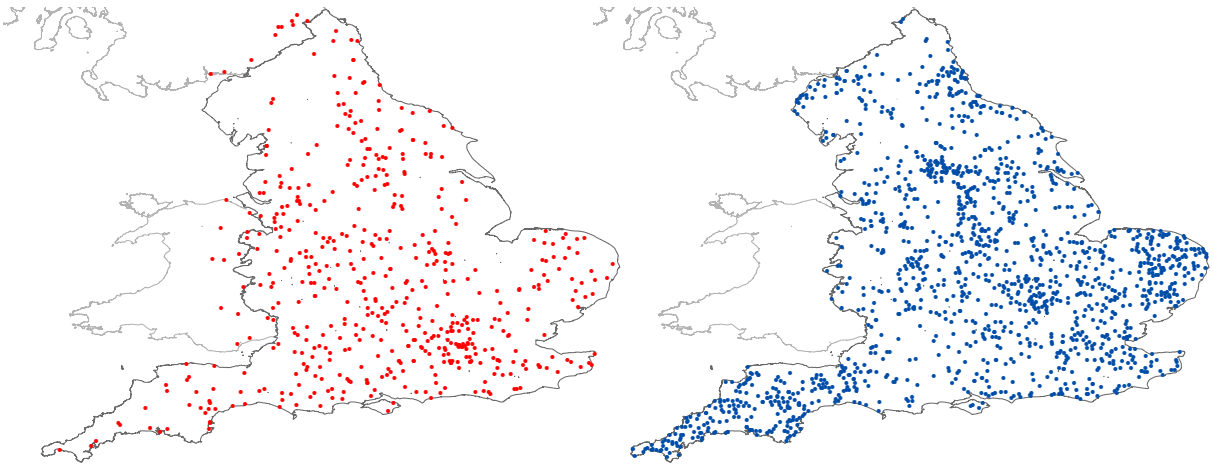
Note: The sample is all counties in England and Wales, broken down in two groups: counties with large (above median) and small (below median) land concentration. Land concentration is measured as the share of a county in the hands of large landowners, that is, those owning at least 3,000 acres. The chart plots the kernel for the distribution of the average education funds raised from rates in 1871–95.

Figure 10: Funds raised from rates. Peer versus Commoner landowners



Note: The sample is all counties in England and Wales listed in the reports from the Committee of Council on Education in 1871–95. In the left panel, counties are broken down in two groups: counties with a relative number of *peer* large landowners above the median, and counties below the median. The left panel also breaks down counties in two groups: counties with a relative number of *commoner* large landowners above the median, and counties below the median. Large landowners are those in possession of 3,000 acres and upwards. The chart shows the average funds raised from a rate overtime, for each group. Funds from a rate are in pence per capita.

Figure 11: Location of School Boards and great lord's country seats



(a) Seats (b) School Boards

Note: This map plots all 1,495 School Boards operating between 1872–78 in England along with the 551 country seats of peers in possession of 2,000 acres and upwards whose family seat was listed in Burke's *Heraldic Dictionary* (1826).

Table 1: Elementary Education Acts, 1870 to 1902

Year	Act	Description
1870	Forster's Act	State to provide education
1873	Education Act	School attendance condition for outdoor relief
1876	Sandon's Act	Creates School Attendance Committees
1879	Industrial School	School Boards to manage Industrial Schools
1880	Mundella's Act	Attendance compulsory for children aged 5–10
1890	Education Code	Standards of education
1891	Free Grant	Virtually establishes free elementary schooling
1893	Blind and Deaf	Special schools for blind and deaf children
1893	School Attendance	Attendance compulsory for children aged 5–11
1899	School Attendance	Attendance compulsory for children aged 5–12
1902	Balfour's Act	Abolishes School Boards

Source: Stephens (1998).

