

LONG-TERM TRENDS IN SCHOOLING: THE RISE AND DECLINE (?) OF PUBLIC EDUCATION IN THE UNITED STATES

SANDRA E. BLACK AND KENNETH L. SOKOLOFF

Department of Economics, UCLA and NBER, 8283 Bunche Hall, Los Angeles, CA 90095

e-mail: sblack@econ.ucla.edu; sokoloff@ucla.edu

Contents

Abstract	70
Keywords	70
1. Introduction	71
2. Early history	72
3. Public universities	81
4. The high school movement	86
5. Challenges and responses in the late 20th century	89
5.1. The growth of teachers' unions	93
5.2. School finance reform: Success or failure?	94
5.3. Population heterogeneity and support for public schools	96
6. Conclusion	101
References	103

Abstract

In recent decades, there has been rising anxiety about the quality of the public education in the United States. However, it is important to note that this has not always been the case; in fact, the United States has long been a leader in terms of the public provision of education at all levels of schooling. This chapter documents this history, describing the conditions in the early years of the country that were conducive to the rise of universal public education, in particular the relative homogeneity of the population and the local nature of the provision of public education. These factors increased local support and enabled the educational system to be responsive to local needs. In more recent history, however, there has been substantial change in the demographics of the United States; this chapter also explores how well the public education system has been able to adapt to these changes.

Keywords

history of education, public education

JEL classification: I2, N3

1. Introduction

The history of schooling in the United States is distinguished by broad and decentralized provision of what might be termed a “practical” or “common” education. These features were present from the very start. From virtually the time of initial settlement, the population of the United States seems to have been firmly convinced of the value of education. Colonists were so active at establishing schools to provide their children with the basic tools, such as the ability to read and write, that the young nation had the highest literacy rate in the world by the beginning of the 19th century. Many schools of the colonial era had to rely on a mixture of public and private funds, but with the “common school movement” of the early 19th century the U.S. embarked on a path of providing a core curriculum through “universal” schools, open to all children and supported fully by general taxes. This pioneering adoption of a policy of free and publicly funded primary schools, which was later extended to secondary schools, accounts for why the U.S. was regarded as having the best-educated population in the world well into the 20th century. Although other nations may have invested in better or more elite institutions of higher learning, none could match the U.S. in the breadth of access to a basic education.

The record has not been so dissimilar at the college or university level. Believing strongly in the utility of education, Americans established many colleges during the colonial era. These institutions may have been small, but they were numerous; by 1800 there were roughly two dozen, and by 1860, nearly two hundred and fifty. The first colleges were founded under private charters (often with religious affiliations), but with the growing recognition of the importance of education, as well as debates about access, during the early 19th century, state governments sought to play more of an active role in this arena. Some sought to exert more control over private colleges they had previously chartered, but more significant was the establishment of new state universities. This practice became routine; nearly every state joining the Union after the 1820s made specific provision for a state university in their first state constitution.

As a result, by the time of the Civil War, the key elements of the education system were largely in place. The U.S. had set out on a radically different course from that of any other country in the world. Broad access to education, supported by general taxation was perhaps the defining characteristic, but the emphasis on a common track (together with the relative insignificance of private schools), rather than having different schooling ladders for different children, was also rather exceptional. Equality in access to schooling did undoubtedly increase further over the late-19th and 20th centuries, as opportunities for blacks improved and inter-state and inter-district differences in measures of quality such as expenditures per pupil and length of school-year narrowed, but this path had in some sense already been laid down.

The other distinguishing feature that proved to be of fundamental importance was the extreme degree of decentralization. The evolution of this organizational structure may have been at least partially serendipitous, but most observers have agreed that it led to higher quality and efficiency, through enhanced experimentation, competition, and

flexibility, as well as contributed to a tendency for schools – especially at the university level – to adapt their programs to local environments. Many suggest that the decentralized structures, including sources of funding, heightened the focus on access and helped to mobilize greater public support for community and public goods by alleviating collective action problems.

Why schooling institutions developed in the United States along such a different, and evidently successful, path from that of other countries has long been a subject of controversy. Many factors have been cited, including religious background, political ideology, wealth, high rates of return on investment in schooling, the general degree of equality or population homogeneity, and the decentralized structure of the educational system. In recent decades, with rising anxiety about the quality of the education provided by public schools, the traditional jewel of that system, these latter two considerations have received particular attention. Some observers, for example, have argued that declines in the homogeneity of the population, whether in terms of income inequality or demographic composition, have exacerbated the collective action problems underlying the funding of public schools and undercut the ability of governments to mobilize adequate resources. Moreover, they suggest that the shifting balance of political and economic control away from local officials, and toward state-level authorities, has further compounded these difficulties. Evidence of the relative growth in private school enrollments is interpreted as offering some support for this view. Others dissent in strong terms. On one hand, they point to the problems with measuring the quality of schooling and the performance of schools. On the other, they note that the observation of new ways of doing things does not necessarily mean that a decline is under way. In a healthy educational system, adaptation and innovation in a world of rapid change in technology, population, and other aspects of the environment would be expected as well as desirable. The United States educational system has indeed exhibited remarkable institutional flexibility in the past, and there is considerable logic to the view that the current dangers have been exaggerated. However, given both the externalities we normally associate with education as well as the imperfections in human capital markets, the appropriate stance for economists is to eschew comfortable preconceptions and keep their eyes and mind on the evidence.

2. Early history

It was not long after the Europeans established permanent settlements on the northern part of the North American mainland that they began to organize educational institutions. Foremost among them were primary schools that communities administered and supported for local children. Massachusetts is frequently celebrated as the leader, but other colonies in New England conceded little in their enthusiasm for basic and widespread education.¹ Indeed, all of the region's states had made some provision for public

¹ The classic source on the early history of schooling is Cubberley (1920), but there are many histories pertaining to particular states. See, for example, Chadbourne (1936).

education by 1800, generally requiring towns beyond a certain size to support a primary or grammar school. Despite some resistance to the levying of school taxes, New Englanders already enjoyed relatively broad access to primary education and had attained high rates of literacy through a combination of local public schools, private institutions, and home instruction. Elsewhere in the United States, schooling was not quite so widespread. Private schools generally predominated in the Middle Atlantic and the South. Aside from New York, few governments in these regions went beyond requiring public schooling to be provided to the children of paupers until the early 1800s. Overall, however, the young republic offered remarkably broad access to basic education by the international standards of the time, and by 1800 enjoyed the highest literacy rates in the world.²

A major breakthrough in the expansion of schooling occurred during the second quarter of the nineteenth century when the so-called “common school movement” swept most of the country. These institutions of primary education were to be open to all who wished to attend, supported primarily through local taxes (though often receiving some aid from state governments), and managed by local authorities (with state-appointed officers typically providing some oversight to the multitude of local school systems that operated within the respective states).³ Although there had previously been scattered successes, principally in New England, in achieving the goal of universal access to a primary education, the movement is usually dated as beginning about 1825 and ending about 1850, by which time virtually every northern state had passed and implemented laws to induce townships or counties to establish such common schools.

This twenty-five year period was marked by intense political struggle in state after state, with especially strong support for free schools coming from urban dwellers, members of labor organizations, and residents of western states – reflecting a general drive for democratization that characterized the era. Opposition is said to have come from religious and private-school interests as well as from the wealthier classes or districts who might have expected to bear disproportionate increases in taxes.⁴ Entirely “free” schools were obtained only gradually, however, as the progression of laws and township policies chipped away incrementally at the traditional use of permanent endowments, licensing fees, lotteries, and “rate bills” (tuition or user fees) to finance the schools, and replaced them with general taxes. Resistance to raising rates or levying new taxes was always a

² Belief in the value of education, and the importance of public authorities encouraging higher levels was widely shared among the new nation’s leaders, and manifest in national government policy. Although local and state governments have always been central to the funding and administration of schools, the importance of the national government setting aside specified divisions of land within each township to help pay for the schools, as first laid out in the Land Ordinance of 1785 and the Northwest Ordinance of 1787, should not be forgotten. See Cubberley (1947, Chapter 4).

³ For example, the state of Maine supplied between 5 and 15 percent of the funds for common schools during the 1850s and 1860s. The revenues came from the interest on a Permanent School Fund (which had originated by selling off some state land), as well as from state taxes on property and bank deposits. Local funds came primarily from local property taxes.

⁴ See Cubberley (1920), as well as the discussion in Soltow and Stevens (1981).

factor to be overcome, and state governments often tied inducements like financial aid for schools to decisions by districts to agree to tax themselves; some northern states continued to rely on a combination of taxes and “rate-bills” to fund the schools as late as 1871 (New Jersey). Although some southern states passed legislation allowing for free schools as early as the 1830s, there was limited progress in establishing them in the South until after the Civil War.⁵ Overall, however, schooling had spread sufficiently by 1850 that nearly 60 percent of whites from age 5 to 19 (or more than 40 percent of the entire school-age population) were enrolled in school, and nearly 90 percent of white adults were literate (see [Table 1](#) for a comparison of U.S. literacy rates compared to literacy rates elsewhere in the Americas).⁶ Based either on such estimates of literacy, or of the proportion of the population enrolled in schools (see [Table 2](#)), the residents of the leading democracy in the world were also the best educated. Perhaps even more remarkable is that the proportion of whites enrolled in school did not advance further until the 20th century, with the expansion of secondary schooling (see [Figure 1](#)).

It is clear that the relative success of the U.S. in attaining such high rates of school enrollment was largely due to the early and widespread adoption of primary schools that were to be financed by general taxes. The natural question to ask is why this country came to be so far ahead of others in this regard. Many factors may have played a role. First, the U.S. may have been more inclined to invest in public education because of the religious views that were more prevalent in English colonies. Proponents of the idea that religious faith was an important, if not critical, element of the early history factor typically cite the example of seventeenth-century New England, where the organization of primary schools was often rationalized as necessary for ensuring that all members of the population were able to read the Bible. Although the significance of religion is undeniable, the force of the argument can be exaggerated. Not only did New England account for only a small share of the United States population at the end of the eighteenth century, and beyond, but the observation that all regions of the U.S. (and Canada as well) compared favorably in literacy and enrollment rates to England through the 19th century would seem to cast doubt on the notion that the high rates of investment in schooling were due solely to either religion or English heritage. Moreover, the supporters of public schooling during the common school movement stressed the economic and civic importance of education, rather than the religious. Schooling would help equip men for self-governance and participation in a democracy, as well as provide an avenue for self-improvement and upward mobility.⁷

⁵ Cubberley (1920, 1947).

⁶ Precisely how high the enrollment and attendance rates were during the antebellum period is a matter of some controversy, as is the question of just how important the elimination of school fees was in attaining high rates, but there is no serious disagreement about the leadership of the U.S. during this period. See Fishlow (1966), Kaestle and Vinovskis (1980), Vinovskis (1995), and Goldin and Katz (2003).

⁷ Common schools served girls (despite their lacking the vote) as well as boys, and estimates of literacy from the late 1700s through the 1850s suggest that although the expansion of common schools benefited all, they helped females close a gender gap. See Soltow and Stevens (1981) for more discussion of the temporal and regional patterns of literacy in the U.S., and how well they conform to various hypotheses about why that country and Canada should be so distinctive.

