HOW LATIN AMERICA FELL BEHIND

Essays on the Economic Histories of Brazil and Mexico, 1800–1914

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Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies

A View from Economic Historians of the United States

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Economic historians of the United States, with their traditional reliance on Europe as the reference point, normally focus on factor endowments in accounting for the record of economic growth. They routinely attribute the country's long history of high and relatively equally distributed incomes, as well as impressive rates of advance, to an extraordinarily favorable resource endowment. This conventional framework, tracing back to Adam Smith, highlights how widespread knowledge of European technologies among a free citizenry, coupled with the relative abundance of land and other resources per capita, would be expected to, and did, yield a relatively high marginal productivity of labor or wage—and thus a relatively egalitarian society with a high standard of living and excellent prospects for realizing sustained progress. Hence, treatments of the settlement of the New World that are organized about a comparison of the thirteen colonies with the economies the settlers left behind provide a welcome fit between the evidence and the theory.[1]

Puzzles arise, however, when scholars of the United States turn to the experiences of Latin American economies. These other New World societies also began with—by European standards of the time—vast supplies of land and natural resources per person and were among the most prosperous and coveted of the colonies in the seventeenth and eighteenth centuries. Indeed, so promising were these other regions that Europeans of the time generally regarded the thirteen British colonies on the North American mainland and Canada as of relatively marginal economic interest—an opinion evidently shared by Native Americans who had concentrated disproportionately in the areas the Spanish eventually developed.[2]

Yet, despite their similar, if not less favorable, factor endowments, the United States and Canada ultimately proved to be far more successful than the other colonies in realizing sustained economic growth over time. This stark contrast in performance suggests that factor endowments alone cannot explain the diversity of outcomes. In so doing, however, it raises the question of what can.

Those seeking to account for the divergent paths of the United States and Latin America have usually made reference to differences in institutions, where the concept is interpreted broadly to encompass not only formal political and legal structures but culture as well.[3] Many specific contrasts in institutions have been proposed as being potentially significant, including the degree of democracy, the extent of rent seeking, security in property rights, the inclination to work hard or be entrepreneurial, as well as culture and religion. Where there is explicit discussion of sources of institutional differences, the norm has been to relate them to presumed exogenous differences between British, Spanish, Portuguese, and various Native American heritages. Although the possible influences of factor endowments on the path of economic and institutional development have been neither ignored nor excluded, few scholars have attempted to identify or explore systematic patterns. It is as if the deviance of the Latin American economies from the United States model has in itself been viewed as evidence of the predominance of exogenous, idiosyncratic factors. In reality, of course, it is the United States that proved to be the atypical case.

In this chapter, we explore the possibility that the role of factor endowments has been underestimated and the independence of institutional development from the factor endowments exaggerated. Our analysis is inspired by the observation that despite beginning with roughly the same legal and cultural background, as well as drawing immigrants from similar places and economic classes, the British colonies in the New World evolved quite distinct societies and sets of economic institutions. Only a few were ultimately able to realize sustained economic growth. The majority that failed shared certain salient features of their factor endowments with Latin American New World societies, and we suggest that although these conditions allowed for average standards of living that were high for that time, they were less well suited for the realization of sustained economic growth than were those prevailing in such economies as the United States and Canada.[4]

In brief, we argue that a hemispheric perspective across the range of European colonies in the New World indicates that although there were

many influences, the factor endowment and attitudes toward it reflected in policy had profound and enduring impacts on the structure of respective colonial economies and ultimately on their long-term paths of institutional and economic development. While all colonies began with an abundance of land and other resources relative to labor, at least after the initial depopulation, other aspects of their factor endowments varied, which contributed to substantial differences among them in the distribution of landholdings, wealth, and political power. Some, like the colonies in the Caribbean, Brazil, or the southern colonies on the North American mainland, had climates and soil conditions well suited for growing crops, like sugar, coffee, rice, tobacco, and cotton, that were of high value on the market and much more efficiently produced on large plantations with slave labor. The substantial shares of the populations composed of slaves and the scale economies both served to generate a vastly unequal distribution of wealth and political power. The Spanish colonies in Mexico and Peru were likewise characterized early in their histories by extreme inequality, at least partially because of their factor endowments. In these cases, the extensive existing populations of indigenous peoples and the Spanish practices of awarding claims on land, native labor, and rich mineral resources to members of the elite encouraged the formation of highly concentrated landholdings and extreme inequality. In contrast, small family farms were the rule in the northern colonies of the North American mainland, where climatic conditions favored a regime of mixed farming centered on grains and livestock, which exhibited no economies of scale in production. The circumstances in these latter regions encouraged the evolution of more equal distributions of wealth, more democratic political institutions, more extensive domestic markets, and the pursuit of more growth-oriented policies than did those in the former. We suggest further that there are reasons for expecting regions with more equal circumstances and rights to be more likely to realize sustained economic growth and that the breadth of evidence provided by the experiences of New World colonies supports this view.[5]

Although we reject the simple determinism implied by the concept of "path dependence," by arguing for the long-term effects of factor endowments we are endorsing the idea that patterns of growth may be "path influenced." Given the large number of societies implicitly treated, our generalizations could well seem breathtaking, if not reckless. Such exercises in comparative history are nevertheless useful if, in specifying patterns of economic and institutional development, they help us to understand better the issues involved and how to direct our future studies of the underlying processes.[6]

A Brief Sketch of the Growth of the New World Economies

The "discovery" and exploration of the Americas by the Europeans were part of a grand and long-term effort to exploit the economic opportunities in underpopulated or underdefended territories around the world. European nations competed for claims and set about extracting material and other advantages through the pursuit of transitory enterprises, like expeditions, and the establishment of long-term settlements. At the individual level, people both elite and humble invested their energy and other resources across a range of activities and projects that were rent seeking as well as more conventionally entrepreneurial. At both the levels of national governments and private agents, formidable problems of organization were raised by what appeared to the Europeans as radically novel environments as well as by the difficulties of effecting the massive and historically unprecedented intercontinental flows of labor and capital. Surveying the histories of the New World colonies, enormous diversity in the specific types of ventures and/or institutions is evident. The explanatory factors include differences among colonies in the backgrounds of their European and African immigrants, in the backgrounds of the indigenous populations, in factor endowments narrowly defined (land, labor, climate, and other resources), as well as chance or idiosyncratic circumstances.

Common to all New World colonies was a high marginal product of labor, especially of European labor. One indication of this return to labor is the extensive and unprecedented flow of migrants who traversed the Atlantic from Europe and Africa to virtually all of the colonies (see Table 10.1) despite a high cost of transportation.[7] Moreover, the fact that over 60 percent of these immigrants were Africans brought over involuntarily as slaves is a testament to the predominance of the economic motive of capturing the gains associated with a high productivity of labor. With their prices set in competitive international markets, slaves ultimately flowed to those locations where their productivity met the international standard. There were no serious national or cultural barriers to owning or using them; slaves were welcomed in the colonies of all the major European powers, with only Spanish and British settlements drawing less than two-thirds of their pre-1760 immigrants from Africa. In contrast, nearly 90 percent of all immigrants to the French and Dutch colonies through 1760 were slaves, and the figure was over 70 percent for the Portuguese.