Table 2: Descriptive statistics (1870–99)

	mean	s.e.	min	max	N	unit
Funding						
Funds from rates	10.9	0.2	0	44.8	1,242	pence p.c.
Grants from the Committee	7.1	0.2	0	42.9	1,247	"
School fees and books sold	2.4	0.1	0	11.2	1,242	"
Endowment	0.1	0.0	0	0.7	777	"
Aid to Industrial Schools	0.1	0.0	0	3.5	728	"
Loans	5.9	0.3	0	211.0	935	"
Other incomes	0.3	0.0	0	4.3	936	"
Total receipts	32.0	1.0	0	667.5	936	"
Expenditures						
Election	0.2	0.0	0	43.0	915	pence p.c.
Salaries of Board officers	1.4	0.1	0	25.3	761	"
Legal	0.5	0.0	0	4.4	643	"
Maintenance of Public Schools	20.9	0.9	0.2	644.2	826	"
Contribution to Industrial Sch.	0.4	0.1	0	43.4	931	"
Land purchase & building exp.	6.4	0.6	0	451.4	930	"
Furnishing	0.3	0.0	0	31.9	930	"
Principal of loans	1.8	0.1	0	43.5	931	"
Interest of loans	3.1	0.2	0	140.8	931	"
Other expenses	0.1	0.0	0	3.1	922	"
Total expenses	34.1	1.8	0	1,403.5	931	"
Liabilities for loans	92.2	5.7	0	4,365.0	931	"
Other liabilities	2.2	0.5	0	355.0	875	"
Average cost per scholar	1.9	0.0	1.6	4.1	800	£
Elementary schools	376.2	16.5	0	2089	480	number
Voluntary schools	357.5	11.5	33	2314	799	"
Certificate teachers	828.4	34.2	43	6419	800	"
Assistant teachers	391.8	21.5	1	4546	800	"
Pupil teachers	595.4	28.2	11	4694	800	"
Female assistant	153.9	6.0	5	1007	520	"
Outcomes						
Reading exam (% pass)	90.1	0.2	24.9	98.2	441	%
Writing exam (% pass)	81.9	0.2	68	92.5	480	"
Arithmetic exam (% pass)	77.4	0.2	61.2	88.9	480	"
Total (% pass)	85.5	0.2	76.6	92.7	280	"
Examinees	47,317	2,918	0	368,962	481	number
Examinees (specific exam)	2,356	292.2	17	29,248	198	"
Accommodation	99,558	4,962	10	882,411	793	"
Scholars	67,248	3,232	0	592,094	793	"

Note: The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1871 to 1899. Not all variables are available all years and for all counties. Funds from rates, grants, and fees and books sold are observed in 1871–95. Other funds and expenditures are computerized from the report of 1871–72 and all reports from 1878 to 1895. Examination results are from 1879 to 1891. The number of elementary schools, teachers, average cost per scholar, accomodation, and scholars are for English counties from 1879 to 1899. See Table A2 in the appendix for details.

Table 3: Land distribution in the average county in England and Wales

	Acres		Num. of owners	
	mean	std. dev.	mean	std. dev.
Large landowners	258,625	170,819	30.8	19.2
Peers	106,328	78,706	7.5	5.5
Commoners	152,297	100,634	23.3	14.9
Squires	79,178	47,101	46.3	27.1
Greater Yeomen	88,807	56,865	178.0	113.8
Lesser Yeomen	76,229	53,212	449.1	313.0
Small Propriertors	71,343	49,649	3,928	2,999
Cottagers	2,634	2,709	12,408	13,328
Public Bodies	26,336	21,877	263.6	204.7
Waste	24,882	34,326		
Total	628,034	372,568	17,304	15,809

Note "Large landowners" are all owners of 3,000 acres and upwards. They are broken down by status: commoners versus peers. "Squires" own estates between 1,000 and 3,000 acres. "Greater Yeomen" between 300 and 1,000 acres. "Lesser Yeomen": between 100 and 300. "Small Proprietors": over 1 acre and under 100. Finally, "Cottagers" hold less than 1 acre.

Table 4: Regressions of education funds on land concentration (1871-95)