Table 1
Literacy rates in the Americas, 1850–1950

	Year	Ages	Rate
Argentina	1869	+6	23.8%
	1895	+6	45.6
	1900	+10	52.0
	1925	+10	73.0
Brazil	1872	+7	15.8
	1890	+7	14.8
	1900	+7	25.6
	1920	+10	30.0
	1939	+10	57.0
Chile	1865	+7	18.0
	1875	+7	25.7
	1885	+7	30.3
	1900	+10	43.0
	1925	+10	66.0
	1945	+10	76.0
Colombia	1918	+15	32.0
	1938	+15	56.0
	1951	+15	62.0
Mexico	1900	+10	22.2
	1925	+10	36.0
	1946	+10	48.4
Canada	1861	All	82.5
Eng-majority counties	1861	All	93.0
Fr- majority counties	1861	All	81.2
United States			
North Whites	1860	+10	96.9
South Whites	1860	+10	91.5
All	1870	+10	80.0
			(88.5, 21.1)*
	1890	+10	86.7
			(92.3, 43.2)*
	1910	+10	92.3
			(95.0, 69.5)*

Source: Engerman, Haber and Sokoloff (2000).

*The figures for Whites and Non-Whites are reported respectively within parentheses.

Another potential explanation for why the U.S. led in making commitments to public schooling is that with the onset of industrialization and sustained economic growth during the early nineteenth century the population could better afford the cost.⁸ Surely

⁸ At 1800, the U.S. was not so distinguished from either other societies in the Americas, or western Europe, as regards per capita income. Instead, it differed most dramatically with respect to the extent of inequality

Table 2
Ratio of students in school to population ages 5–19 for selected countries,
1895 to 1945

	1895	1920	1945
United States	0.62	0.68	0.76
Canada	0.60	0.65	0.64
Argentina	0.21	0.41	0.44
Bolivia	0.07	–	0.18
Brazil	0.08	0.10	0.22
Chile	0.16	0.37	0.40
Colombia	–	0.20	0.21
Costa Rica	0.22	0.22	0.29
Cuba	–	0.31	0.37
Mexico	0.13	0.22	0.28
Peru	–	–	0.31
Uruguay	0.13	0.36	–
Austria	0.45	0.52	0.58
Belgium	0.42		0.53
Denmark	0.49	0.49	0.50
Finland	0.12	0.29	0.53
France	0.56	0.43	0.60
Germany	0.54	0.53	0.55
Ireland	0.32	0.54	0.53
Italy	0.27	0.36	0.47
Netherlands	0.44	0.45	0.56
Norway	0.48	0.50	0.52
Portugal	0.14	0.17	0.26
Spain	–	0.27	0.34
Sweden	0.50	0.42	0.45
Switzerland	0.53	0.54	0.49
United Kingdom	0.45	0.51	0.66

Sources: For the information on enrollments and population, from which these estimates were calculated (sometimes involving interpolation) see Mitchell (1992, 1993).

material resources mattered. However, although the Americans were no doubt aided by their prosperity, it is important to remember that they had demonstrated an unusual propensity to invest in schooling long before they were particularly distinguished in terms of per capita income. Britain, as well as a number of other societies in Europe and the Americas, continued to surpass or at least rival the United States in this gauge

in income, human capital, and political influence. The latter seems to have contributed to broader access to economic opportunity across a broad range of institutions, not just schooling. See Engerman and Sokoloff (2002), and Engerman, Mariscal and Sokoloff (2002) for more discussion.

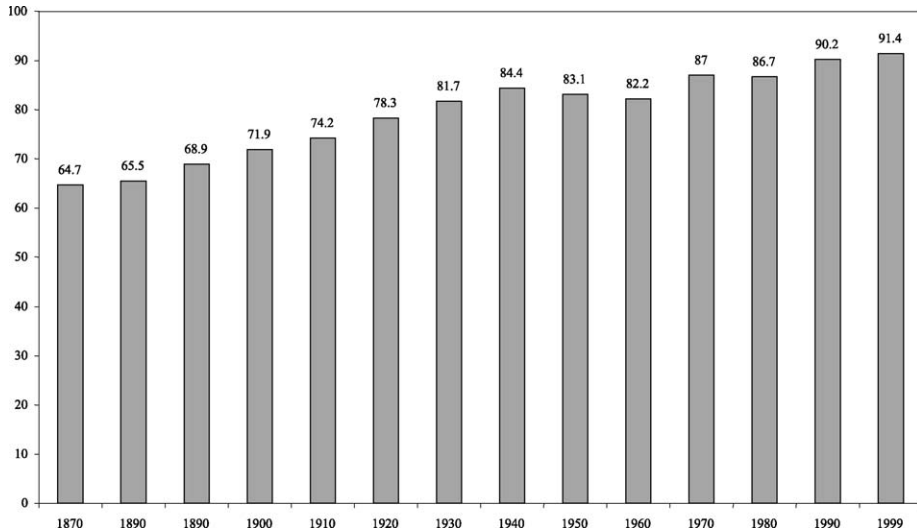


Figure 1. Enrollment as a percent of 5- to 17-year-olds. Source: NCES (2001).

of economic performance well into the nineteenth century, but lagged badly in offering broad access to primary education.

Historians of education typically highlight the fact that the common school movement was one of a number of campaigns for democratization in various social and economic policies that coincided with, or followed shortly after, widespread extension of the suffrage.⁹ Despite the sentiments popularly attributed to the Founding Fathers, voting in the United States was largely a privilege reserved for white men with significant amounts of property until early in the nineteenth century. By 1815, only four of the original thirteen states (and seven overall) had adopted universal white male suffrage, but as the movement to do away with political inequality gained strength, they were joined by the rest of the country as virtually all new entrants to the Union extended voting privileges to all white men, as part of a general campaign to attract and retain settlers, and older states revised their laws. The shift to full white manhood suffrage was largely complete by the late 1840s.¹⁰ Overall, the timing of the movements for extending the suffrage as well as for common schools, is consistent with the view that increasing equality in political influence helped realize the increased investments in public schooling, along with the corresponding extension of access to a primary education. That the southern

⁹ Cubberley (1920, 1947).

¹⁰ For discussions of the series of reforms involving both the extension of the franchise and the conduct of voting more generally, see Porter (1918), Albright (1942), Keyssar (2000), and Engerman and Sokoloff (2005). For a discussion of how the extension of the franchise in Europe may have contributed to the expansion of public schooling, see Acemoglu and Robinson (2000).

states were generally the laggards in both broadening the electorate and starting common schools, while New England and the western states were leaders in both, likewise provides support for this view.¹¹ Since doing away with property restrictions on the franchise enhanced the political voice of the groups that would benefit relatively more from the establishment of tax-supported free schools (as they were less able to pay the cost of educating their children), and the most important single source of tax revenue for local and state governments were taxes on property (so the poor would bear relatively less of the additional tax burden), it should not be surprising if the achievement of greater equality in political influence led to the institutional changes that contributed to greater equality in the distribution of human capital.

A related idea is that the greater support for public education institutions in the United States was due not to differences in capacity to pay (as gauged by per capita income), nor to the crude politics of redistribution, but rather to differences across communities in their willingness or ability to mobilize tax revenue for public or quasi-public goods such as public schools. This way of framing the problem highlights issues of social capital, government or administrative structure, as well as of political economy. Although many societies initially gave local or provincial governments responsibility for operating public schools, and granted them authority to levy taxes, the United States was one of very few countries where rather early in its process of development this capability was acted on in a widespread and substantial way. Elsewhere it was generally not until national governments got involved and provided resources that major investments in a broad system of primary schooling were undertaken.¹² Some scholars have suggested the possibility that such differences across communities, or across countries, in the willingness of populations to pay taxes to support public schools may have had something to do with differences in the extent of inequality or social heterogeneity amongst the respective populations.¹³ The logic is based on the observation that the well-to-do can always obtain schooling for their children through the private market, but that public investment in schooling systems, or broad access to schooling, generally involves some transfers between those who bear a disproportionate share of the costs and those who realize a disproportionate share of the benefits.¹⁴ Major support for public schooling is therefore more likely where there is relative equality or population homogeneity (where

¹¹ Later, the southern states were also laggards in establishing public high schools. See [Goldin and Katz \(1999b\)](#).

¹² The role of the national government was more prominent in Europe than in the U.S., and especially so in Latin America.

¹³ The idea that social homogeneity is associated with greater social capital, and leads to higher levels of investment in public or quasi-public goods has been receiving increasing attention. For discussion and evidence of this linkage see [Goldin and Katz \(2000\)](#) and [Alesina, Baqir and Easterly \(1999\)](#).

¹⁴ In the nineteenth-century U.S., for example, it was typical for local governments – that provided most of the funds for public schools – to raise the overwhelming share of their revenue through property taxes. Property taxes generally accounted for 90 percent or more of local government tax revenue through the middle of the 20th century. See [Copeland \(1961\)](#).

one expects there to be less severe collective action problems because of greater similarity across households in the balance of costs and benefits, as well as in values and perspective), or where the wealthier segments of the population are more receptive to indirectly supporting their neighbors or countrymen (either because of the social capital of the community or because such investments yield social benefits that the taxpayers will share in, such as the increase in property values that come from attracting a desirable class of migrants). In this view, the United States during the early 19th century enjoyed conditions that were very favorable to substantial investments in public schooling. Not only would the relative political and economic equality (as compared to other parts of the world) and social homogeneity of the population make it easier to overcome collective action problems and take advantage of the returns to investment in primary schooling, but also the general circumstance of scarce labor meant that local communities (and especially property holders) could benefit from investments in public goods that would lure new residents and spur growth.¹⁵ Support for this notion of the significance of social or political equality comes from the coincidence in time between the common school movement of the 1820s and 1830s in the United States and the broadening of the franchise during that same era, from similar associations between suffrage reform and the passage of measures to support public schools in both Canada, England, and elsewhere in Europe, as well as from geographic patterns in the spread of secondary schools discussed below.¹⁶

The U.S. schools were distinctive not only for the early move to public funding, extensive reach, and decentralized structure, but also for their relatively practical and egalitarian content. The curricula tended to stress basic skills and tools, and were organized around the idea of providing all students, boys and girls, with a “common” academic education. To a remarkable degree, the guiding vision seemed to be that children were quite similar in capacities, and while some might be able to remain longer

¹⁵ For more discussion of the distinctiveness of the U.S. as regards relative equality, and of the significance of labor scarcity for encouraging investments in public goods, see Engerman and Sokoloff (2002, 2005). For evidence that the U.S. was rather different from other countries of the period in having higher literacy outside of cities than in urban centers, see Engerman, Mariscal and Sokoloff (2002). For fascinating evidence of how much early settlers had to gain from attracting migrants and spurring local population growth, see Galenson and Pope (2002).

¹⁶ Also consistent with this view is the cross-sectional correspondence across states between leadership in broadening the franchise and leadership in the establishment of universal common schools. For discussions of the connection between extensions of suffrage and public schooling in many countries and contexts, see the discussions in many chapters of Cubberley (1920). Although the idea that the earlier move to broad provision of public schooling in the United States reflected a more general orientation toward democratic institutions is something of a consensus interpretation, other explanations have been offered. For example, some have suggested that the introduction of widespread public schooling was associated with a desire among certain segments of the elite to socialize, or otherwise prepare, immigrants or other potential workers for employment in large-scale industrial establishments. See Bowles and Gintis (1976). Even if this argument held for an early industrializing state such as Massachusetts, which seems highly debatable, it is surely poorly suited to the overwhelmingly agricultural Midwestern states that established public schools with great enthusiasm.