As the rate of movement to the New World accelerated over time, there were several salient changes in the composition and direction of the flow of immigrants. First, the fraction of migrants who were slaves grew con-

TABLE 10.1

European-Directed Transatlantic Migration, 1500–1760

(by European nation and continent of origin)

	(1) Africans arriving in New World, by region claimed		(2) Europeans leaving each nation for New World (Net)		(3) Total flow of migrants to New World (1 + 2)		(4) Flow of Africans relative to that of Europeans
	(000)	(%)	(000)	(%)	(000)	(%)	(1/2)
			1500–80				
Spain	45	78.0	139	60.0	184	63.4	0.32
Portugal	13	22.0	93	40.0	106	36.6	0.14
Britain	0	—	0	—	0	0.0	0
TOTAL	58	100.0	232	100.0	290	100.0	0.25
			1580–1640				
Spain	289	59.8	188	43.9	477	52.5	1.54
Portugal	181	37.5	110	25.7	291	31.9	1.65
France	1	0.2	2	0.5	3	0.3	0.50
Netherlands	8	1.7	2	0.5	10	1.1	4.00
Britain	4	0.2	126	29.4	130	14.3	0.03
TOTAL	483	100.0	428	100.0	911	100.0	1.13
			1640–1700				
Spain	141	18.4	158	31.9	299	23.7	0.89
Portugal	225	29.3	50	10.1	275	21.8	4.50
France	75	9.8	27	5.4	102	8.1	2.78
Netherlands	49	6.4	13	2.6	62	4.9	3.77
Britain	277	36.1	248	50.0	525	41.6	1.12
TOTAL	767	100.0	496	100.0	1,263	100.0	1.55
			1700–60				
Spain	271	10.5	193	22.2	464	13.4	1.40
Portugal	768	29.7	270	31.0	1,038	30.0	2.84
France	414	16.0	31	3.6	445	12.9	13.35
Netherlands	123	4.8	5	0.6	128	3.7	24.60
Britain	1,013	39.1	372	42.7	1,385	40.0	2.72
TOTAL	2,589	100.0	871	100.0	3,460	100.0	2.97
			1500–1760				
Spain	746	19.1	678	33.4	1,424	24.0	1.10
Portugal	1,187	30.5	523	25.8	1,710	28.9	2.27
France	490	12.6	60	3.0	550	9.3	8.17
Netherlands	180	4.6	20	1.0	200	3.4	9.00
Britain	1,294	33.2	746	36.8	2,040	34.4	1.73
GRAND TOTAL	3,897	100.0	2,027	100.0	5,924	100.0	1.92

SOURCES: These data are based on unpublished estimates prepared by David Eltis. They draw on a number of primary and secondary sources, and while some of the specific numbers will no doubt be revised with further research, the basic patterns will probably not be altered. We wish to thank Eltis for permission to use these numbers in this chapter. See also Eltis forthcoming.

tinuously over the four subperiods specified in Table 10.1, from roughly 20 percent prior to 1580 to nearly 75 percent between 1700 and 1760. Second, there was a marked shift in relative numbers away from the Spanish colonies, whose share of migrants declined continuously from 63.4 percent between 1500 and 1580 to 13.4 percent between 1700 and 1760. This precipitous fall in the relative prominence of the Spanish colonies was only partially due to the extraordinary rise of British America. The rate of flow to Spanish America peaked between 1580 and 1640, when 477,000 immigrants settled in the colonies of Spain, 291,000 in those of Portugal, and 3,000 in those of France. Between 1700 and 1760, however, the numbers of new settlers in Spanish America were stagnant at 464,000, while the numbers moving to the possessions of Portugal and France had grown to 1,038,000 and 445,000 respectively. During the interval of just over a century, the flow of migrants increased dramatically to the colonies of all major nations but Spain. This steep relative decline in migration to Spanish America does not appear to have been due to an unsustainably high flow from Spain during the early phase of colonization. As implied by the population estimates for the home countries shown in Table 10.2, Spain was contributing a far smaller percentage of its citizens than Portugal, and a similar or slightly lower percentage than Britain, through 1760.[8]

Another, and not unrelated, change suggested by these figures was the growing share of immigrants settling in colonies specialized in the production of sugar, tobacco, coffee, and a few other staple crops for world markets. This is evident from the increasing proportion over time going to the colonies of Portugal, France, and the Netherlands, as well as the continued quantitative dominance—over 90 percent (see Table 10.3)—in the destinations of migrants to British America, of colonies in the West Indies and on the southern mainland. Virtually all of these colonies were heavily ori-

TABLE 10.2

Populations of European Countries During the Era of Colonization

Country	1600 (millions)	1700 (millions)	1800 (millions)	Per annum growth rate, 1600–1800
Britain	6.25	9.30	16.00	0.47
France	20.50	22.00	29.00	0.17
Netherlands	1.50	2.00	2.00	0.14
Portugal	2.00	2.00	2.75	0.16
Spain	8.50	8.00	11.50	0.15

SOURCES: McEvedy and Jones 1978: 49, 57, 65, 101, 103.

TABLE 10.3

Patterns of Net Migration to, and Wealth Holding in, Categories of British Colonies

Net migration (000)	New England No.	New England Pct.	Middle Atlantic No.	Middle Atlantic Pct.	Southern No.	Southern Pct.	West Indies No.	West Indies Pct.
Whites								
1630–80	28	11.0	4	1.6	81	31.9	141	55.5
1680–1730	−4	−1.8	45	19.9	111	49.1	74	32.7
1730–80	−27	−10.7	101	40.1	136	54.0	42	16.7
TOTAL	−3	−0.4	150	20.5	328	44.8	257	35.1
Blacks								
1650–80	0	—	0	—	5	3.7	130	96.3
1680–1730	2	0.47	5	0.9	64	12.0	461	86.7
1730–80	−6	−0.9	−1	−0.2	150	23.4	497	77.7
TOTAL	−4	−0.3	4	0.3	219	16.8	1,088	83.2
Total								
1630–80	28	7.2	4	1.0	86	22.1	271	69.7
1680–1730	−2	−0.3	50	6.6	175	23.1	535	70.6
1730–80	−33	−3.7	100	11.2	286	32.1	539	60.4
GRAND TOTAL, 1630–1780	−7	−0.3	154	7.6	547	26.8	1,345	66.0
Wealthholding, c. 1774 (£)								
Total per capita	36.6		41.9		54.7		84.1	
Nonhuman per capita	36.4		40.2		36.4		43.0	
Total per free capita	38.2		45.8		92.7		1,200.0	
Nonhuman per free capita	38.0		44.1		61.6		754.3	

SOURCE: Galenson 1996.
NOTE: The estimates for wealthholding in the West Indies pertain to Jamaica.

ented toward the production of such crops and attracted such substantial inflows of labor (especially slaves), because their soils and climates made them extraordinarily well suited for producing these valuable commodities and because of the substantial economies in producing crops like sugar, coffee, and rice on large slave plantations. Indeed, during the era of European colonization of the New World there are few examples of significant colonies that were not so specialized: only the Spanish settlements on the mainlands of North and South America and the New England, Middle Atlantic, and Canadian settlements of Britain and France. It was not coincidental that these were also the colonies that relied least on slaves for their labor force.[9]

What stands out from the estimates presented in Table 10.4 is how small the percentages of the populations composed of those of European descent were among nearly all of the New World economies, even well into the nineteenth century. The populations of those colonies suitable for cul-