	Funds from local rates (p.c.)		Grants from the Committee (p.c.)		School fees and books sold (p.c.)		Total (p.c.)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Large landholdings (share)	-0.11**	-0.12**	-0.06	-0.07**	-0.02**	-0.02**	-0.27***
	(0.04)	(0.05)	(0.04)	(0.03)	(0.01)	(0.01)	(0.10)
% employed in manu.	0.17***	0.19***	0.11***	0.14***	0.05***	0.04***	0.39***
	(0.04)	(0.05)	(0.03)	(0.04)	(0.01)	(0.01)	(0.11)
log income (pence p.c.)	-1.49	3.25	-3.11*	0.88	-0.43	0.84	6.74
	(2.26)	(2.09)	(1.59)	(1.59)	(0.45)	(0.51)	(4.65)
% non-conformist		0.38***		0.34***		0.08***	0.79***
		(0.10)		(0.06)		(0.02)	(0.17)
% voting conservative		0.15***		0.13***		0.01	0.29***
		(0.05)		(0.04)		(0.01)	(0.10)
Religiosity (%)		-0.24***		-0.17***		-0.06***	-0.47***
		(0.06)		(0.05)		(0.02)	(0.12)
Wales		-7.14***		-5.66***		-1.85***	-14.35***
		(2.56)		(1.72)		(0.61)	(4.67)
Constant	17.19	-14.46	27.81*	-2.31	3.88	-2.43	-31.99
	(19.93)	(18.37)	(14.18)	(13.80)	(4.03)	(4.62)	(39.92)
Observations	156	156	156	156	156	156	156
Adjusted-R2	0.103	0.301	0.0826	0.304	0.172	0.347	0.312

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1871 to 1895. The evidence is averaged by decades such that it varies at the same level as the county controls. Funds from rates, grants, fees, and totals are expressed in pence per capita. "Large landholdings" is the share of a county in the hands of large landowners, that is, those in possession of 3,000 acres and upward. County controls are from Hechter (1976). Standard errors clustered by county are in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 5: Regressions of education expenditures on land concentration

	Number						Expenditures	
	School Boards [1]	Element. Schools [2]	Public to Voluntary [3]	Certificate teachers [4]	Female assistant [5]	Expense per scholar [6]	Public Schools [7]	Industrial Schools [8]
Large landholdings (share)	-0.48	-0.87	-0.64***	-9.42	-2.39**	-0.67*	-0.30***	-0.01
	(0.29)	(2.57)	(0.16)	(6.91)	(1.17)	(0.39)	(0.09)	(0.01)
% employed in manu.	0.30	6.01	-0.01	33.77**	3.28*	0.33	0.22**	0.01***
	(0.44)	(3.87)	(0.16)	(12.93)	(1.62)	(0.22)	(0.09)	(0.00)
log income (pence p.c.)	7.63	140.91	-18.06***	83.77	-59.17	-2.86	-10.42***	0.32
	(12.66)	(92.30)	(5.35)	(240.25)	(46.01)	(13.79)	(3.81)	(0.25)
% non-conformist	1.94*	-5.23	1.28**	10.61	7.97**	0.01	0.36*	0.01
	(1.00)	(4.51)	(0.48)	(16.96)	(3.46)	(0.68)	(0.21)	(0.01)
% voting conservative	0.19	-7.16***	0.14*	2.55	2.95***	1.78***	0.03	0.01
	(0.36)	(1.72)	(0.07)	(3.73)	(0.76)	(0.19)	(0.07)	(0.00)
Religiosity (%)	-0.78	7.75	-1.17***	34.97	4.90	-0.31	-0.40*	-0.02**
	(0.78)	(7.62)	(0.32)	(22.97)	(3.12)	(0.78)	(0.23)	(0.01)
Wales	-	-	-	-	-	-	-8.88	-0.67**
							(8.45)	(0.30)
Constant	9.3	-1,351	284.5***	-4,707	-149.7	422.7***	132.7***	-1.13
	(140.96)	(1,248.85)	(59.53)	(3,928.88)	(568.65)	(125.27)	(41.17)	(2.02)
Observations	120	120	120	120	120	120	104	156
Adjusted-R2	0.0821	0.173	0.495	0.260	0.209	0.407	0.324	0.0993

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1871 to 1899. Not all variables are available all years and for all counties. Expenditures on Public Schools (col. [7]) are computerized from 1878 to 1895. Expenditures in Industrial Schools (col. [8]) also includes the report of 1871–72. The number of elementary schools, teachers, average cost per scholar, accomodation, and scholars are for English counties from 1879 to 1899 (cols. [1] to [6]). See Table A2 in for details. The evidence is averaged by decades such that it varies at the same level as the county controls. Dependent variables come from the Reports of Council on Education. "Public to voluntary"' is the ratio of public to voluntary schools in a county. Expenditures on public and industrial schools are expressed in pence per capita. "Large landholdings" is the share of a county in the hands of large landowners, that is, those owning at least 3,000 acres. County controls are from Hechter (1976). Log income in pence per capita. Standard errors clustered by county are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6: Regressions of education outcomes on land concentration (1879–91)