Table 3
Median years of schooling, by race and gender, 1865–1960

	Total	Male	Female	White	Black
1865	8.0	7.7	8.1	8.2	1.3
1870	8.1	8.0	8.2	8.2	2.9
1875	8.2	8.1	8.2	8.3	3.8
1880	8.3	8.2	8.3	8.4	4.4
1885	8.3	8.2	8.4	8.4	4.8
1890	8.4	8.3	8.4	8.5	5.0
1895	8.5	8.4	8.5	8.6	5.5
1900	8.6	8.6	8.7	8.8	5.8
1905	8.8	8.7	8.9	9.0	6.1
1910	9.5	9.2	9.9	10.0	7.3
1915	10.3	10.1	10.5	10.7	8.3
1920	11.6	11.4	11.8	11.9	9.1
1925	12.1	12.0	12.1	12.3	10.4
1930	12.2	12.1	12.2	12.3	10.7
1935	12.3	12.3	12.3	12.4	12.0
1940	12.5	12.6	12.5	12.6	12.3
1945	12.6	12.7	12.5	12.6	12.4
1950	12.9	13.0	12.8	12.9	12.6
1955	12.9	12.9	12.8	12.9	12.6
1960	12.7	12.7	12.8	12.8	12.6

Note: From 1865 to 1900, the Black group represents Black and Others.

Sources: Current Population Reports: Educational Attainment in the United States: March 1981 and 1980, and Historical Statistics of the United States, Colonial Times to 1970, Part I.

in formal schools than others, and thus move further up the formal educational ladder, all should be provided with the same basic knowledge or training. Not only was it right for each individual, if not quite an individual right, to be equipped with the same basic skills or knowledge, but also, in ensuring this would be so, society would promote civic virtue and a better functioning democracy. The relative absence of parallel schooling tracks for different classes of students was yet another fundamental way in which the schooling system in the U.S. stood in sharp contrast with those in Europe and elsewhere.¹⁷

Of course, not all segments of the population were equally well served. As seen in Table 3, there has been striking, especially from an international perspective, gender equality in the United States from early in its history (as regards enrollment rates and

¹⁷ European countries were generally much slower to provide broad access to schools, and even when they ultimately did so, they tended to favor systems whereby different groups of students received different programs of instruction training (often geared toward careers in particular occupations or industries) at earlier ages.

literacy, if not in programs of study or quality of instruction). The experience of Black Americans, however, provides an extreme and tragic example of how access to schooling has often been all too closely linked with social or political standing; their education levels have always lagged far behind those of whites. With many states having prohibitions on instructing slaves to read, blacks received very little in the way of schooling before the Civil War. Even after the War, although emancipation, constitutional amendments, and other policies yielded a dramatic expansion in their access to public services, blacks generally had to make do with schools that were *de jure* segregated, and vastly inferior in nearly all dimensions, until well into the 20th century. *Plessy v. Ferguson* (1896) notwithstanding, the separate schooling was anything but equal – especially after black voting rights were effectively eroded by poll taxes, literacy tests, and a host of other qualifications for suffrage adopted by many states late in the 19th century.¹⁸ *Brown v. Board of Education* (1954) brought an end to *de jure* segregation, but the *de facto* segregation that endured, and continues to the present day, has highlighted some of the problems that can arise from decentralized structures of public school financing and administration. Students in districts that provide less support to public schools, for whatever reason, have very different experiences in the classroom than do their peers in more fortunate circumstances. Of course, there is no easy solution, especially in a context where there is substantial inequality or heterogeneity. Centralized structures that involve redistribution tend to inspire greater resistance to taxes, as well as encourage households who demand higher quality schooling services to shift to private providers.

3. Public universities

The United States also has a strong history in publicly provided university education. Although the first universities were private, as both the private and social usefulness of institutions of higher learning became apparent, it did not take long for the public sector to expand its role, to innovate a quite new type of education institution, and in so doing broaden access to universities. The earliest colleges – such as Harvard, William and Mary, and Yale – were established through charters from colonial state governments, and each was (with the precursor of the University of Pennsylvania standing out as an exception) associated with a particular religious denomination. They were private, relying primarily on tuition for funding, though they sometimes received support from state authorities. By the early 19th century, however, there was growing expression of public dissatisfaction with how they operated. Institutions of higher learning were already coming to be recognized as of great public significance, not only as avenues for

¹⁸ For superb treatments of how black voting rights were undermined by southern whites after the period of Reconstruction, and how enormous gaps in public provision for white and black schools quickly followed and persisted well into the 20th century, see Du Bois and Dill (1911), Kousser (1974), Welch (1973), and Margo (1990).

personal advancement, but also for their contributions to the intellectual and technological development of society.¹⁹ A democracy required an educated citizenry; in this intensely democratic age, many observers feared that religious denominations might exercise too much control, and were suspicious of aristocratic tendencies. Efforts by state governments to exert more authority over the colleges were generally resisted, as was the attempt by New Hampshire to transform Dartmouth College into a state institution. The Supreme Court ruling that the charter of a college was a contract that could not be altered by legislative fiat was just one of many reasons why state governments turned to creating new universities of their own.

This belief in the importance of higher education, and of broad access to it, together with the demographic, economic, and geographic expansion, fueled a sharp acceleration in the formation of colleges and universities after the Revolution. Only ten were founded before 1780, fourteen more came over the next twenty years, and by the close of 1860 students were attending classes in more than two hundred and forty-five such institutions. Although the overwhelming majority of these institutions were private, state universities accounted for nearly 10 percent of the total and a somewhat larger proportion of students. Whereas the early denominational colleges had relied on very narrow curricula, largely confined to theology, mathematics, philosophy, and ancient languages, those established after the Revolution began to introduce new programs (i.e. medicine, law, and ultimately engineering) that were more practical and often focused on the applications of science or scientific method to current problems or circumstances. Part of the inspiration for these changes may have come from Europe, and especially from the example of the Ecole Polytechnique founded by the revolutionary French government in 1794, but the actual designing and creation of such new programs were carried out by visionary or entrepreneurial academics and patrons whose senses of possibilities had likely been influenced by the concerns of students, state governments, and businessmen. One illustration of this is the significance of the Erie Canal in encouraging the spread of engineering instruction in the U.S. during the first half of the 19th century.²⁰ The Rensselaer School (founded in 1824, and later renamed the Rensselaer Polytechnic Institute) was the pioneer in focusing its programs on engineering and agricultural science, but as the progress of early industrialization made clear the growing relevance and value of familiarity with technology, many colleges began to expand their offerings in this direction.²¹ Harvard and Yale both acted in 1847 to organize the Lawrence Scientific School and the Sheffield Scientific School respectively, and separate departments or schools in science and related areas were becoming commonplace by the 1850s.

¹⁹ One reflection of this sentiment was George Washington's desire for a National University to be established in the nation's capital.

²⁰ See Edelstein (2002). As Edelstein discusses, it was no coincidence that these early programs were highly concentrated in New York.

²¹ Rensselaer is another example of how many Americans conceived of institutions of higher learning in utilitarian terms. The school was founded on the basis of a gift from Stephen Van Rensselaer, who wanted an institution that would promote study and instruction of the application of science to agriculture and manufactures.

The success of private institutions such as Rensselaer in producing graduates who became renowned for their accomplishments and impact on the economy encouraged public authorities to seek to emulate the model. During the late 1840s and early 1850s, state legislatures in New York, Michigan, Illinois, Virginia, and Pennsylvania moved to establish state colleges of agriculture (and often of “mechanic arts” as well), and the federal government soon joined in. Despite some fears that it would adversely affect already existing private schools, in 1862 President Lincoln signed the so-called First Morrill Act, which gave over more than 11 million acres of public land to the states to endow institutions focused on agriculture, mechanic arts, or military science and tactics.²² Different states exploited these federal land grants in different ways, but the unambiguous effect was an enormous expansion of public college and universities, both by stimulating the organization of new universities such as Ohio State, Purdue, and MIT, as well as by dramatically boosting the resources available to schools that had been struggling with limited funds. The Morrill Act is a vivid demonstration of how government support for broad access to education extended beyond primary schooling, even during the 19th century.

The land grant universities also reflect, however, the deeply utilitarian approach that policy makers, and Americans more generally, took toward educational institutions of higher learning. Public support was grounded on the presumption that they would contribute to the advance of technology and the economy, whether at the national, regional, or local level. They were much more likely to establish programs in agriculture, engineering, the natural sciences, mining, forestry, as well as in other fields of study that would be helpful to local industries than were private institutions of higher learning. In 1890, for example, about 22 percent of all students attending college or university were enrolled in public schools, while roughly 50 percent of engineering degrees were awarded by such institutions (which were the home of nearly 60 percent of engineering programs).²³

It is interesting to observe that this major expansion of public universities, and their move into more technical fields, coincided in time with the beginning of a major shift in the educational backgrounds of individuals who were making the most important contributions to technological knowledge. [Figure 2](#) displays the level of formal schooling attained for the 409 individuals (408 men and 1 woman) recognized as important inventors in the *Dictionary of American Biography* who were born before 1886 and active in the U.S.²⁴ Arraying them by birth cohort, and weighting them by the number of patents they received, reveals that their levels of formal schooling were quite modest through the birth cohort of 1820 to 1845; roughly 75 to 80 percent of patents went to those ‘great inventors’ with only primary or secondary schooling (meaning that their formal schooling had ended no later than age 17). These data indicate that people with rather limited formal technical educations were capable of making important contribu-

²² A similar bill had been passed by Congress a few years before, but was vetoed by President Buchanan.

²³ Goldin and Katz (2003) and Edelstein, p. 10.

²⁴ See Khan and Sokoloff (2004) for a discussion of the sample, and further analysis.

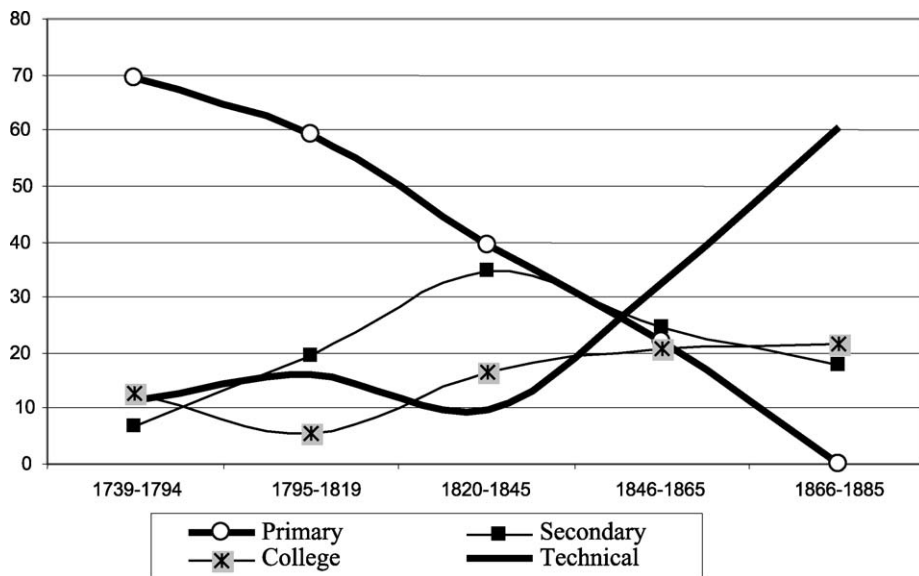


Figure 2. Educational level of great inventors by birth cohort, % distribution of patents. Source: Khan and Sokoloff (2004).

tions to technological knowledge, at least until the very end of the 19th century. The technologically creative seem to have been able to accumulate the skills and knowledge necessary to operate at the frontier largely on their own, or through their work experience as apprentices or younger employees, up until the Second Industrial Revolution. The growing importance of a technical education begins to be evident among the great inventors in the birth cohort of 1846–65, as the proportion of them who had studied at an institution of higher learning, and earned degrees engineering and/or the natural sciences rose sharply. By the next birth cohort, a college education was virtually a necessity, especially one in a technical field (in Figure 2, includes physical or biological sciences, medicine, and engineering).