TABLE 10.4

Distribution and Composition of Population in New World Economies

Economy	Year	White (%)	Black (%)	Indian (%)	Share in New World population
		PANEL A			
Spanish America	1570	1.3	2.5	96.3	83.5
	1650	6.3	9.3	84.4	84.3
	1825	18.0	22.5	59.5	55.2
	1935	35.5	13.3	50.4	30.3
Brazil	1570	2.4	3.5	94.1	7.6
	1650	7.4	13.7	78.9	7.7
	1825	23.4	55.6	21.0	11.6
	1935	41.0	35.5	23.0	17.1
U.S. and Canada	1570	0.2	0.2	99.6	8.9
	1650	12.0	2.2	85.8	8.1
	1825	79.6	16.7	3.7	33.2
	1935	89.4	8.9	1.4	52.6
		PANEL B			
1. Barbados	1690	25.0	75.0	—	
2. Barbados	1801	19.3	80.7	—	
3. Mexico	1793	18.0	10.0	72.0	
4. Peru	1795	12.6	7.3	80.1	
5. C. Venezuela	1800–09	25.0	62.0	13.0	
6. Cuba	1792	49.0	51.0	—	
7. Brazil	1798	31.1	61.2	7.8	
8. Chile	1790	8.3	6.7	85.0	
9. U.S.–Nation	1860	84.9	14.0	1.1	
10. U.S. South	1860	61.7	37.7	0.7	
11. U.S. North	1860	96.2	2.6	1.3	
12. Canada	1881	97.0	0.5	2.5	
13. Argentina	1918	95.6	1.2	3.2	

SOURCES:
Panel A: The data for 1570, 1650, and 1825 are from Rosenblat 1954: 88 (1570); 58 (1650); 35–36 (1825). The data for 1935 are from Kuczynski 1936: 109–10.
Panel B: (1–2) Watts 1987: 311; (3–6) taken from Lockhart and Schwartz 1983: 342; (7) Merrick and Graham 1979: 29; (8) Mamalakis 1980: 7–9; (9–11) U.S. Census Bureau 1864: 598–99; (12) Leacy 1983: Series A154–184; (13) Tornquist & Co. 1919: 23.
NOTES:
Panel A: The Antilles have been included within Spanish America in all years. The 1825 category "castas," which included "mestizajes, mulattos, etc." and represented 18.17 percent of the total population in Spanish America, has been divided two-thirds Indian, one-third black, except for the Antilles, where all were considered to be blacks. In 1935, there were a number counted as "others" (generally Asian), so the distributions may not total 100 percent.
Panel B: The Argentine figure for Indians is considerably lower than that for 1825 given in Kuczynski (67.9 percent, p. 106) and by Rosenblat (31.7 percent Indian, and possibly about one-third *castas*, most being *mestizaje*), but is above that of Kuczynski (1936: 106, 110) for 1935, which is under 1 percent of the total population. As the estimate given by Lockhart and Schwartz (1983: 342) indicates, the share of Indians in the Buenos Aires population at the start of the nineteenth century was similar to that of all Argentina at the start of the twentieth century.

tivating sugar, like Barbados and Brazil, came to be quickly dominated by those of African descent who had been imported to work the large slave plantations.[10] The Spanish colonies were predominantly populated by Indians or mestizos, largely because they had generally been established and built up in those places where there had been substantial populations of Native Americans beforehand and because of the restrictive immigration policies of Spain. As a result, less than 20 percent of the population in colonies like Mexico, Peru, and Chile were composed of whites as late as the turn of the nineteenth century. The Spanish Antilles, however, did have a relatively large white population, reflecting the limited number of Indians after depopulation and the long lag between the beginnings of the settlement and the sugar boom that developed there only after the start of the nineteenth century.[11]

In contrast, because the territories that were to become the United States and Canada had only small numbers of Native Americans prior to the arrival of the Europeans, the composition of their populations soon came to be essentially determined by the groups who immigrated and their respective rates of natural increase. Because their endowments were generally more hospitable to the cultivation of grains than of sugar, these colonies absorbed relatively more Europeans than African slaves as compared to other areas of high immigration in the New World, and their populations were, accordingly, composed primarily of whites. Even with substantial numbers of slaves in the U.S. South, roughly 80 percent of the population in the United States and Canada was white in 1825, while the shares in Brazil and in the remainder of the New World economies overall were below 25 and 20 percent respectively. It would not be until later in the nineteenth century that the populations of Latin American countries like Argentina and Chile would attain the predominantly European character that they have today—through major new inflows from Europe as well as increased death rates and low fertility among native Indians. This greater prevalence of white property owners in the United States and Canada may help to explain why there was less inequality and more potential for economic growth in these economies. Both the more-equal distributions of human capital and other resources, as well as the relative abundance of the politically and economically powerful racial group, would be expected to have encouraged the evolution of legal and political institutions that were more conducive to active participation in a competitive market economy by broad segments of the population.

The estimates of the composition of population suggest that colonists of European descent could enjoy relatively elite status and rely on slaves

and Indians to provide the bulk of the manual labor in most of the New World. It should not be surprising, therefore, that the principal areas of exception, the northern United States and Canada, were at first less attractive to Europeans. Reasons for their movement to the New World other than economic must have been of quite secondary importance in general. If they were not attracted primarily by the prospect of improvements in material welfare and rights to the ownership of land, it is not easy to comprehend why so many of them would have voluntarily made multiyear commitments to serve as indentured servants, braved the discomfort and not insubstantial risks of death on their voyages, and located in the adverse, disease-infested environments characteristic of the places best suited for growing sugar and tobacco. The implications of the magnitude of the intercontinental migration are made all the more compelling by the awareness that the relative, if not absolute, stagnation of the flow to Spanish colonies was to a large degree affected by the tight control of the authorities over the number and composition of migrants.[12]

Although direct information on the productivity or incomes of individuals during the colonial period is fragmentary, the overall weight of the evidence seems clear. The patterns of migration, wage rates prevailing in free labor markets, anthropometric measurements, as well as data on wealth holdings, all suggest that incomes and labor productivity for Europeans throughout the New World must have been high by Old World standards. The estimates of wealth holdings on the eve of the American Revolution for the English colonies presented in Table 10.3, for example, provide perhaps the most systematic comparative record of economic performance across colonies. The qualitative result is robust no matter which of the four alternative definitions of wealth is employed. Jamaica, representative of the many colonies in the Caribbean specializing in sugar, generated as much nonhuman wealth per capita as any group of colonies on the North American mainland, and much more per free individual. The stark contrast between the per capita and per free individual figures reflects the larger shares of the population composed of slaves, the high returns to ownership of slaves, and the much greater inequality in the sugar colonies. Among those on the mainland, the record of the southern colonies (from the Chesapeake south) fell between that of Jamaica and those of their northern neighbors (New England and the Middle Atlantic)—with roughly equivalent performance on a per capita basis but offering much more wealth to the average free individual.