	% passes in				Presented for	
	Reading	Writing	Arithmetics	Scholars attending	examination	specific exam
	[1]	[2]	[3]	[4]	[5]	[6]
Large landholdings (share)	-0.07**	-0.07**	-0.09**	-1,034	-681.5	-45.1
	(0.03)	(0.03)	(0.03)	(737)	(623.7)	(39.0)
% employed in manu.	0.06*	0.16***	0.19***	3,450***	2,676**	208.2**
	(0.04)	(0.02)	(0.02)	(1,261)	(1,109)	(86.4)
log income (pence p.c.)	-0.66	-2.87**	-3.06**	-2,952	4,702	-606.9
	(1.12)	(1.14)	(1.29)	(21,262)	(22,532)	(1,915)
% non-conformist	0.18*	0.06	-0.07	860.8	1,262	159.9
	(0.09)	(0.07)	(0.07)	(1,420)	(1,786)	(139.2)
% voting conserv.	0.12***	0.15***	0.16***	450.9	341.4	225.6*
	(0.04)	(0.03)	(0.03)	(401.6)	(541.3)	(132.7)
Religiosity (%)	-0.05	-0.01	-0.03	2,419	2,440	107.1
	(0.05)	(0.06)	(0.07)	(1,675)	(1,593)	(77.4)
Wales	-	-	-	-28,375	-77,735	-
				(42,303)	(73,459)	
Constant	91.53***	91.92***	90.62***	-299,731	-359,485	-23,996
	(8.87)	(11.69)	(11.14)	(317,217)	(322,986)	(18,508)
Observations	80	80	80	145	81	40
Adjusted-R2	0.124	0.456	0.434	0.305	0.273	0.349

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1879 to 1891. The evidence is averaged by decades such that it varies at the same level as the county controls. Dependent variables come from the Reports of Council on Education. "Large landholdings" is the share of a county in the hands of large landowners, that is, those owning at least 3,000 acres. County controls are from Hechter (1976). Wales dummy omitted when data for Welsh counties is not available. Standard errors clustered by county are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7: Education funds. Peer versus commoner landownership (1871–95)

	Rates (p.c.)	Grants (p.c.)	Fees (p.c.)	Total
	[1]	[2]	[3]	[4]
Large landholdings (share)				
Peer	-0.17**	-0.09*	-0.02	-0.31**
	(0.07)	(0.05)	(0.02)	(0.14)
Commoner	-0.05	-0.04	-0.03	-0.21
	(0.08)	(0.06)	(0.02)	(0.18)
% employed in manu.	0.20***	0.14***	0.04***	0.40***
	(0.06)	(0.04)	(0.01)	(0.11)
log income (pence p.c.)	3.41	0.94	0.82	6.85
	(2.11)	(1.62)	(0.51)	(4.70)
% non-conformist	0.36***	0.33***	0.08***	0.77***
	(0.09)	(0.06)	(0.02)	(0.17)
% voting conservative	0.15***	0.13***	0.01	0.30***
	(0.05)	(0.04)	(0.01)	(0.10)
Religiosity (%)	-0.23***	-0.17***	-0.06***	-0.47***
	(0.06)	(0.04)	(0.02)	(0.12)
Wales	-7.34***	-5.75***	-1.83***	-14.50***
	(2.59)	(1.69)	(0.62)	(4.71)
Constant	-17.57	-3.67	-2.17	-34.38
	(18.96)	(14.36)	(4.75)	(41.08)
Observations	156	156	156	156
Adjusted-R2	0.300	0.301	0.343	0.308
Ho: $\beta_1 = \beta_2$				
prob > F	0.350	0.580	0.705	0.716

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1871 to 1895. The evidence is averaged by decades such that it varies at the same level as the county controls. Funds from rates, grants, and fees are expressed in pence per capita. "Large landholdings" is the share of a county in the hands of large landowners, that is, those in possession of 3,000 acres and upward. This is broken down by status of the landowner: peers versus commoners. County controls are from Hechter (1976). Standard errors clustered by county are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 8: Education expenditures. Peer versus commoner landownership (1870–99)