The coincidence of the expansion of public universities with the major and rather discontinuous increase in the prevalence of college education and degrees in technical fields among great inventors raises a number of intriguing interpretations. One is that the episode is indicative of how responsive U.S. public education institutions, and the government authorities that establish and maintain them, have been to changes in the relative returns to different types of human capital. Moreover, an economic logic might suggest that since the fraction of the population that stood to take direct advantage of the expanded opportunity to obtain a college degree was small, the steps the federal and state governments took were likely based on a presumption that public universities generated significant positive externalities. Another possibility is that the land-grant universities, and their greater orientation toward science and engineering, constituted

an innovation in educational institutions, in that whatever else they accomplished, they also introduced a more effective means by which technologically creative individuals could become familiar with the frontiers of technical knowledge. That the shift in the composition of great inventors from those who had accumulated their technical skills and knowledge through work experience to those who had been trained at universities occurred so swiftly, if not discontinuously, does suggest that this avenue was superior for the production of technological leaders.²⁵ Although part of this apparently remarkable success may have stemmed from the public subsidy to university education, it is worth noting that the late-19th century was also marked by private universities, new as well as old, starting or expanding programs in the engineering, the natural sciences, medicine, and other technical fields.²⁶

Over time, public schools came to account for a larger and larger share of institutions of higher education. From less than a quarter in 1890, the fraction of college students enrolled in public schools increased to roughly one half by 1940, and is now over three quarters.²⁷ This shift in the relative importance of public and private colleges occurred over a period during which the demand for college and university education rose dramatically. Private institution enrollments registered extremely impressive growth, but public sector enrollments truly exploded. The chief reason for this seemingly greater responsiveness or flexibility was likely the greater ease of mobilizing resources. Faced with a burgeoning demand for the education provided by such institutions, and encouraged by the belief that both the presence of the institutions and the stock of individuals so educated generated positive local externalities, public authorities were simply more able and willing to provide the resources needed to expand supply. Of course, there was, and continues to be, substantial and systematic variation across states in their levels of support for public universities. It has, for example, been widely noted that the states that were formed the earliest, and where private colleges were more likely to have been founded during the early history of the country, tend to have markedly lower levels of public support for state universities. Overall, one of the most striking, if not surprising, patterns is a pronounced persistence over time in state and local government spending per capita on higher education.

²⁵ Another observation that tends to support this sort of interpretation is that the shift toward more highly educated great inventors occurred at roughly the same time in all of the sectors of the economy. Inventors concerned with electric light and power were a bit more likely to have had university degrees in science or engineering than those in other areas, but such differences across sectors were minor compared to the dramatic changes between birth cohorts. See *Khan and Sokoloff (2004)* for more discussion.

²⁶ Cornell and the Massachusetts Institute of Technology are of course famous examples of distinguished universities that began as so-called land grant institutions, but Case and Carnegie are among the many distinguished private schools of technology that were established during this era.

²⁷ U.S. Census Bureau (2002), Table 198.

4. The high school movement

Of course a major factor helping to account for the growth of enrollments in colleges and universities was the expansion of public high schools – a development that did not take place in earnest until the early 20th century. As we have discussed, prior to the ‘common school’ movement of the first half of the 19th century, most schooling was provided on a private basis – that is, the grammar schools, academies, or colleges were funded primarily by the fees or tuition collected from students and their families. As public provision of primary schooling spread, it was the so-called academies (beginning with institutions such as the Dummer Academy and the Phillips Academy founded in Massachusetts in 1761 and 1778 respectively) that focused on secondary education. These institutions varied in emphasis, but generally provided courses of study that either prepared students for college, or gave them an advanced education (following on common schools) in modern languages, mathematics, the sciences, and history, with the goal of equipping them for success in the professions or the “ordinary business of life”. These academies grew in popularity, with the most intense phase of their development coinciding roughly with the common school movement. Some scholars have estimated that by 1850, there were more than 6000 of these academies, staffed by more than 12,000 teachers, and with more than 260,000 students enrolled.²⁸ That the numbers of these essentially private secondary schools grew so rapidly, and that they were evidently stimulated by the spread of broad-based primary school systems, suggests that this period was characterized by a powerful demand for education among the middle and upper classes of the population. These institutions schooled many boys and girls, some bound for college, but some for other occupations (including teaching in lower schools).

The establishment of free public high schools got under way during the 1820s, with Boston and Portland, Maine opening schools in 1821, and the passage of seminal (if selectively enforced) legislation by Massachusetts in 1827 requiring all towns with 500 or more families to have one. Many towns and especially big cities (Philadelphia in 1838 and New York in 1848, for example) followed, but even in New England where public high schools were for decades highly concentrated, the spread of such institutions was a very slow process. Among the obstacles were the question of cost relative to benefit (given that many adolescents were able to earn significant wage income in the labor market or be productive on the farm), the difficulty of realizing an efficient scale given the relatively dispersed population of the mid-19th century (the private academies were often boarding schools), and the opposition of taxpayers and the advocates for common schools and/or private academies (who might well have had reason to think that public high schools would sap them of scarce resources). Outside of New England and New York, there was considerable resistance to legislation providing for public high schools, including challenges to constitutionality where such laws were actually passed.²⁹

²⁸ Cubberley (1947, p. 247). Goldin and Katz (2003) have suggested that these numbers give an exaggerated sense of how high enrollment rates were among adolescents.

²⁹ See Cubberley (1947, pp. 262–264) for discussion. Also see Vinovskis (1985).

Table 4
Availability and use of public high schools

	# Free public high schools	% Pupils in public high schools	Approx. % of pupils in HS relative to HS age population
1869–70	c. 500	–	2.0
1878–80	c. 800	–	3.0
1889–90	2,536	68.1	5.0
1894–95	4,712	74.7	7.5
1899–00	6,005	82.4	9.0
1904–05	7,576	86.4	10.0
1909–10	10,213	88.6	12.5
1914–15	11,674	89.6	20.0
1919–20	14,326	91.0	29.0
1924–25	c. 20,000	91.6	47.0
1929–30	c. 22,000	–	52.0

Source: Cubberley (1947, p. 627).

It was not really until the last decades of the 19th century that public high schools began to develop rapidly. As Table 4 shows, between 1880 and 1900 the number of free public high schools increased seven fold, to a point where they accounted for more than 80 percent of secondary school enrollments. Even then, however, only about 10 percent of those of high school age were enrolled in either public or private institutions.³⁰ Although the early rise of public high schools may seem modest, that they were having major democratizing effects was soon evident. The rather elite backgrounds of those able to afford private secondary education is suggested by estimates that between 50 and 60 percent of high school graduates during the 1880s and early 1890s would go on to graduate from college. With the rapid increase in the numbers of public schools during the late 1890s and beyond, however, this figure dropped to just over 30 percent by 1900, and to nearly 20 percent by 1920.³¹ Most of the growth in public high schools before 1900 was in the northern states, and especially New England, where urbanization and the shift to non-agricultural occupations were most advanced. But this regional pattern changed dramatically as the expansion of public high schools accelerated during the first decades of the 20th century.

From less than 10 percent as late as 1910, high school graduation rates rose to over 50 percent by 1940, with the increase accounted for almost exclusively by the rapid expansion of public provision of free secondary school education (see Table 5). As Goldin and Katz highlight in their careful studies, this crucial phase of the ‘high school movement’

³⁰ See the figures in Cubberley (1947, p. 627).

³¹ These estimates are based on the ratio of bachelor’s degrees granted relative to the number of high school graduates four years earlier. See Snyder (1993, Figure 19).

Table 5
High school graduation rates summary statistics by state

	Unweighted		Weighted	
	Mean	Standard deviation	Mean	Standard deviation
48 States				
1910	0.088	0.049	0.086	0.043
1920	0.180	0.085	0.162	0.069
1928	0.300	0.117	0.270	0.100
1938	0.504	0.145	0.482	0.130
32 Non-Southern States				
1910	0.112	0.043	0.111	0.297
1920	0.223	0.069	0.199	0.281
1928	0.361	0.093	0.321	0.268
1938	0.581	0.097	0.559	0.134

Source: Goldin and Katz (1997) "Why the United States Led in Education", Table 1. Weighted data use the number of the 17-year olds in the state.

proceeded most swiftly in states located in the Great Plains (such as Iowa, Nebraska, Kansas, and South Dakota) and on the pacific coast (such as California or Washington).³² These regions had lagged New England in the spread of high school education at 1910, but were the first to broadly assume the major new financial commitments required to expand the level of public education offered all children from common or grammar school through high school. An enormous change was effected in but a few decades, with graduation rates in these leading regions jumping from just over 10 percent to the 60 to 75 percent range over this key 1910 to 1940 interval. It was not until the 1960s that the rest of the country caught up, with the national rate leveling off in the 70 to 75 percent range for the remainder of the century.

Fundamental to this movement was the rather high return to having a high school degree. Based on their analysis of the rather unique set of data information provided by the 1915 Iowa State Census, Goldin and Katz estimate that the private return to a high school education was over 10 percent, for either blue- or white-collar occupations. Although neither they, nor other scholars, have a fix on how recently the return to secondary schooling had risen to that level, there is certainly reason to think that the changes in technology associated with the Second Industrial Revolution, the growth in urban centers, the continued sectoral shift out of agriculture, and the surge of immigration from abroad might have boosted the returns to schooling about the turn of the century.

³² Goldin and Katz (1999a, 1999b, 2000).

Why was it that the populations that took the lead in taxing themselves to provide high school educations to all of their children were in ‘America’s heartland’, far away from the urban centers often associated with progressive attitudes toward education? Goldin and Katz identify a number of factors that help account for the regional pattern, including the high per capita incomes in these areas. The key feature of their explanation, however, is the emphasis on how these states had greater social equality or homogeneity than other regions such as the Northeast (and especially the South), and that these qualities were associated with higher levels of social capital and greater willingness to invest in public or quasi-public goods such as schooling. As they note, the cost of providing universal high school education was substantial – with the cost of the four years of high school roughly equivalent to the cost of the preceding eight years of schooling.³³ Moreover, it is striking that the public decisions about levels of support for schooling were generally made at local levels, such as school districts or counties, even if guided or coordinated from above (state governments). Amongst the evidence they offer for their view is that even within Iowa, a state where social heterogeneity is relatively subtle, counties with greater social homogeneity (such as the proportion of the population with native-born parents) and economic equality (as proxied for by motor vehicle registration per household) made significantly earlier and larger commitments to funding high school education, and had higher rates of attendance. Analyses of variation across states yield similar implications. The Goldin and Katz perspective on the regional diffusion of high schools is, therefore, quite similar to ideas about the common school movement: communities with greater equality or homogeneity were more likely to support public provision of schooling because of greater uniformity across households in the sharing of costs and benefits as well perhaps as greater identification or concern with what was good for others in the community.