Systematic estimates of the records of relative per capita income over time have not yet been constructed for many of the New World economies,

TABLE 10.5

Gross Domestic Product Per Capita in Selected New World Economies, 1700–1989

Economy	1700	1800	1850	1913	1989
	GDP PER CAPITA (1985 U.S. DOLLARS)				
Argentina	—	—	$874	$2,377	$3,880
Barbados	$736	—	—	—	5,353
Brazil	—	$738	901	700	4,241
Chile	—	—	484	1,685	5,355
Mexico	450	450	317	1,104	3,521
Peru	—	—	526	985	3,142
Canada	—	—	850	3,560	17,576
United States	490	807	1,394	4,854	18,317
	ANNUAL RATES OF GROWTH IN GDP PER CAPITA (%)				
Economy	1700–1800		1800–50	1850–1913	1913–89
Argentina	0.0		—	1.6	0.6
Barbados	—		—	—	—
Brazil	—		0.4	−0.4	2.4
Chile	0.4		—	2.0	1.5
Mexico	0.0		−0.7	2.0	1.5
Peru	0.1		—	1.0	1.5
Canada	—		—	2.3	2.1
United States	0.5		1.1	2.0	1.8

NOTES AND SOURCES: The main sources are Coatsworth 1993; Maddison 1991. The GDP per capita estimates for Barbados are from (for 1989) Central Intelligence Agency (1992: 30–31) and from (for 1700) Eltis 1995a. The precise estimate was computed from Eltis's estimate that GDP per capita in Barbados was 40 percent higher than in England and Wales at 1700, and by employing the relative per capita income estimates for the United States and England and Wales in 1770 prepared by A. H. Jones (1980: 68), together with the estimated rates of GDP per capita growth drawn from Coatsworth. The growth rates reported for 1700 to 1800 were assumed to apply to the period 1700 to 1770. The Canadian GDP per capita figure for 1850 was computed by using the 1870–1913 rate of growth from Maddison to extrapolate back to 1850. The Peruvian estimates of GDP per capita were computed by assuming that the ratio of it to Mexican GDP per capita in 1989 was equal to the ratio between the respective GNP per capita income estimates for that year reported in the World Bank 1991: 204–5; and that GDP per capita in Peru grew at the same rate as in Mexico between 1900 and 1913. Although Maddison has published alternative sets of estimates, which yield somewhat different growth paths (especially for Argentina) during the late nineteenth and early twentieth centuries, the qualitative implications are essentially the same for our purposes. See, for example, Maddison 1994.

but Table 10.5 conveys a sense of the current state of knowledge. The figures suggest that the advantage in per capita income enjoyed by the United States (and Canada) over Latin American economies materialized during the late eighteenth and nineteenth centuries, when the United States (as well as Canada) began to realize sustained economic growth well ahead of its neighbors in the hemisphere. Indeed, as John Coatsworth has suggested, there may have been virtual parity (given the roughness of the estimates) in terms of per capita income in 1700 between Mexico and the British colonies on the mainland that were to become the United States.

Moreover, product per capita appears to have been far greater in the sugar islands of the Caribbean, where David Eltis finds that in Barbados the level was more than 50 percent higher.[13] If the current estimates are correct, then those of European descent in Mexico and Barbados were much better off than their counterparts on the North American mainland, because they accounted for a much smaller share of the population and their incomes were far higher than those of the Native Americans or slaves (Table 10.4). Estimates of per capita income for other Latin American economies do not extend as far back, but it does seem apparent that they must have been closer to U.S. levels during this era than they have been since. Moreover, by the same logic as proposed for Mexico, incomes for populations of European descent must have been comparable or higher in South America and the Caribbean than in the northern parts of North America.

Although all of the major New World colonies may have provided high living standards for Europeans, it is clear that they evolved dissimilar economic structures and institutions early in their histories. This divergence has long been noted and explanations have often made reference to differences in the origins or backgrounds of the settlers. With the recent accumulation of evidence of wide disparities among colonies of the same European country, however, alternative sources of diversity deserve a reexamination. As economic historians of the United States, we are most impressed with the importance of factor endowments, broadly construed.

Economists traditionally emphasize the pervasive influence of factor endowments, and thus the qualitative thrust of our argument is not entirely novel. Indeed, our analysis has some antecedents in the work of Evsey Domar and W. Arthur Lewis, who were concerned with the problems that factor endowment can pose for underdeveloped economies. These scholars explored diametrically opposed cases, with Domar focusing on labor scarcity and Lewis on labor surplus.[14] We interpret factor endowment more broadly, however, and argue that the United States and Canada were relatively unusual among New World colonies, because their factor endowments (including climates, soils, and the density of native populations) predisposed them toward paths with relatively equal distributions of wealth and income and corresponding institutions that favored the participation of a broad range of the population in commercial activity. This is significant, in our view, because the patterns of early industrialization in the United States suggest that such widespread involvement in commercial activity was quite important in realizing the onset of economic growth. In contrast, the factor endowments of the other New World colonies led to highly unequal distributions of wealth, income, human capital, and politi-

cal power early in their histories, along with institutions that protected the elites. Together, these conditions inhibited the spread of commercial activity among the general population, lessening, in our view, the prospects for growth.

It is convenient for both our exposition and analysis to define three types of New World colonies. The usefulness of these abstractions, drawn from the uniqueness of each society, must be judged ultimately by how meaningful and coherent our stylized types are and by the explanatory power they help provide. Our first category encompasses those colonies that possessed climates and soils that were extremely well suited for the production of sugar and other highly valued crops characterized by extensive scale economies associated with the use of slaves. Most of these sugar colonies, including Barbados, Brazil, Cuba, and Jamaica, were in the West Indies, but there were also a number in South America. They specialized in the production of such crops early in their histories, and through the persistent working of technological advantage their economies came to be dominated by large slave plantations and their populations by slaves of African descent. The greater efficiency of the very large plantations, and the overwhelming fraction of their populations that was black and slaves, made their distributions of wealth and human capital typically extremely unequal.[15] Even among the free population, there was greater inequality in such economies than in those on the North American mainland.[16]

Although the basis for the predominance of an elite class in such colonies may have been the enormous advantages in sugar production available to those able to assemble a large company of slaves, as well as the extreme disparities in human capital between blacks and whites, the long-term success and stability of the members of this elite was also undoubtedly aided by their disproportionate political influence. Together with the legally codified inequality intrinsic to slavery, the greater inequality in wealth contributed to the evolution of institutions that commonly protected the privileges of the elites and restricted opportunities for the broad mass of the population to participate fully in the commercial economy even after the abolition of slavery. Progress in these postemancipation economies was further slowed by the difficulties of adjusting to the loss of the productive technology on which they had long been based.[17]

A second category of New World colonies includes exclusively Spanish colonies like Mexico and Peru, which were characterized by relatively substantial numbers of natives surviving contact with the European colonizers and by the distribution among a privileged few (*encomenderos*) of claims to often enormous blocs of native labor, land, and mineral resources. The

resulting large-scale estates, established by grant early in the histories of these colonies, were to some degree based on preconquest social organizations, whereby Indian elites extracted tribute from the general population, and endured even where the principal production activities were lacking in economies of scale. Although small-scale production was typical of grain agriculture during this era, their essentially nontradeable property rights to tribute (in the form of labor and other resources) from rather sedentary groups of natives gave large landholders the means (a major competitive advantage) and the motive to continue to operate at a large scale. For different reasons, therefore, this category of colony was rather like the first in generating an economic structure in which large-scale enterprises were predominant, as was a very unequal distribution of wealth. This second type of colony relied on the labor of natives with low levels of human capital instead of slaves; in both cases, however, the elites were racially distinct from the bulk of the population. Instead of the existence of scale economies in slavery supporting the competitive success or persistence of the largest units of production, large-scale enterprises in this second class of colonial economies were sustained by the disinclination or difficulty of the natives in evading their obligations to the estate-owning families and in obtaining positions that allowed them to participate fully in the commercial economy. These estates were not unlike feudal manors, where lords held claims on the local population that could not be easily transferred and where labor mobility was limited.[18]