	Number						Expenditures	
	School Boards [1]	Element. Schools [2]	Public to Voluntary [3]	Certificate teachers [4]	Female assistant [5]	Expense per scholar [6]	Public Schools [7]	Industrial Schools [8]
Large landholdings								
Peer	-1.33**	-9.53	-0.42*	-36.91*	-6.87***	-0.88***	-0.26**	-0.00
	(0.63)	(5.86)	(0.24)	(19.79)	(2.27)	(0.31)	(0.12)	(0.01)
Commoner	0.89	13.54	-1.02***	36.32	5.08	-0.32	-0.38*	-0.02
	(1.05)	(8.45)	(0.30)	(23.00)	(3.22)	(0.85)	(0.21)	(0.01)
% employed in manu.	0.53	8.47*	-0.08	41.58***	4.55**	0.39	0.21**	0.01***
	(0.51)	(4.46)	(0.16)	(14.96)	(1.77)	(0.27)	(0.09)	(0.00)
log income (pence p.c.)	12.69	190.92*	-19.36***	242.56	-33.27	-1.65	-10.59***	0.30
	(14.30)	(100.33)	(5.38)	(236.25)	(40.02)	(14.46)	(3.90)	(0.25)
% non-conformist	1.57	-7.32	1.33***	3.97	6.89**	-0.04	0.38*	0.01
	(0.96)	(5.00)	(0.49)	(15.48)	(3.22)	(0.69)	(0.22)	(0.01)
% voting conserv.	0.28	-6.53***	0.12	4.53	3.28***	1.80***	0.02	0.01
	(0.33)	(1.58)	(0.07)	(3.61)	(0.71)	(0.19)	(0.07)	(0.00)
Religiosity (%)	-0.71	9.50	-1.22***	40.52	5.80*	-0.27	-0.40*	-0.02**
	(0.82)	(8.34)	(0.31)	(24.09)	(3.12)	(0.73)	(0.24)	(0.01)
Wales = o,	-	-	-	-	-	-	-8.73	-0.65**
							(8.27)	(0.29)
Constant	-65.60	-2,223	307.2***	-7,476*	-601.5	401.7***	135.9***	-0.71
	(161.1)	(1,401)	(61.64)	(4,372)	(584.0)	(136.1)	(44.80)	(2.03)
Observations	120	120	120	120	120	120	104	156
Adjusted-R2	0.124	0.229	0.502	0.348	0.297	0.404	0.318	0.0989
Ho: $\beta_1 = \beta_2$								
prob > F	0.156	0.068	0.211	0.066	0.023	0.537	0.660	0.249

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1871 to 1899. Not all variables are available all years and for all counties. Expenditures are computerized from the report of 1871–72 and all reports from 1878 to 1895 (cols. [7] and [8]). The number of elementary schools, teachers, average cost per scholar, accommodation, and scholars are for English counties from 1879 to 1899 (cols. [1] to [6]). See Table A2 in for details. The evidence is averaged by decades such that it varies at the same level as the county controls. Dependent variables come from the Reports of Council on Education. "Public to voluntary"' is the ratio of public to voluntary schools in a county. Expenditures on public and industrial schools are expressed in pence per capita. "Large landholdings" is the share of a county in the hands of large landowners, that is, those owning at least 3,000 acres. This is broken down by status of the landowner: peers versus commoners. County controls are from Hechter (1976). Log income in pence per capita. Constants not reported. Standard errors clustered by county are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9: Education outcomes. Peer versus commoners landownership (1879–91)