5. Challenges and responses in the late 20th century

While social equality and homogeneity among the population seems to have greatly facilitated the growth and expansion of the public school system during the 19th and early 20th centuries, the increasing heterogeneity evident in late 20th century America might be viewed as posing new challenges to the system. Some observers believe that increases in income inequality, major change in the ethnic and age composition of households, changes in the legal environment, as well as the increasing cost of schools in a world in which women (long disproportionately represented among the ranks of teachers) have a broader range of professional career paths available to them may undercut support for maintaining high quality public schools. Certainly there is much concern among the body politic. The state of public schools has returned to center stage in many political campaigns, with calls for overhauling the system, introducing national standardized testing, school vouchers, and expanded choice for parents. Surveys of public opinion indicate that adults give national schools a report card grade of slightly below a “C”.

³³ Goldin and Katz (1999a, 1999b, 2000, 2003) and Goldin (2001).

Table 6
 Percentage of population attaining upper secondary education or more, by country: 1999

OECD countries	Ages 25–64	Ages 25–34	Ages 35–44	Ages 45–54	Ages 55–64
Australia	57	65	59	55	44
Austria	74	83	78	69	59
Belgium	57	73	61	50	36
Canada	79	87	83	78	62
Czech Republic	86	93	89	85	75
Denmark	80	87	80	79	70
Finland	72	86	82	67	46
France	62	76	65	57	42
Germany	81	85	85	81	73
Greece	50	71	58	42	24
Hungary	67	80	76	70	36
Iceland	56	64	59	53	40
Ireland	51	67	56	41	31
Italy	42	55	50	37	21
Japan	81	93	92	79	60
Korea	66	93	72	47	28
Luxembourg	56	61	57	52	41
Mexico	20	25	22	16	9
New Zealand	74	79	77	71	60
Norway	85	94	89	79	68
Poland	54	62	59	53	37
Portugal	21	30	21	15	11
Spain	35	55	41	25	13
Sweden	77	87	81	74	61
Switzerland	82	89	84	79	72
Turkey	22	26	23	18	12
UK	62	66	63	60	53
US	87	88	88	88	81
OECD mean	62	72	66	58	45

Source: Hanushek (2002, Table 1).

Despite what seems to be growing sentiment among laymen that public schools are in trouble, scholars have been cautious about drawing strong conclusions as regards trends in performance. As Hanushek (1998) has noted, although U.S. students overall do not perform particularly well compared with students from other countries, they never have – especially on math and science exams. In the past, the U.S. stood out not for the average performance of our students, but for the fraction of our population that was schooled. It should not necessarily be alarming that other countries are catching up to us in this latter dimension (see Table 6). Moreover, it may be naïve to think that the performance of our students, or schools, is merely a function of resources. There is, indeed, at best weak evidence of much of a return in terms of student performance to

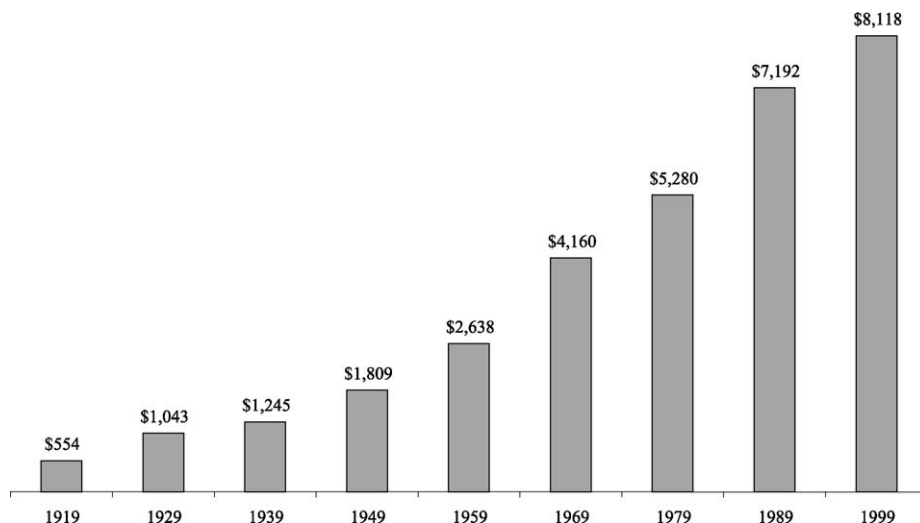
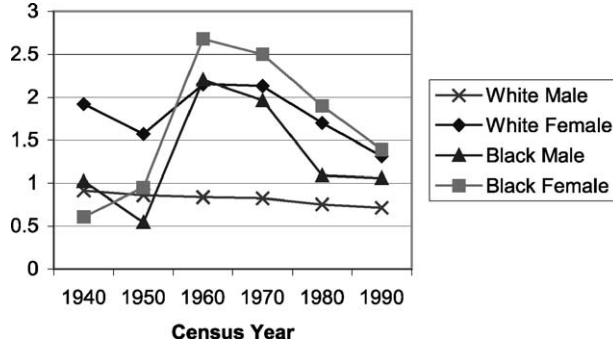


Figure 3. Expenditures per pupil in average daily attendance constant \$1998. Source: U.S. Department of Education, NCES (2001).

the steady and large increases in the amount we have invested in primary and secondary schooling. Real per student expenditure on primary and secondary education in the United States has risen from \$554 in 1919, to \$1,245 in 1939, and to \$8,118 in 1990 (see Figure 3). Most of this growth was due to the rising cost of instructional staff (accounting for approximately 40 percent of the expenditure increase), an increase in the intensity of education (with declining pupil-staff ratios), and an increase in the length of the school year.³⁴

Although many are reassured by these arguments and numbers, and use them to highlight the possibility that disappointing performance by students may reflect changes in the society rather than a deterioration in the schools, pessimists find grounds for concern about the overall health of the system. They begin with the well-documented absence of a clear link between measured inputs into schools and school performance. In their view, this pattern suggests that there may be gross inefficiency in how resources are being utilized; surely, they contend, we can do better. A second problem is the apparent negative correlation between teacher salaries and teacher quality, coupled with the evidence that the relative wages of high-quality women rose dramatically as their access to more lucrative alternative career paths has widened since the 1960s (see Figure 4). The implication is that the figures indicating increased expenditures on a per pupil basis, because of the increase over time in salaries paid to teachers, may be misleading. The quality of teachers could well have declined, even if their average salary increased,

³⁴ Hanushek and Rivkin (1997).



Mean relative earnings over all teacher i 's relative to non-teacher college-graduate j 's are calculated as $\frac{1}{N_i} \sum_i \frac{y_i}{Y_j}$, where $Y_j \equiv \frac{1}{N_j} \sum_j y_j \mid X_i = X_j$ and X include state of residence, SMSA status, gender, race, education group, and age group. For more details, see discussion in text.

Figure 4. Decline in teacher earnings relative to non-teachers. Source: Bacolod (2003).

as the latter development may have resulted more from technological change in other sectors and the improved labor market opportunities of women, than from the rising productivity or ability of teachers. These changes, along with an increasing presence of unions in the market for teachers, may have had adverse effects on the quality of education in the U.S.

This possibility has been receiving increasing attention from scholars. Flyer and Rosen (1997) discuss the rising costs of elementary and secondary education in the context of the rising value of women's time. They attribute much of the three-fold increase in the direct costs of education to the rising opportunities of women and changing family structure. In a direct examination of changes in teacher quality, Bacolod (2002) focuses on the impact of changing professional opportunities for women on teacher supply and quality. In 1940, 23 percent of women aged 21–30 with at least 2 years of college went into teaching. By 1980, this fraction had dropped to 15 percent, and by 1990 was down to 6 percent. At the same time, the quality of teachers was declining. Among the cohort of women born in 1941–45 who ultimately went into teaching, 41 percent scored about the 80th percentile in IQ and only 8 percent were below the 20th percentile. In sharp contrast, by the cohort born in 1963–64, the fraction above the 80th percentile was only 19 percent and the fraction below the 20th percentile had increased to 19 percent. Bacolod attributes these changes to the sensitivity of educated women to pay differentials; as the pay of teachers increases relative to the pay of other professionals, the profession would be able to attract better teachers. In a similar vein, Corcoran, Evans and Schwab (2002) find evidence that the likelihood that a female from the top of her high school class will eventually enter teaching has fallen significantly from 1964 to 1992, from almost 20 percent to under 4 percent.

If it is a pure supply and demand phenomenon, why doesn't the market adjust to maintain the same quality of teachers or attract higher quality individuals into the profession?

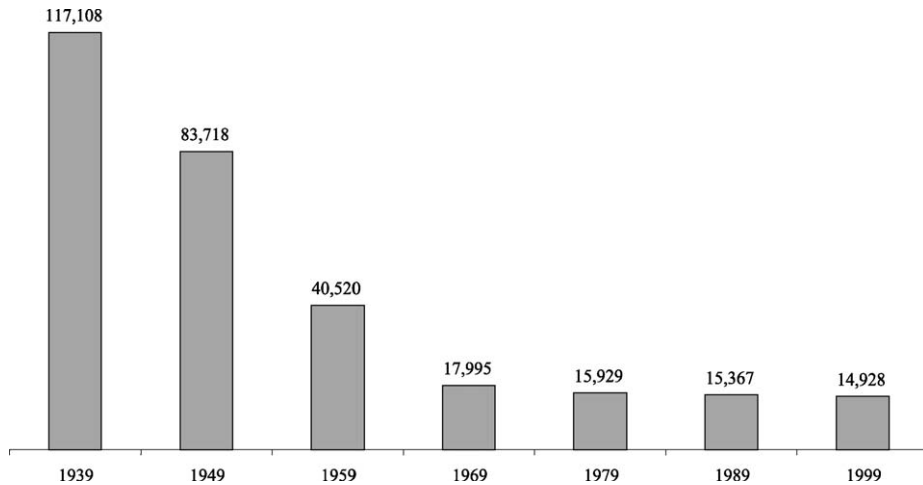


Figure 5. Number of regular public school districts. Source: NCES (1995).

One possibility is that perhaps because of collective action problems, governments are notoriously bad about adjusting the wages of public workers to adjust for inflation and other developments that affect labor markets. Another explanation for the lack of adjustment is the presence of strong anti-competitive pressures such as teachers' unions in the profession.

5.1. *The growth of teachers' unions*

According to [Murphy \(1990\)](#), it was the growth of cities and the centralization of public school systems that provided the foundation for teacher unionization. The number of public school districts declined dramatically, from approximately 118,000 different regular public school districts in 1939 to fewer than 20,000 by 1969 (see [Figure 5](#)). Even with this consistent and long-run trend toward the centralization of public education, however, there were a number of obstacles for teachers unions to overcome. The first obstacle was the requisite notion that women working as teachers be considered "professionals" in order to be unionized. A second problem had to do with the political ideology of the late 1940s and 1950s; anti-communist sentiment – red-baiting – contributed to an atmosphere of fear that inhibited efforts to unionize workers in such a key sector. And finally, [Murphy](#) notes the recurring fiscal crises in education as a last major obstacle to teacher unionization. As a result, it was only in the 1960s that teachers' unions really became much of a presence.