To almost the same degree as in the colonial sugar economies, the economic structures that evolved in this second class of colonies were greatly influenced by the factor endowments, viewed in broad terms. Although the Spanish need not have treated the native population as a resource like land, to be allocated to a narrow elite, the abundance of low-human-capital labor was certainly a major contributor to the extremely unequal distributions of wealth and income that generally came to prevail in these economies. Moreover, without the rich supply of native labor, it is highly unlikely that Spain could have maintained its policies of restriction of European migration to its colonies and of generous awards of property and tribute to the earliest settlers. The early settlers in Spanish America endorsed having formidable requirements for obtaining permission to go to the New World—a policy that undoubtedly limited the flow of migrants and helped to preserve the political and economic advantages enjoyed by those who had earlier made the move. A larger number of Europeans vying for favors would have raised the cost of maintaining the same level of benefits to all comers, as well as increased the competition, political and otherwise, for

the special privileges enjoyed by the early arrivals. Because of the differences in settlement patterns, the fights for control between creoles and *peninsulares* took a quite different form in Spanish America than did the colonial-metropolitan conflicts of British America.[19]

Paths of development similar to that observed in Mexico are repeated in virtually all of the Spanish colonies that retained substantial native populations.[20] During the initial phase of conquest and settlement, the Spanish authorities allocated *encomiendas*, often involving vast areas along with claims on labor and tribute from natives, to relatively small numbers of individuals. The value of these grants was somewhat eroded over time by reassignment or expiration, new awards, and the precipitous decline of the native population over the sixteenth century that necessarily decreased the amount of tribute to be extracted. These *encomiendas* had powerful lingering effects, however, and ultimately gave way to large-scale *estancias* or haciendas, which obtained their labor services partially through obligations from natives but increasingly through local labor markets. Although the processes of transition from *encomienda* to hacienda are not well understood, it is evident that large-scale agriculture remained dominant, especially in districts with linkages to extensive markets. It is also clear that the distribution of wealth remained highly unequal, not only at given points in time but also over time, because elite families were able to maintain their status over generations. These same families, of course, generally acted as *corregidors* and other local representatives of the Spanish government in the countryside, wielding considerable local political authority.[21]

The final category of New World colonies is best typified by the colonies on the North American mainland—chiefly those that became the United States, but inclusive of Canada as well. With the exception of the southern states of the United States, these economies were not endowed with substantial indigenous populations able to provide labor nor with climates and soils that gave them a comparative advantage in the production of crops characterized by major economies of scale or of slave labor. For these reasons, their growth and development, especially north of the Chesapeake, were based on labor of European descent who had similar and relatively high levels of human capital. Correspondingly equal distributions of wealth were also encouraged by the limited advantages to large producers in the production of grains and hays predominant in regions like the Middle Atlantic and New England. With abundant land and low capital requirements, the great majority of adult men were able to operate as independent proprietors. Conditions were somewhat different in the southern colonies, where crops like tobacco and rice did exhibit some limited

scale economies, but even here, the size of the slave plantations, as well as the degree of inequality in these colonies, was quite modest by the standards of Brazil or the sugar islands.[22]

Spain had several colonies on the South American mainland that might also be placed in this category. Most notable among them is Argentina, although the Indian share of the population there remained high into the 1800's. Despite not being suited for growing sugar as a major crop, and ultimately flourishing as a producer of grains, the economy came to be characterized by substantial inequality in the distribution of land. Rooted in large grants to military leaders and favored families, this inequality may have persisted because of scale economies in raising cattle on the pampas.[23] Argentina failed to attract many immigrants until well into the nineteenth century and remained a relative backwater, partially because of Spanish restrictions on European immigration and on trade, as well as the relative absence of lures like valuable mineral resources or stocks of readily available native labor (these were concentrated in the southern part of the country). Despite such ambiguous cases, however, there appears to be no serious question that the structure of the economies in the northern colonies of the North American mainland was quite different from those of their counterparts elsewhere in the New World.

In our discussion of the first two categories of New World colonies, we raised the possibility that the relatively small fractions of their populations composed of whites, as well as their highly unequal distributions of wealth, may have contributed to the evolution of political, legal, and economic institutions that were less favorable toward full participation in the commercial economy by a broad spectrum of the population. The deviant case represented by the United States and Canada highlights this point. It seems unlikely to have been coincidental that those colonies with more homogenous populations, in terms of both human capital and other forms of wealth, evolved a set of institutions that were more oriented towards the economic aspirations of the bulk of the adult male population.

The Role of Institutions in Shaping Factor Endowment

We have suggested that various features of the factor endowments of three categories of New World economies, including soils, climates, and the size or density of the native population, may have predisposed those colonies toward paths of development associated with different degrees of inequality in wealth, human capital, and political power, as well as with different potentials for economic growth. Although these conditions might

reasonably be treated as exogenous at the beginning of European colonization, it is clear that such an assumption becomes increasingly tenuous as one moves later in time after settlement. Factor endowment may influence the directions in which institutions evolve, but these institutions in turn ultimately affect the evolution of the factor endowment. It is our contention, however, that the initial conditions had long, lingering effects, both because government policies and other institutions tended generally to reproduce the sorts of factor endowments that gave rise to them and because certain fundamental characteristics of the New World economies and their factor endowments were difficult to change.[24]

Crucial legislation influencing the evolution of the factor endowment, as well as the pace and pattern of economic development in the New World colonies, were those relevant to land policy, policy regarding immigration, and the regulation of trading arrangements between colonies, the metropolis, and the outside world. During the era of colonization, most European countries followed some variant of mercantilism. Although the specifics of national policy could vary with economic and other circumstances, the aim of colonies was to benefit the metropolis. Significant changes occurred in the late eighteenth century for the British, with the successful revolution in the American colonies and the full acquisition of Canada and various Caribbean islands from the French. In the first quarter of the nineteenth century, most of the mainland North and South American colonies of Spain achieved their independence, as did Brazil from Portugal. These newly independent nations did not necessarily pursue the same sets of policies they had as colonies; at the very least, even if variants of mercantilism were still being pursued, they were now aimed at benefiting the former colonies and not the metropolis.

During the colonial period, there were significant differences throughout the New World in immigration patterns and policies. The British emigration was to a large extent of indentured labor, an extension of its domestic arrangements for agricultural labor (servants in husbandry).[25] Neither practice was to be seen among Iberian nations, where immigrants were more frequently missionaries or in the military. The distribution of Native Americans prior to European settlement meant that areas settled by the Spanish had much larger numbers than did those settled by the British, and the Spanish introduced more controls over Indians in order to better exploit this available resource and obtain labor from them. Because all New World economies were able to obtain slaves from Africa, the composition of the population in different regions reflected the numbers of whites and Native Americans only in part. More important was the nature of the crops

produced and traded in international markets, a condition influenced by natural factors as well as by governmental regulations.