	% passes in				Presented for	
	Reading [1]	Writing [2]	Arithmetics [3]	Scholars attending [4]	examination [5]	specific exam [6]
Peer	-0.11**	-0.10***	-0.12***	-2,868*	-2,487	-160.4*
	(0.05)	(0.03)	(0.03)	(1,648)	(1,495)	(80.7)
Commoner	-0.01	-0.01	-0.03	1,863	2,287	145.6
	(0.07)	(0.05)	(0.06)	(1,561)	(1,510)	(95.4)
% employed in manu.	0.07*	0.17***	0.20***	3,851***	3,172**	248.4***
	(0.04)	(0.02)	(0.02)	(1,389)	(1,210)	(90.2)
log income (pence p.c.)	-0.42	-2.65**	-2.86**	4,551	15,841	229.4
	(1.11)	(1.07)	(1.24)	(20,188)	(21,053)	(1,636)
% non-conformist	0.16*	0.05	-0.08	367.4	640.8	136.0
	(0.10)	(0.07)	(0.07)	(1,292)	(1,602)	(111.8)
% voting conserv.	0.12***	0.16***	0.17***	582.5	526.6	270.2*
	(0.04)	(0.03)	(0.03)	(412.0)	(567.5)	(135.5)
Religiosity (%)	-0.05	-0.01	-0.02	2,570	2,571	101.4
	(0.05)	(0.05)	(0.06)	(1,688)	(1,601)	(66.8)
Wales	-	-	-	-33,407	-96,152	-
				(42,749)	(73,883)	
Constant	87.96***	88.56***	87.64***	-429,356	-525,126	-36,481*
	(9.48)	(10.78)	(10.81)	(342,502)	(330,105)	(19,248)
Observations	80	80	80	145	81	40
Adjusted-R2	0.124	0.458	0.431	0.341	0.348	0.438
Ho: $\beta_1 = \beta_2$						
prob > F	0.306	0.141	0.234	0.100	0.080	0.071

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1879 to 1891. The evidence is averaged by decades such that it varies at the same level as the county controls. Dependent variables come from the Reports of Council on Education. "Large landholdings" is the share of a county in the hands of large landowners, that is, those owning at least 3,000 acres. This is broken down by status of the landowner: peers versus commoners. County controls are from Hechter (1976). Log income expressed in pence per capita. Wales dummy omitted when data for Welsh counties is not available. Constants not reported. Standard errors clustered by county are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 10: Education funds. Cross-School-Board variation, 1872–78

	Total rates (pe.)		Total grants (pe.)		Total fees (pe.)	
Lord's acreage	-0.84**	-0.86**	-0.37**	-0.41**	-0.29**	-0.25**
	(0.32)	(0.36)	(0.16)	(0.15)	(0.11)	(0.11)
% employed man.	4,128***		2,061***		1,802***	
	(869)		(422)		(213)	
Observations	1,691	1,691	845	845	1,187	1,187
Adjusted-R2	0.042	0.073	0.079	0.149	0.121	0.145
County controls	YES	NO	YES	NO	YES	NO
County FE	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES

Note: The sample is a panel of all the School Boards operating in England between 1872–78. County controls are log income, % non-conformists, % conservative, religiosity, and a dummy for Wales; Standard errors clustered by county in parenthesis; *** p<0.01, ** p<0.05, * p<0.1

Table 11: Sample stratification

	[1] Baseline	[2] South and Midlands	[3] North	[4] Wales
	Dep. variable: Rates (pence p.c.)			
Large landholdings (share)	-0.12 [-0.22 , -0.04]	-0.17 [-0.28 , -0.05]	-0.13 [-0.26 , -0.01]	-0.02 [-0.17 , 0.14]
% employed in manufacturing	0.19 [0.10 , 0.28]	0.27 [0.20 , 0.35]	0.24 [0.01 , 0.47]	-0.06 [-0.20 , 0.08]
Adjusted-R2	0.301	0.426	0.402	0.300
	Dep. variable: Grants (pence p.c.)			
Large landholdings (share)	-0.07 [-0.13 , -0.01]	-0.10 [-0.19 , -0.01]	-0.10 [-0.23 , 0.01]	0.01 [-0.11 , 0.13]
% employed in manufacturing	0.14 [0.06 , 0.21]	0.20 [0.14 , 0.26]	0.15 [-0.06 , 0.36]	-0.07 [-0.19 , 0.05]
Adjusted-R2	0.304	0.369	0.192	0.222
	Dep. variable: Fees (pence p.c.)			
Large landholdings (share)	-0.02 [-0.04 , -0.00]	-0.01 [-0.04 , 0.02]	-0.06 [-0.09 , -0.04]	-0.02 [-0.05 , 0.01]
% employed in manufacturing	0.04 [0.025 , 0.06]	0.06 [0.042 , 0.08]	0.05 [-0.01 , 0.11]	-0.01 [-0.03 , 0.02]
Adjusted-R2	0.347	0.348	0.469	0.401
	Dep. variable: Total funds (pence p.c.)			
Large landholdings (share)	-0.27 [-0.45 , -0.10]	-0.37 [-0.56 , -0.17]	-0.29 [-0.57 , -0.03]	-0.03 [-0.30 , 0.24]
% employed in manufacturing	0.39 [0.20 , 0.58]	0.58 [0.44 , 0.72]	0.45 [-0.07 , 0.93]	-0.13 [-0.40 , 0.12]
Adjusted-R2	0.312	0.407	0.349	0.296
County controls	YES	YES	YES	YES
Observations	156	99	21	36