The first teachers' unions actually developed out of teachers' professional associations in a few large central city districts beginning to employ union tactics (such as strikes) in order to be recognized. Indeed, it was just such a circumstance that led to the organization of the American Federation of Teachers (AFT). The AFT then induced

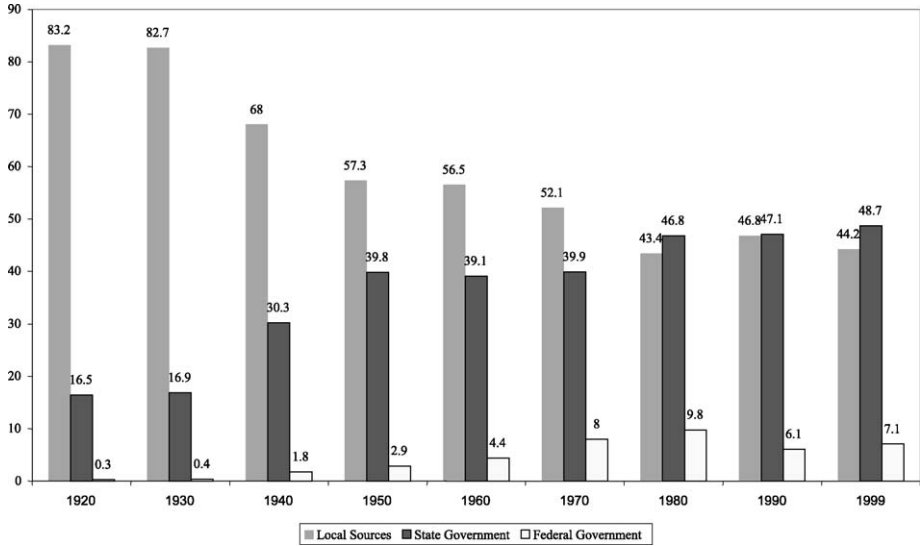


Figure 6. Percentage distribution of revenue receipts for education. Source: NCES (2001).

the National Education Association (NEA) to begin collective bargaining on behalf of teachers. Although the practice spread quickly, with 93 percent of school districts reporting teachers represented by a union as early as 1963, the strength of these organizations varied, and varies, considerably across districts. Hoxby notes that, in 1966, only 8 percent of school districts reported the existence of a collective bargaining agreement between their administration and the teachers’ organization, and at least 50 percent of teachers as union members. By 1992, the relative importance of unions had grown, with an increase in the share of school districts having a majority of their teachers in a union to 36 percent (serving approximately 43 percent of the nation’s students).

Given the rise of unionization, what has the impact been on teachers and school quality? Although the unions focus on redirecting resources to teachers, their redistributive goals may not be associated with a positive impact on the productivity of teachers or on the performance of students. Hoxby (1996) examines the effect of the growth in unionization by using differences in the introduction of collective bargaining, particularly that when it stems from the passage of state laws facilitating teachers’ unionization. She concludes that teachers’ unions increase the resources allocated to the school but actually reduce productivity, and this productivity reduction is sufficiently large to have an overall negative effect on student performance.

5.2. School finance reform: Success or failure?

About the same time that teachers’ unions were growing in strength, there was a drastic change in the way education was financed. Resources for public schools had tradition-

ally been raised locally, with the dominant share coming from property taxes that went directly to local public schools and other government services. However, in the 1960s, many states reformed their methods of school finance in an effort to equalize per pupil expenditures across districts; funding for schools was no longer so closely tied to local taxes, and what taxpayers contributed were no longer so much directed at local schools and other projects. [Figure 6](#) shows the decline in the percentage of revenues for education raised at the local level. These changes were at least partially driven by changes in thinking encouraged by progressive scholars and lawyer activists, who had become increasingly discontent with the longstanding systems of school finance. Despite the Coleman Report (1966) finding a weak link between expenditures and student outcomes, many found the system of resources for schools coming from local sources to be “unfair.” Reformers argued that in allowing children from richer communities to attend better funded schools than their counterparts in poor neighbors, the existing system violated the Fourteenth Amendment to the United States Constitution and denied individuals “equal protection of the law.”

However, when the first efforts to persuade the federal government, including the Supreme Court, to attack this problem met with resistance (and the reluctance of the Supreme Court to get involved in questions of state and local finance), the attention of reformers turned to state governments, and state courts in particular. The reformers have been remarkably successful, and since the 1970s, with 19 state funding systems being declared unconstitutional, enormous changes in the way in which schools are financed have been implemented.³⁵

In an interesting study of this reform movement, [Hoxby \(1998\)](#) examines whether the school finance reforms to equalize spending across districts that occurred in many states were a response to a genuine failure of the traditional system to provide an equitable allocation of resources for schooling, or whether they are better understood as motivated by changing views about the importance of school finance systems in creating an equitable allocation of resources. Using data from three states, Massachusetts, Illinois, and California, all of which started with local finance through property taxes, and later moved to state government control, Hoxby explores whether the school finance equalization was a response to changes in per-pupil spending inequality, per-pupil valuation inequality, and per-capita income inequality across districts. Large changes prior to the reform might suggest that the traditional system of financing schools was failing, while little to no change would point to the pursuit of new goals or expectations. Her finding of very little change in the extent of inequality in per-pupil spending across districts, and that much of the change in inequality that does occur can be explained by changes in income inequality, suggests that it was not a failing of the existing education finance system that motivated the reform; rather, in her view, the impetus for reform came more

³⁵ Although many of these decisions were based on interpretation of the “equal protection” clause in state constitutions, others came through the education clauses in state constitutions that require the state to provide a “thorough and efficient” (or similar wording) system of public schools. See [Minorini and Sugarman \(1999\)](#) for more discussion.

from demographic changes, as well as from changes in expectations about the goals of public education.

California was the first state to have its supreme court declare its education finance system unconstitutional. *Serrano v. Priest*, originally filed by a class of Los Angeles County public school children and their parents, contended that the finance system was unconstitutional because of its reliance on local property taxes for funding. Because of this dependence of funds for schools on local sources, large variations in property wealth led to large variations in school expenditures across districts. The decision has resulted in a substantial equalization across districts in expenditures per pupil, but many observers believe it has also contributed to declining support for public schools in the state. The relative performance of California schools and students has sharply declined in the years since.

The evidence does suggest that school finance equalization efforts did lead to an equalization of spending across districts. In a systematic study comparing school finance reform programs across states, *Card and Payne (2002)* find that where the school finance system was declared unconstitutional in the 1980s, state governments did respond by allocating relatively more funds to low-income districts; the resulting increase in the relative spending on schools in these districts does seem to have fostered some convergence in spending across richer and poorer districts as well as a narrowing of test score outcomes. The reforms are far from an unmitigated success however. While the school finance equalization schemes do appear to have reduced differences in spending across districts, it is unclear whether they are really raising the bottom districts or pulling down the top. As *Hoxby (1998)* argues, these policies might reasonably be considered a tax on district's spending on public schools, and could well encourage parents to turn to private schools to provide education for their children. Moreover, while spending may have been equalized, there appears to have been no commensurate improvement in the performance of students from poorer districts.³⁶

5.3. Population heterogeneity and support for public schools

As we have discussed, the history of schooling in the United States is largely one of a well-supported and innovative public sector. Such a positive outcome was neither natural nor due to serendipity. Rather, the outcome was primarily due to a population that was unusually (from a world perspective) favorably disposed toward bearing the tax burdens required to support strong education institutions. Americans were likely amenable to these arrangements for schooling their children because they enjoyed comfortable living standards, expected further material progress through economic growth,

³⁶ This pattern, which seems to hold for California and elsewhere, may perhaps not be surprising. Some would argue that spending equality across groups is insufficient for dealing with the problems that afflict certain disadvantaged segments of the population. *Duncombe and Yinger (1997)* cite inequality of costs as an explanation as to why, despite aid formulas implemented to improve educational outcomes of those in greatest need, central city school districts are unable to improve their educational outcomes.

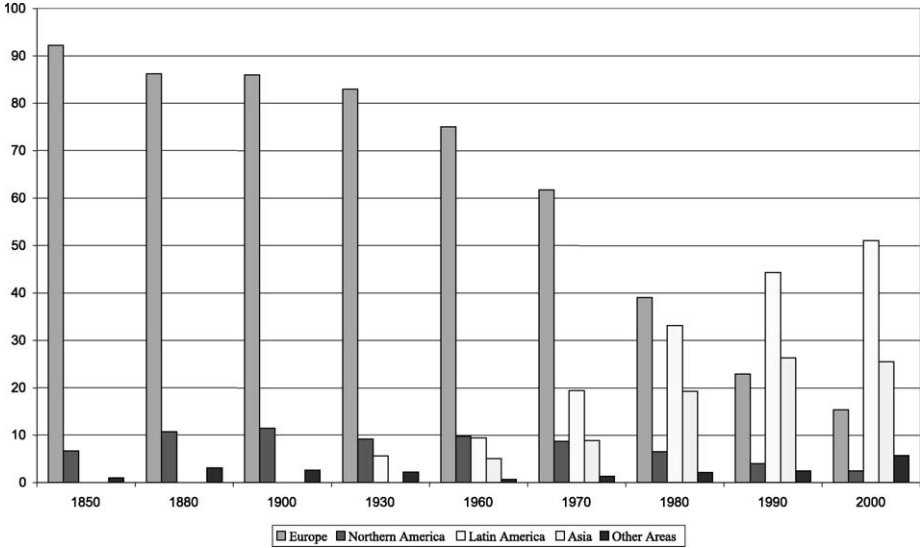


Figure 7. Foreign-born population by region of birth. Source: Census Bureau (2000).

and because a relatively high degree of homogeneity amongst them (and commitment to community) led to reasonably equal sharing of the costs and benefits of such policies. Moreover, local funding and administering of thousands of school districts meant that taxes for schools would be spent close to home, and that there would competition as well as ample scope for adapting school programs to fit local conditions.

Many observers fear that the exceptionally favorable environment for public schooling that has long characterized the United States is under threat. The key concern is, of course, not with whether the level of prosperity in the society is sufficient to sustain the traditional system of offering broad access to a high quality, if somewhat standardized, education. Rather, the chief issue seems to be whether the erosion of social equality and homogeneity, which has long served as the foundation for the public school system, will undercut political and economic support. The challenge seems especially formidable in light of the changes in markets and institutions noted above that have adversely affected the production of high quality education and diminished the degree of local control.

The logic and empirical basis for the concern with the potential consequences of greater population heterogeneity is straightforward. Over the last half-century, there have been dramatic increases in income inequality, in the fraction of households without children, and in the proportion of school-age children (and the population) from ethnic and/or racial backgrounds quite different from the historic norm – whites of European descent (see Figures 7, 8 and 9). All of these changes might be expected to exacerbate the collective action problems associated with organizing and funding investments in public and quasi-public goods such as public schools. In addition, the schools are facing increased challenges through recent changes in the percentage of students with difficulty

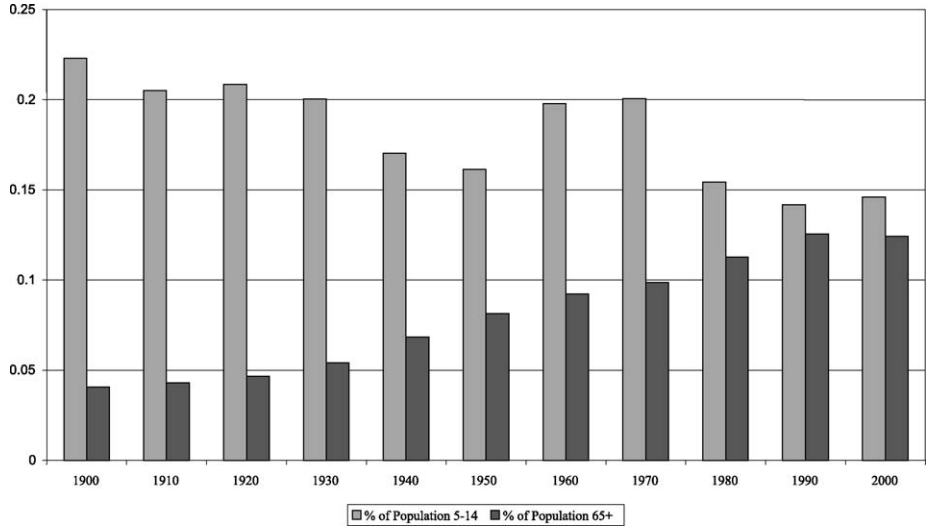


Figure 8. An aging population. Source: Census 2000 Special Reports, Series CNSR-4; Demographic Trends in the 20th Century, 2002.