Lands were frequently given as grants to military men, missionaries, and other settlers, as well as made available, often through sales, to other individuals in what could be smaller holdings. The more important were governmental land grants (for example, as with the Spanish), the larger the holdings tended to be, and the more unequal the distributions of wealth and political power would become, relative to places where small holdings were made available. The size of holdings was often shaped by the nature of the crop to be produced and its technological requirements, but, as seen in the case of *encomienda* in Spanish America, the importance of renters in late nineteenth-century Argentina, and the rise of sharecropping in the postemancipation U.S. south, the distribution of land ownership need not be the same as the size and distribution of operating farms. Nevertheless, the initial policy of land distribution did have a profound influence on the distribution of wealth and political power and thus on the future course of growth. Because the postsettlement policies for allocation of land were affected by the distribution of political power determined from the policies at the time of settlement, the long-term economic and political significance of these early policies is manifest.[26]

In regard to immigration, the British, fearing overpopulation at home and responding to the perception in the colonies of an acute scarcity of labor, actively encouraged immigration to their colonies, first those in the Caribbean and then those on the mainland. Indeed, the right to migrate to British colonies remained open for people from other European countries, generating a more diverse white population and a broader base of participation in the commercial economy than was to be found elsewhere. In stark contrast, Spanish immigration was tightly controlled and even declined somewhat over time. Not only was Spain believed to be suffering from underpopulation rather than overpopulation, but the advantages that served as implicit subsidies provided to those who migrated led to a concern for limiting the flow as well. The authorities in Spain were motivated by a desire to keep costs down, while those who had already migrated sought to maintain their levels of support and privileged positions. A restrictive stance toward further immigration could not have been retained, however, if there had not already been a substantial supply of Indians to work the land and otherwise service the assets owned by the elites and the Spanish Crown; in this sense, at least, the policy must have been due to the factor endowment.[27] Overall, there were strict controls over who could settle in Spanish America, with preference shown for relatives of those

already there and permission denied to citizens of other European countries as well as to those not Catholic—in the purported interest of achieving a more homogeneous white society. Grants of permission to emigrate were initially restricted to single men but were ultimately extended to married men accompanied by their families; single white women were never allowed.[28]

After the wave of independence movements early in the nineteenth century, most nations introduced or followed a relatively free immigration policy to attract new workers, mainly from Europe, with only a few restrictions on the racial or ethnic composition of the immigrants. Indeed, several countries advertised for migrants and attempted to induce, by subsidy (including land grants) or other measures, more permanent arrivals. Despite the marked easing of restrictions on immigration by Latin American countries, however, by far the dominant stream of European transatlantic migratory flows over the nineteenth century was directed to the United States, reflecting both the larger size of its economy as well as the hoped-for greater opportunities possible with the higher per capita income, the more equal distributions of wealth and political power, and the greater availability of small landholdings. It was not until late in the century that the Latin American economies received substantial new inflows of labor from Europe.[29]

African slaves were imported into some areas until the 1860's, with especially large flows into Brazil and Cuba during the 1830's and 1840's—partially due to the ending of the British and U.S. slave trades in 1808 and the emancipation of British slaves in the 1830's.[30] In the aftermath of slavery (and in the case of Cuba, while slavery still existed), extensive contract labor movements from India, China, and elsewhere in Asia took place in various parts of the Caribbean.[31] There was also some movement of contract workers from China, Japan, and, for a few years, Polynesia, to Peru for sugar production. Peru's principal export crop at midcentury, guano, was a government monopoly, using the labor of slaves, contract workers, convicts, and military deserters for production.[32] In general, however, while slaves and indentured servants dominated the eighteenth century, it was free white migration that accounted for the bulk of new immigrants to most parts of the Americas in the nineteenth century overall. There was, even here, another important difference in the nature of the immigrants to the United States, Canada, and to Latin America. The former two received migrants primarily from northwestern Europe, where economic growth was already under way and literacy was expanding. The major recipients in Latin America drew mainly from areas that had lagged, such as Argentina

from Italy and Spain and Brazil principally from Italy and Portugal. Thus, even after restrictions on European migration were lifted, it is probable that those going to the United States and Canada had generally higher levels of human capital than those moving to Latin America.[33]

All the New World colonies were settled at a time of relatively low population densities in the productive sectors and thus confronted the problems of attracting sufficient labor while determining the rate at which (and by whom) new lands would be brought into production. In understanding the nature of policies toward land, it is useful to point to not only its expanse (which will also influence the ease of getting away from areas of high density), but also the soil type, climate, and disease environment, which will influence which crops can profitably be grown, as well as the desirability of settlement by different groups. Policies concerning transportation development influenced the accessibility to markets, and the willingness of the various governments to construct, operate, and subsidize such activities affected the pace of settlement and the relative production of different crops.

These considerations—which determine which crops could be produced by settlers, given appropriate trade policies and the availability of labor—thus dictate the technology to be used in profitable production and the optimum scale of production. The optimum scale will in turn affect the nature of landholdings and the form of the allocation of land, while the preferences of free workers for desired working conditions will influence the type of labor that could be used in production. It is therefore not unexpected that those British colonies in which sugar was the primary crop had a quite different racial composition of their labor force, and distribution of wealth and political power, than those in which grains were the principal crop.

Because the governments of each colony or nation were regarded as the owners of the land, they were able to set those policies that would influence the pace of settlement for effective production, as well as the distribution of wealth, by controlling its availability, setting prices, establishing minimum or maximum acreages, granting tax credits, and designing tax systems. Land policy could also be used to affect the labor force, either by encouraging immigration through making it readily available or by increasing the pool of wage labor through limiting availability. In most cases, although there were initial attempts at a slow, orderly process of settlement, this became more difficult to control over time. In the United States, where there were never major obstacles, the terms of land acquisition became easier over the course of the nineteenth century.[34] Similar changes

were sought around the middle of the nineteenth century in both Argentina and Brazil as a means to encourage immigration, but these seem to have been less successful than in the United States and Canada in getting land to smallholders.[35] That the major crops produced in the expansion of the United States and Canada were grains, permitting relatively small farms given the technology of the times, may help explain why such a policy of smallholding was implemented and was effective.[36] But as the example of Argentina indicates, small-scale production of wheat was possible even with ownership of land in large units, maintaining a greater degree of overall inequality in wealth and political power.[37] Argentina, in the second half of the nineteenth century, was somewhat unusual in not having a national land policy, that being left to individual state governments. Unlike in the United States, however, where rivalry among the subfederal governments seemed to spur investment in transportation infrastructure and banks, accelerating the pace of economic growth, no such beneficial effects were manifest in Argentina. Thus, the nature of factor endowments (inclusive of soils, climates, the composition and relative sizes of populations, and existing distributions of land and political power), as well as the particular crops grown, did influence land policies, and the particular land policies pursued in different areas had significant impacts on future levels and distributions of income. While the ruling political coalitions may have gotten what they sought, that did not mean that the country would grow most rapidly.

It is rather difficult to design the counterfactual worlds necessary to demonstrate whether land policies in countries such as the United States, which generally encouraged rapid settlement, influenced economic growth relative to an alternative that would have meant slower settlement, permitting land to be sold only in larger, more expensive units. Arguments for a slower, more concentrated pattern of development in the United States were made by such contemporary observers as Henry Carey and Edward G. Wakefield, who claimed that economies of scale in production would result from higher population density and cheaper workers who would be available to labor in nascent industrial establishments if there were no "open frontier" into which potential labor could expand.[38] Whether this earlier application of the Nieboer-Domar hypothesis points to a higher national income or not, it does suggest a difference in economic structure, increasing manufacturing output relative to agriculture (or output in settled agricultural areas relative to frontier agriculture), as well as raising the returns to capital and land relative to those of labor. Greater access to land, on the other hand, promoted agriculture, led to higher rates of internal and external mobility, and was important in attaining a greater degree of equality among whites in the antebellum United States than existed elsewhere in the world at that time.[39] Together with the high per capita income, this degree of equality, in turn, led to a broad participation in commercial activity, to a large middle-class market permitting mass production of standardized goods—"the American System of Manufactures"—and to conditions conducive to a sustained increase in the commitment to inventive activity, with a corresponding acceleration of technical change.[40] In this way, the early achievement of economic growth in the United States can be related to its unusual, even for the New World, resource endowment.