Note The sample is a panel of all counties in England and Wales listed in the reports from the Committee of Council on Education from 1871 to 1895. South and Midlands are all English counties south of Cheshire, and Yorkshire (West Riding and East Riding). Northern counties are Cheshire, Cumberland, Durham, Lancashire, Northumberland, Westmoreland, and Yorkshire. The evidence is averaged by decades such that it varies at the same level as the county controls. "Large landholdings" is the share of a county in the hands of large landowners, that is, those in possession of 3,000 acres and upward. County controls include log income, the proportion voting conservative, the proportion of non-conformists, and religiosity (Hechter 1976). As sample stratification involves fewer clusters, I report 95% confidence intervals in brackets calculated using wild-cluster bootstrap at the county level (Cameron et al. 2008).

Table 12: Using selection from observables to assess the selection on unobservables

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Panel A: Education funding		Rates (p.c.)		Grants (p.c.)		Fees (p.c.)		Total (p.c.)					
		All	Peers	All	Peers	All	Peers	Al	Peers				
restricted set	full set												
none	all	-1.9	-5.3	-1.2	28.4	-1.9	-5.3	-2.0	-9.2				
log income	all	-2.7	-5.5	-2.2	17.2	-2.7	-5.5	-3.0	-10.2				
% in manufacturing	all	-5.4	2.2	-2.3	1.1	-5.4	2.2	-5.7	1.6				
Panel B: Education expenditures		Number of School Boards		Public to Voluntary		Certificate teachers		Av. expense per scholar		Public School expenditures		Industrial Sch. expenditures	
		All	Peers	All	Peers	All	Peers	All	Peers	All	Peers	All	Peers
restricted set	full set												
none	all	-95.3	6.1	-9.2	3.5	-3.7	-1.9	5.1	-1.9	-1.5	-11.3	-3.5	-0.4
log income	all	10.2	5.7	2.7	1.8	-5.5	-1.9	4.4	-1.9	-9.4	12.6	-3.0	-0.4
% in manufacturing	all	7.0	2.1	-16.9	1.4	-21.0	-24.0	5.5	-1.7	-2.1	1.5	10.9	-2.2
Panel C: Education outcomes		% pass in reading		% pass in writting		% pass in arthmetics		Av. Scholars in attendance		Presented for examination		Presented for specific exam	
		All	Peers	All	Peers	All	Peers	All	Peers	All	Peers	All	Peers
restricted set	full set												
none	all	-2.4	-2.2	-1.4	-0.9	-1.9	-0.9	-2.3	-1.0	-2.6	-1.5	-2.5	-1.3
log income	all	-3.8	-2.5	-3.6	-1.1	-6.9	-1.0	-2.3	-1.0	-5.3	-1.5	-4.5	-1.4
% in manufacturing	all	-3.0	-4.7	-2.0	-2.2	-3.2	-2.2	20.7	-2.2	-9.9	-5.2	19.4	-3.6

Note: Each cell reports ratios based on the coefficients for $edu_{c,t} = \alpha + \beta\ land_c + \mathbf{V}'_{c,t}\gamma + \epsilon_{c,t}$ from two individual-level linear regressions. In one regression, the covariates $\mathbf{V}_{c,t}$ includes the "restricted set" of control variables. Call the coefficient of interest in this "restricted" regression β^R. In the other regression, covariates include the "full set" of controls. Call the coefficient of interest in this "full" regressions β^F. The reported ratio is the absolute value of $\beta^F/(\beta^R - \beta^F)$ (Altonji et al. (2005)). $land_c$ is the measure of landownership concentration. Odd columns consider the share of county c in the hands of landowners in possession of 3,000 acres and upwards. Even columns only consider the share of county c in the hands of peers in possession of 3,000 acres and upwards. For the latter, bot "restricted" and "full" regressions include the share of land in the hands of commoners as a control. Variables and samples are described in detail in Tables 4 to 6.