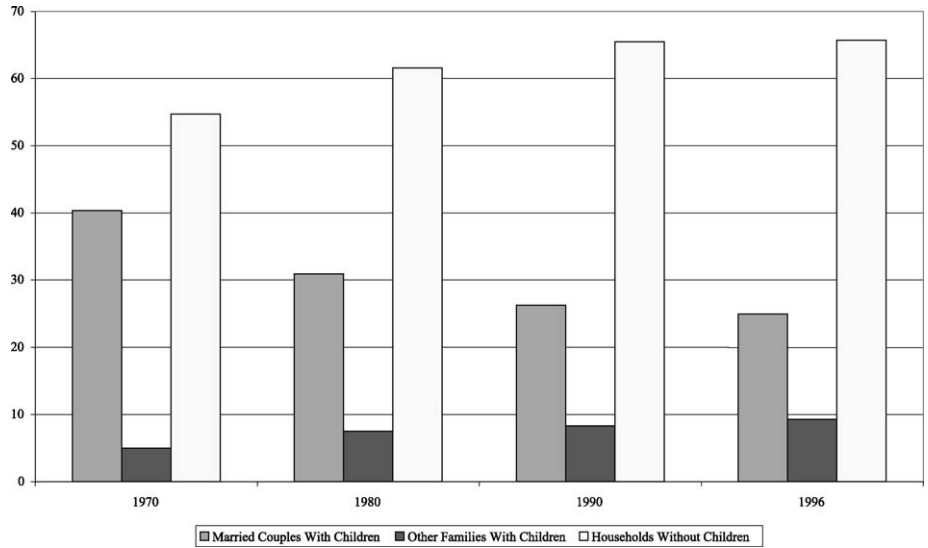


Figure 9. Household composition: 1978–1996. Source: Census Bureau (2002).

speaking English (see Figure 10). As a larger fraction of the nation’s income and wealth comes to be concentrated in the hands of high-income and childless households, it may

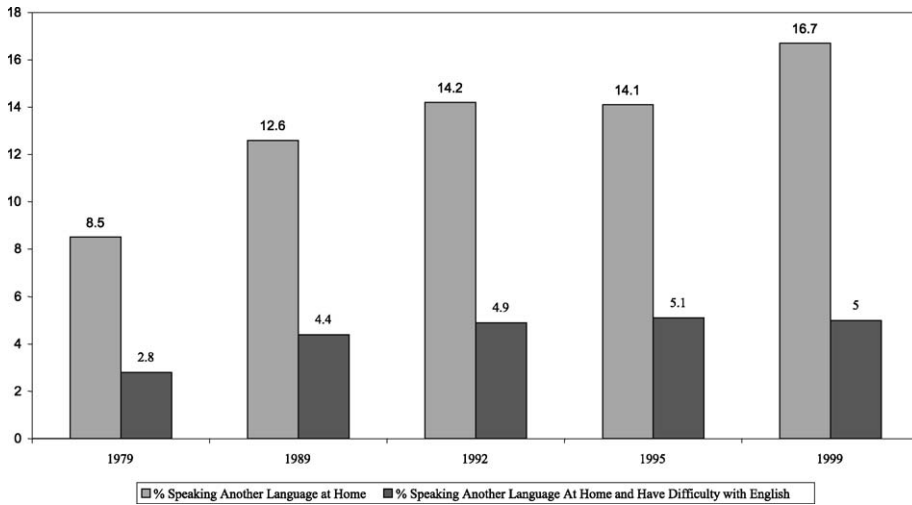


Figure 10. Children who speak a language other than English at home as a percentage of children 5 to 17 years old. Source: Statistical Abstract of the U.S. 2003, Table 217.

not be unreasonable to expect heightened resistance on their part to paying taxes to fund public schools that increasingly serve the children of parents that are poor and/or from very different backgrounds.³⁷ Thus, some pessimists forecast a decline in the quality of public schools, and a shift toward private schools by parents who value and can afford a better education for their children.

The aggregate data do not provide an obvious case for alarm. As shown in Figure 11, there is no evidence of a major shift toward private schooling. The share of elementary school students enrolled in private schools has been roughly stable, fluctuating between 7 and 11 percent, since the late-19th century. Few attended secondary schools before the advent of the public high school movement, so it is not surprising that more than 30 percent of students so enrolled were at private institutions until late in the 19th century. With the enormous wave of expansion of public high schools during the early 20th century, the share of private schools was reduced to about 7 percent by 1939.

Examinations beyond the aggregate trend do, however, suggest that changes in the composition of the population have effects on private school attendance. Fairlie and Resch (2002) use the National Educational Longitudinal Survey to test for the presence of “white flight” from public schools into private schools in response to minority

³⁷ Educating the children of immigrants is of course not new to U.S. society. However, it is perhaps worth noting that well-to-do Americans may not only differ from today’s immigrants in their ethnic and cultural backgrounds, but also in the type of primary or secondary schooling they want, or is appropriate, for their children. Human capital is more important factor of production, and means for personal advancement, than it was in the past, and thus the appeal and feasibility of common curricula may be less today than they were.

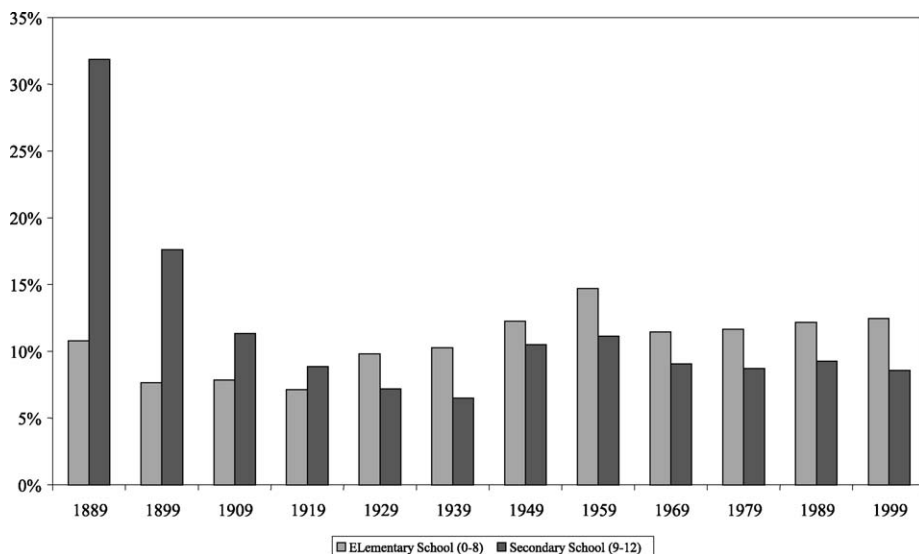


Figure 11. Fraction of enrollment in private schools. Source: NCES (1995).

children; they conclude that families leave schools with higher concentrations of poor minorities. Moreover, in an analysis using 1980 and 1990 census data, [Betts and Fairlie \(2003\)](#) find that immigrants induce native flight among high school students; they estimate that one native student switches to a private school for every four immigrants who arrive in public high schools. Students who leave are predominantly white students, and they seem especially sensitive to non-English speaking immigrants.³⁸

Similar implications come from the many studies of the impacts of various desegregation initiatives in the years since *Brown v. Board of Education*. For example, [Clotfelter \(1976\)](#) explored the doubling of non-Catholic private school enrollment between 1961 and 1971, to get at whether active policies of desegregation affected the demand for private school enrollment by whites.³⁹ Using data from a sample of U.S. metropolitan areas in 1960 and 1970, along with a sample of counties in Mississippi, he found that

³⁸ Of course, there is a long history to white Americans of European descent resisting integration of schools, and of discriminating systematically in the funding of schools that serve other groups. See, for example, [Margo \(1990\)](#). For a quite different historical case, see [Downes \(1996\)](#), who looks at variation in the private school share in the early years of California statehood, and concludes that measures of the heterogeneity of school districts, the resultant ability of districts to provide publicly the optimal amount of education for the majority of their residents, and the extent of intergovernmental competition can explain a significant portion of the variation in public and private shares in California counties.

³⁹ Interestingly, this increase in non-Catholic private school enrollment was accompanied by a significant decline in Catholic private school enrollment (from 5.3 million to 4.0 million) due to a worsening financial crisis among parochial schools.

school desegregation, through its effect on racial composition of students eligible to attend school with whites, increased private school enrollment among whites. However, this effect was only large when the proportion of nonwhites in the school population was large, suggesting the presence of a “tipping” phenomenon.

Evidence that is of perhaps more relevance to the current concerns comes from a study by [Betts and Fairlie \(2001\)](#), who find evidence that in recent years it may be the best students who are leaving the public school system in favor of private schools. Using 1990 census microdata, they document high rates of private school attendance among white natives, white immigrants, and Asian natives, and low rates among black and Hispanic natives and immigrants. Their analysis of the sources of these differentials is handicapped by the omission of religious affiliation, but they report that parental education and family income per capita can explain over 70 percent of the variation in mean private school attendance rates between white natives and all other groups. Those who attend private schools have higher income per capita and parental education.

One of the concerns about the recent changes in the way public schools are financed is that they may stimulate flight from public to private schools by those who especially value education. Attempts to equalize spending and hence public school opportunity could backfire as wealthier individuals, no longer in direct control of financing their local schools, will no longer support the public school system as they shift their children to private schools. In this case, private schools would attract the best students and public school quality would fall, both in terms of spending and average student quality.⁴⁰ Although much more work needs to be done, some scholars claim that the evidence does suggest that the move to centralized school finance has led to an increase in the use of private education. [Husted and Kenny \(2002\)](#) examine 159 metropolitan areas in 1970, 1980, and 1990 and find that private school enrollments increase as public spending becomes more equalized. [Downes and Schoeman \(1998\)](#) study what has happened in California, and show that changes in the public provision of schooling that may result from school finance reform can explain a large portion of the growth in the share of students enrolled in private schools.

6. Conclusion

Throughout its history, the United States has been a leader and innovator in schooling institutions. The country was a pioneer in embracing the goal of universal access to primary education, and by the middle of the 19th century, if not before, was recognized as having the most literate population in the world. After centuries of universities functioning primarily as centers reserved for the elite, the state governments of this new republic began to establish public universities, whose programs would not only serve

⁴⁰ For further discussion of the general equilibrium theory, see papers by [Nechyba \(1996\)](#) and [Epple and Romano \(1996\)](#).

students from many walks of life, but would also promote the advance and diffusion of technological knowledge and otherwise contribute to the local economy. Later, the U.S. proved just as revolutionary in secondary education. What is perhaps most salient about the overall record is the longstanding commitment to provide broad access to education, but the remarkable creativity and flexibility in developing new approaches to pursuing the goal of how to support and facilitate better use of the progress of knowledge is also extremely impressive. These innovations spread, or are in the process of spreading, across the world. Until rather recently, it has been for other countries to learn from what was being done here, as they sought to improve their own educational institutions.