The basic tripartite classification of New World colonies indicates that the United States (particularly the northern states) and Canada, with their reliance on grain agriculture and relatively small landholdings, were unique both in their rates of long-term growth and degrees of equality. The basic influence of their factor endowments was reinforced by their policies of offering small units of land for disposal and maintaining open immigration, particularly by Europeans. Elsewhere there were large landholdings, greater inequality, and, ultimately, a later achievement, if any, of modern economic growth. In much of the Caribbean, this reflected the importance of sugar plantations producing for world markets and the large number of slaves in their populations. In areas such as Mexico (where corn was the principal crop), Peru, and Argentina, land and labor policies led to large landholdings and great inequality, whether on the basis of large numbers of Native Americans (as in Mexico and Peru) or with immigrant renters (as in Argentina). The latter nations had relatively few Africans and only a small plantation sector, but their patterns of land distribution during the earlier stages of settlement meant that more substantial inequalities were generated than in the United States and Canada.

The Extent of Inequality and the Timing of Industrialization

We have argued above that, despite the high living standards all New World colonies offered Europeans, fundamental differences in their factor endowments, which were perpetuated by government policies, may have predisposed them toward different long-term growth paths. Most of these economies developed extremely unequal distributions of wealth, human capital, and political power early in their histories as colonies and maintained them after independence. The United States and Canada stand out as rather exceptional in being characterized from the beginning by high material living standards among both elites and common people, as well as

by relative equality in other dimensions. It may, we suggest, not be coincidental that the economies in this latter group began to industrialize much earlier and thus realized more growth over the long run.

The idea that the degree of equality or of democracy in a society might be associated with its potential for realizing economic growth is hardly new. On the contrary, controversy over the existence and nature of the relationship can be traced back a long way.[41] Those who favor the notion that relatively unequal distributions of wealth and income have proved conducive to the onset of growth traditionally credit higher savings or investment rates by the prosperous.[42] Their focus on the capability for mobilizing large amounts of capital stems from a belief that either major capital deepening or the introduction of a radically new generation of technologies and capital equipment was necessary for sustained growth, and skepticism that labor-intensive sectors or enterprises of small scale could have generated much in terms of technological progress.[43] Proponents of the opposite view have held that greater equality in circumstances has historically stimulated growth among early industrializers through encouraging the evolution of more extensive networks of markets, including that for labor, and commercialization in general. This provided impetus to self-sustaining processes whereby expanding markets induce, and in turn are induced by, more effective or intensified use of resources, the realization of scale economies, higher rates of inventive activity, and other forms of human capital accumulation, as well as increased specialization by factors of production.[44] This perspective views the acceleration of economic growth as the cumulative impact of incremental advances made by individuals throughout the economy, rather than being driven by progress in a single industry or the actions of a narrow elite. By highlighting how the extension of markets elicits responses from broad segments of the population, this school of thought suggests a greater potential for economic growth where there are both high per capita incomes and relative equality in circumstances.[45]

Despite the complexity of the relationship between equality and the onset of growth, and the likelihood that it varies with context, we believe that recent studies on the processes of early industrialization in the United States provide support to the hypothesis that those New World economies with more equality were better positioned to realize economic growth during the eighteenth and early nineteenth centuries. The new evidence comes primarily from investigations of the sources and nature of productivity growth during that era when the United States pulled ahead. Studies of both agriculture and manufacturing have found that productivity increased substantially during the first stages of industrialization and that the

TABLE 10.6

Annual Growth Rates of Labor and Total Factor Productivity for Selected Manufacturing Industries in the American Northeast, 1820–60

Industry	Labor productivity		Total factor productivity	
	value added	gross output	value added	gross output
Boots/shoes	2.0–2.1	2.2–2.5	1.4–2.0	1.3–1.6
Coaches/harnesses	2.0–2.4	1.7–2.2	1.7–1.9	1.3–1.3
Cotton textiles	2.2–3.3	2.5–3.5	2.3–2.9	1.4–1.7
Furniture/woodwork	2.9–3.0	2.9–3.0	2.7–2.8	2.0–2.1
Glass	2.5	1.8	2.2	1.6
Hats	2.4–2.5	2.7–3.1	2.1–2.5	1.4–1.6
Iron	1.5–1.7	1.7–2.0	1.4–1.4	1.1–1.1
Liquors	1.7–1.9	1.9–2.1	1.2–1.2	1.2
Flour/grist mills	0.6–0.7	1.3–1.3	0.2–0.3	1.0–1.0
Paper	4.3–5.5	5.3–6.2	3.9–4.5	2.3–2.6
Tanning	1.2–1.7	2.0–2.6	0.7–1.1	0.9–1.1
Tobacco	2.1–2.4	1.5–2.7	1.4–2.0	0.7–1.0
Wool textiles	2.7–2.8	3.6–3.7	2.4–2.5	1.8–1.9
Capital-intensive industries	[2.0]–2.7	[2.5]–2.9	[1.8]–2.2	[1.3]–1.4
Other industries	[2.3]–2.4	2.3–[2.6]	[1.9]–2.2	[1.4]–1.6
Weighted average total—all industries	[2.2]–2.5	[2.5]–2.7	[1.8]–2.2	[1.3]–1.5

SOURCE: These estimates are drawn from Sokoloff 1986: 698, 706, 719, 722.

NOTES: The ranges of estimates reflect the different figures derived from firm data and from industry-wide data. The estimates for the capital-intensive, other, and all industries were computed as weighted averages of the relevant industry-specific figures. The capital-intensive industries include cotton textiles, wool textiles, paper, flour/grist mills, iron, liquors, and tanning. The figures in brackets pertain to averages based on fewer than the full complement of industries in the respective class.

advances were based largely on changes in organizations, methods, and designs that did not require much in the way of capital deepening or dramatically new capital equipment.[46] Reported in Table 10.6, for example, are estimates of manufacturing productivity growth between 1820 and 1860 computed from cross sections of firm data. They indicate that a wide range of manufacturing industries were able to raise productivity at nearly modern rates, despite the small firm sizes and limited diffusion of mechanization and inanimate sources of power characteristic of most industries until the 1850's. This fundamental aspect of the record, dramatized by the result that the less capital-intensive industries registered rates of total factor productivity growth roughly equivalent to those of the more capital-intensive, suggests that the sources of technological progress during the onset of growth extended across virtually all industries and were not dependent on radically new capital equipment or capital deepening. The implication that increases in the amount of capital used per worker did not play a major role in accounting for technical change during early industri-

alization is further reinforced by the estimates that the dominant share of labor productivity growth was due instead to advances in total factor productivity.[47]

This pattern of relatively balanced productivity growth across a broad spectrum of industries is difficult to attribute to a fundamental breakthrough in technology or a general increase in the capital intensity of production. On the contrary, it appears instead to be more consistent with the hypothesis that firms and individuals throughout the economy were responding to a common environmental stimulus for improvements in technology—like the dramatic expansion of markets that characterized the period. Indeed, this view, that broad advances in productivity were induced by the growth in volume and geographic extent of commerce, originating in the extension of networks of low-cost transportation and increases in income, has received strong support from recent scholarship. Studies of agriculture have found that farms with easy access to major markets became more specialized, used their labor more intensively, and were more apt to adopt new crops and products.[48] Studies of manufacturing have found that firms in proximity to broad markets maintained higher average levels of productivity and were generally distinguished by operating at a larger scale, with a more extensive division (and perhaps intensification) of labor, and with a more standardized product—but without markedly different ratios of capital to labor.[49] The conclusion that growth was stimulated by market development is consistent with both the geographic patterns of productivity as well as the incremental nature of the changes made in technique. Although their cumulative impact could have been major, it is conceivable, if not entirely natural, to think of individually marginal improvements as outcomes of efforts to respond creatively to technological problems raised by competition and opportunities in the marketplace.