A Supplemental tables

Table A1: Examination standards

Standard I	
Reading	One of the narratives next in order after monosyllables in an elementary reading book used in the school.
Writing	Copy in manuscript character a line of print, and write from dictation a few common words.
Arithmetic	Simple addition and subtraction of numbers of not more than four figures, and the multiplication table to multiplication by six.
Standard II	
Reading	A short paragraph from an elementary reading book.
Writing	A sentence from the same book, slowly read once, and then dictated in single words.
Arithmetic	The multiplication table, and any simple rule as far as short division (inclusive).
Standard III	
Reading	A short paragraph from a more advanced reading book.
Writing	A sentence slowly dictated once by a few words at a time, from the same book.
Arithmetic	Long division and compound rules (money).
Standard IV	
Reading	A few lines of poetry or prose, at the choice of the inspector.
Writing	A sentence slowly dictated once, by a few words at a time, from a reading book, such as is used in the first class of the school.
Arithmetic	Compound rules (common weights and measures).
Standard V	
Reading	A short ordinary paragraph in a newspaper, or other modern narrative.
Writing	Another short ordinary paragraph in a newspaper, or other modern narrative, slowly dictated once by a few words at a time.
Arithmetic	Practice and bills of parcels.
Standard VI	
Reading	To read with fluency and expression.
Writing	A short theme or letter, or an easy paraphrase.
Arithmetic	Proportion and fractions (vulgar and decimal).

Source: Revised code of Regulations, 1872

Table A2: Information computerized from the Reports of the Committee of Council on Education, 1870–1899

	COUNTY LEVEL DATA						SCHOOL BOARD LEVEL DATA		
	Funds		Expenditures			Outcomes	Funds		
report	rates, grants, and fees	other	number of School Boards	teachers, schools, av. cost per scholar	other		rates	grants	fees
1870-71	not available	not available	not available	not available	not available	not available	not available	not available	not available
1871-72	yes	yes	yes	not available	yes	not available	no	no	no
1872-73	yes	no	yes	not available	no	not available	yes	yes	yes
1873-74	yes	no	yes	not available	no	not available	yes	yes	yes
1874-75	yes	no	yes	not available	no	not available	yes	yes	yes
1875-76	yes	no	yes	not available	no	not available	yes	yes	yes
1876-77	yes	no	yes	not available	no	not available	yes	yes	yes
1877-78	yes	no	yes	not available	no	not available	yes	yes	yes
1878-79	yes	yes	yes	not available	yes	not available	no	no	no
1879-80	yes	yes	yes	yes	yes	yes	no	no	no
1880-81	yes	yes	yes	yes	yes	yes	no	no	no
1881-82	yes	yes	yes	yes	yes	yes	no	no	no
1882-83	yes	yes	yes	yes	yes	yes	no	no	no
1883-84	yes	yes	yes	yes	yes	yes	no	no	no
1884-85	yes	yes	yes	yes	yes	yes	no	no	no
1885-86	yes	yes	yes	yes	yes	yes	no	no	no
1886-87	yes	yes	yes	yes	yes	yes	no	no	no
1887-88	yes	yes	no	yes	yes	yes	no	no	no
1888-89	yes	yes	yes	yes	yes	yes	no	no	no
1889-90	yes	yes	no	yes	yes	yes	no	no	no
1890-91	yes	yes	yes	yes	yes	yes	no	no	no
1891-92	yes	yes	yes	yes	yes	not available	no	no	no
1892-93	yes	yes	no	yes	yes	not available	no	no	no
1893-94	yes	yes	yes	yes	yes	not available	no	no	no
1894-95	yes	yes	yes	yes	yes	not available	no	no	no
1895-96	not available	not available	not available	yes	not available	not available	not available	not available	not available
1896-97	not available	not available	not available	yes	not available	not available	not available	not available	not available
1897-98	not available	not available	not available	yes	not available	not available	not available	not available	not available
1898-99	not available	not available	not available	yes	not available	not available	not available	not available	not available