Given that the United States is so renowned for championing rugged individualism and the efficiency of markets, it may at first seem surprising to note that this country's major innovations in this critical social and economic sphere involve public sector initiatives. Certainly the success of public schooling must be at least partially attributed to the social utility of the state intervening to deal with the difficulty of enforcing debt contracts backed by human capital, and to the positive externalities associated with a better educated and potentially more mobile populace. Among the other important explanatory factors, however, are the decentralized structures employed to finance and administer the public schools, as well as the democratic ethos that has been sustained over time by fundamental political institutions and relative population homogeneity. These features worked together, both in enhancing the flexibility of the education institutions and in ensuring that the political will and resources necessary for their continued vitality would be there. That schools were financed and administered by local or state authorities subject to the judgments of democratic elections did lead to more experimentation overall, as school boards and university regents sought to adapt programs or innovate new ones to better serve their communities. Moreover, that populations understood that their taxes went to support public schools under local (or state) control, and provide benefits they shared with their neighbors, increased their willingness to bear the cost of public provision of education – especially when those neighbors were very much like them in what they wanted from, and would contribute to, the school system.

As the country moves into the 21st century, there are certainly major challenges facing public schools. Changes in the legal environment and in tax structures have weakened the link between taxes paid and the resources available to local schools, and together with the growing social and economic heterogeneity of the population, have sapped the commitment of taxpayers to foot the bill for broad provision of high quality education. A variety of developments, including the expansion of unions and the increased cost of attracting talented teachers, have made management issues all the more daunting. Moreover, the heightened importance of human capital in a global economy poses fundamental questions about the design of curricula, the structures of post-secondary education, and the viability of public provision where the type of schooling demanded is becoming more differentiated. Although the litany of problems is sobering, it must be remembered that similar issues (such as increased population heterogeneity, centralization of finance and administration, and changes in the returns to different types of education) have arisen before, and stimulated very constructive re-

sponses by public schools. Will it happen again? Optimists can take heart from the fact that the United States remains a country with vast resources and democratic, flexible institutions. One way or another, it will be fascinating, especially for scholars of long-run economic growth and development, to observe how the society adapts its education institutions yet again to the new conditions of an ever-changing world.

References

- Acemoglu, D., Robinson, J.A. (2000). "Why did western Europe extend the franchise?: Democracy, inequality, and growth in historical perspective". *Quarterly Journal of Economics* 115 (4), 1167–1200.
- Albright, S.D. (1942). *The American Ballot*. American Council on Public Affairs, Washington, DC.
- Alesina, A., Baqir, R., Easterly, W. (1999). "Public goods and ethnic divisions". *Quarterly Journal of Economics* 114 (4), 1243–1284.
- Bacolod, M.P. (2002). "A study of teacher supply and quality and school quality: Evidence from the United States and the Philippines". Unpublished Ph.D. dissertation, University of California, Los Angeles.
- Bacolod, M.P. (2003). "Do alternative opportunities matter? The role of female labor markets in the decline of teacher supply and teacher quality, 1940–1990". Working Paper 02-03-02, UC Irvine.
- Betts, J.R., Fairlie, R.W. (2001). "Explaining ethnic, racial, and immigrant differences in private school attendance". *Journal of Urban Economics* 50 (1), 26–51.
- Betts, J.R., Fairlie, R.W. (2003). "Does immigration induce 'native flight' from public schools into private schools?" *Journal of Public Economics* 87 (5–6), 987–1012.
- Bowles, S., Gintis, H. (1976). *Schooling in Capitalist America: Education Reform and the Contradictions of Economic Life*. Basic Books, New York.
- Card, D., Payne, A.A. (2002). School finance reform, the distribution of school spending, and the distribution of SAT scores. *Journal of Public Economic* 83 (1), 49–82.
- Chadbourne, A.H. (1936). *A History of Education in Maine*. Science Press, Lancaster, PA.
- Clotfelter, C.T. (1976). "School desegregation, 'tipping', and private school enrollment". *Journal of Human Resources* 11 (1), 28–50.
- Copeland, M.A. (1961). *Trends in Government Financing*. Princeton University Press, Princeton.
- Corcoran, S.P., Evans, W.N., Schwab, R.S. (2002). "Changing labor market opportunities for women and the quality of teachers 1957–1992". NBER Working Paper No. 9180.
- Cubberley, E.P. (1920). *The History of Education*. Houghton Mifflin, Boston.
- Cubberley, E.P. (1947). *Public Education in the United States*. Houghton Mifflin, Boston.
- Downes, T.A. (1996). "Do differences in heterogeneity and intergovernmental competition help explain variation in the private school share? Evidence from early California statehood". *Public Finance Quarterly* 24 (3), 291–318.
- Downes, T.A., Schoeman, D. (1998). "School finance reform and private school enrollment: Evidence from California". *Journal of Urban Economics* 43, 418–443.
- Du Bois, W.E.B., Dill, A. (1911). *The Common School and the Negro American*. Atlanta University Press, Atlanta, GA.
- Duncombe, W., Yinger, J. (1997). "Why is it so hard to help central city schools?". *Journal of Policy Analysis and Management* 16 (1), 85–113.
- Edelstein, M. (2002). "The production of engineers in New York colleges and universities, 1880–1950: Some new data". Mimeo, Queens College and CUNY.
- Engerman, S.L., Haber, S., Sokoloff, K.L. (2000). "Institutions, inequality, and differential paths of growth among new world economies". In: Ménard, C. (Ed.), *Institutions, Contracts, and Organizations*. Edward Elgar, Cheltenham.
- Engerman, S.L., Mariscal, E.V., Sokoloff, K.L. (2002). "The evolution of schooling institutions in the Americas, 1800–1925". Mimeo, University of California, Los Angeles.

- Engerman, S.L., Sokoloff, K.L. (2002). "Factor endowments, inequality, and paths of development among new world economies". *Economia* 3 (2), 41–102.
- Engerman, S.L., Sokoloff, K.L. (2005). "The evolution of suffrage institutions in the Americas". *Journal of Economic History* 65 (4), 891–921.
- Epple, D., Romano, R. (1996). "Competition between private and public schools, vouchers, and peer group effects". *American Economic Review* 88 (1), 33–62.
- Fairlie, R.W., Resch, A.M. (2002). "Is there 'white flight' into private schools? Evidence from the national educational longitudinal survey". *Review of Economics and Statistics* 84 (1), 21–33.
- Fishlow, A. (1966). "The common school revival: Fact or fancy". In: Rosovsky, H. (Ed.), *Industrialization in Two Systems: Essays in Honor of Alexander Gerschenkron*. Wiley, New York.
- Flyer, F., Rosen, S. (1997). "The new economics of teachers and education". *Journal of Labor Economics* 15 (1), S104–S139.
- Galenson, D., Pope, C. (2002). "Precedence and wealth: Evidence from nineteenth century Utah". In: Goldin, C., Rockoff, H. (Eds.), *Strategic Factors in Nineteenth Century American Economic History: A Volume To Honor Robert W. Fogel*. University of Chicago Press, Chicago.
- Goldin, C. (2001). "The human capital century and American leadership: Virtues of the past". *Journal of Economic History* 61 (2), 263–292.
- Goldin, C., Katz, L.F. (1999a). "The shaping of higher education: The formative years in the United States, 1890 to 1940". *Journal of Economic Perspectives* 13 (1), 37–62.
- Goldin, C., Katz, L.F. (1999b). "Human capital and social capital: The rise of secondary schooling in America, 1910 to 1940". *Journal of Interdisciplinary History* 29 (2), 683–723.
- Goldin, C., Katz, L.F. (2000). "Education and income in the early twentieth century: Evidence from the prairies". *Journal of Economic History* 60 (3), 782–818.
- Goldin, C., Katz, L.F. (2003). "The 'virtues' of the past: Education in the first hundred years of the new republic". NBER Working Paper 9958.
- Hanushek, E.A., Rivkin, S.G. (1997). "Understanding the twentieth-century growth in U.S. school spending". *Journal of Human Resources* 32 (1), 35–68.
- Hanushek, E.A. (1998). "Conclusions and controversies about the effectiveness of school resources". *Federal Reserve Bank of New York Economic Policy Review* 4 (1), 11–28.
- Hanushek, E.A. (2002). "Publicly provided education". In: Auerbach, A.J., Feldstein, M. (Eds.), *Handbook of Public Economics*, vol. 4. Elsevier Science.
- Hoxby, C.M. (1996). "How teachers' unions affect education production". *Quarterly Journal of Economics* 111 (3), 671–718.
- Hoxby, C.M. (1998). "How much does school spending depend on family income? The historical origins of the current school finance dilemma". *American Economic Review* 88 (2), 309–314.
- Husted, T.A., Kenny, L.W. (2002). "The legacy of Serrano: The impact of mandated equal spending on private school enrollment". *Southern Economic Journal* 68 (3), 566–583.
- Kaestle, C.F., Vinovskis, M.A. (1980). *Education and Social Change in Nineteenth-Century Massachusetts*. Cambridge University Press, New York.
- Keyssar, A. (2000). *The Right to Vote: The Contested History of Democracy in the United States*. New York.
- Khan, B.Z., Sokoloff, K.L. (2004). "Institutions and democratic invention in 19th century America". *American Economic Review* 94 (2), 395–401.
- Kousser, J.M. (1974). *The Shaping of Southern Politics: Suffrage Restrictions and the Establishment of the One-Party South, 1880–1910*. Yale University Press, Basic Books, New Haven.
- Margo, R.A. (1990). *Race and Schooling in the South, 1880–1950: An Economic History*. University of Chicago Press, Chicago.
- Minorini, P.A., Sugarman, S.D. (1999). "School finance litigation in the name of educational equity: Its evolution, impact, and future". In: Ladd, H., Chalk, R., Hansen, J. (Eds.), *Equity and Adequacy in Education Finance*. National Academy Press, Washington, DC.
- Mitchell, B.R. (1992). *International Historical Statistics: Europe 1750–1988*. Stockton Press, New York.
- Mitchell, B.R. (1993). *International Historical Statistics: The Americas 1750–1988*. Stockton Press, New York.

- Murphy, M. (1990). *Blackboard Unions: The AFT and the NEA, 1900–1980*. Cornell University Press, Ithaca and London.
- Nechyba, T.J. (1996). “Public school finance in a general equilibrium Tiebout world: Equalization programs, peer effects, and private school vouchers”. NBER Working Paper 5642.
- Porter, K.H. (1918). *A History of Suffrage in the United States*. University of Chicago Press, Chicago.
- Snyder, T.D. (1993). “120 years of American education: A statistical portrait”. U.S. Department of Education, National Center for Education Statistics, Washington, DC.
- Soltow, L., Stevens, E. (1981). *The Rise of Literacy and the Common School in the United States*. University of Chicago Press, Chicago.
- Vinovskis, M.A. (1985). *The Origins of Public High Schools: A Reexamination of the Beverley High School Controversy*. University of Wisconsin Press, Madison.
- Vinovskis, M.A. (1995). *Education, Society, and Economic Opportunity: A Historical Perspective on Persistent Issues*. Yale University Press, New Haven.
- Welch, F. (1973). “Education and racial discrimination”. In: Ashenfelter, O., Rees, A. (Eds.), *Discrimination in Labor Markets*. Princeton University Press, Princeton.