Recent work with U.S. patent records has perhaps more directly demonstrated that the growth of inventive activity was strongly and positively associated with the extension of markets as economic growth began to accelerate during the first half of the nineteenth century.[50] The independent effect of expanding markets was isolated by examining how the record of patenting across geographic areas (down to the county level) varied with proximity to navigable inland waterways, the cheapest form of transportation for all but short routes prior to the railroad. Not only was patenting higher in districts with such access to broad markets, but the construction of canals or other additions to the transportation infrastructure yielded immediate and large jumps in patenting activity. Also indicative of the importance of contact with the market, and economic opportunity more generally, was the widening range of social classes represented among patentees in those geographic areas where patenting per capita rose. This pattern is evident in the first panel of Table 10.7, which shows how the proportion of urban patentees who were from elite occupations fell sharply as rates of patenting first began to rise rapidly from 1805 on. Even focusing on so-called great inventors credited with responsibility for significant techno-

TABLE 10.7

Characteristics of Inventors in the United States, 1790–1846

(Distribution of Urban Patents by Patentee Occupation)

Characteristics	1790–1804 No.	1790–1804 (%)	1805–1822 No.	1805–1822 (%)	1823–1836 No.	1823–1836 (%)	1836–1846 No.	1836–1846 (%)
General commerce & professional (merchants, doctors, gentlemen)	13	50.0	60	38.7	59	24.6	43	18.6
Artisans working with renewable materials (carpenters, shoemakers)	4	15.4	32	20.7	58	24.2	41	17.8
Precision artisans (makers of watches, jewelry, instruments)	5	19.2	16	10.3	22	9.2	26	11.3
Machinists/toolmakers	1	3.9	17	11.0	34	14.2	40	17.3
Other producers/dealers of metal products (stove manufacturers, blacksmiths)	2	7.7	17	11.0	40	16.7	49	21.2
Other occupations or none listed	1	3.9	13	8.4	27	11.3	32	13.9

Backgrounds of Great Inventors, 1790–1846

	Number	Percentage
Educational background		
None to several years of schooling	76	47.5
More than several years	22	13.8
Attended college	38	23.8
Unknown	24	15.0
Occupational class at first major invention		
Artisan	24	15.0
Farmer	8	5.0
Engineer/machinist/full-time inventor	53	33.1
Merchant/professional	36	22.5
Manufacturer	37	23.1
Other/missing	2	1.3

SOURCES: The estimates are drawn from Sokoloff and Khan 1990: 369; Khan and Sokoloff 1993: 293.
NOTES: The top panel reports the number and share of patents filed by patentees of each occupational category during four subperiods. The lower panel reports, for a group of inventors credited with responsibility for technologically significant inventions, their distribution across classes defined first by educational background and then by occupational class at the time of their first invention. Inventors whose extent of schooling is unknown seem likely to have had low levels of education.

logical discoveries, as does the second panel, one is impressed with how broad a range of the population was involved in inventive activity.

A broad spectrum of the population appears to have become engaged in looking for better ways of carrying out production, spurring the rate at which improved methods diffused as well as boosting rates of invention and innovation. Moreover, the association between patenting and access to broad markets held for ordinary patents as well as for the presumably more important patents (on average) awarded to the "great inventors." Evidence that manufacturing firms in districts with higher patenting rates, holding other factors constant, had higher total factor productivity provides further support to the interpretation that invention and technical change were genuinely induced by the expansion of markets.[51]

There are several reasons for believing that the association of markets with economic growth during the first half of the nineteenth century is relevant to the question of whether the condition of greater overall equality was an important contributor to the earlier onset of industrialization in the United States than elsewhere in the New World. First, the coincidence of high per capita incomes with equality would be expected to attract relatively more resources to the production and elaboration of standardized manufactures, because free whites of the middling sort would ultimately expend higher shares of their income on manufactures than would the poor (or than slaveholders would expend on their slaves).[52] Moreover, although the wealthy might also devote large shares of income to manufactures, they generally consumed manufactures that were nonstandard or customized. This is significant, both because markets were more likely to develop around goods or assets with uniform characteristics and because many of the most fundamental advances in technology during the nineteenth century were concerned with the production of standardized manufacturing products.

Second, greater equality in wealth, human capital, and political power likely promoted the evolution of broad, deep markets through the supply side as well. In some cases, the stimulus was associated with the existence of scale economies in activities, such as transportation or financial intermediation, with high fixed costs or capital intensity. Greater densities of potential users and beneficiaries raised the projected returns on investment in such projects and facilitated the mobilization of necessary political and financial backing. In the northeast region of the United States, for example, the great majority of banks and much of the transportation infrastructure (roads and canals) in place during the initial phase of growth were organized locally and relied on broad public participation and use.[53] Without the substantial numbers of small businesses (including farms) and households seeking better access to product and capital markets, there would have been less potential for realizing the substantial scale economies characteristic of transportation and financial intermediation—and much less investment in these crucial areas.[54]

Greater equality in economic circumstances among the U.S. population not only encouraged investment in financial intermediaries and transportation directly through the structure of demand but also through a legal framework that was conducive to private enterprise in both law and administration.[55] The right to charter corporations was reserved to state governments, and this authority was generously wielded in order to promote investments first in transportation and financial institutions but ultimately in manufacturing as well. Responding to widespread sentiment that there should be few obstacles to private initiatives, as well as to opposition to privilege, many state governments had in effect routinized the process of forming a corporation with general laws of incorporation by the middle of the nineteenth century.[56] Another example of a legal system that encouraged private enterprise is provided by the relationship between equality and rates of invention. Not only is it likely that the greater equality in human capital accounted partially for the high rates of invention in the United States overall, but the more general concern with the opportunities for extracting the returns from invention contributed to a patent system that was probably the most favorable in the world to common people at the time.[57] This pattern stands in stark contrast to that in Mexico and Brazil, where patents were restricted by costs and procedures to the wealthy or influential and where the rights to organize corporations and financial institutions were granted sparingly, largely to protect the value of rights already held by powerful interests.[58] Differences in the degree of equality in circumstances between these economies and the United States seem likely to play an important role in explaining the divergence in experience. For a variety of reasons, therefore, a large degree of inequality might be expected to hamper the evolution of markets and hence delay the realization of sustained economic growth.[59]

One might ask whether one can legitimately draw inferences about what the experiences of the New World economies in Latin America could have been like from the experience of the United States. Our implicit assumption is that there was a fundamental nature to the process of early economic growth during the eighteenth and nineteenth centuries, prior to the widespread introduction of mechanization and other heavily capital-intensive technologies, that was essentially the same across all economies.

A complex and heroic counterfactual is obviously involved, but there are reasons to be encouraged. Of central importance here is the observation that the region of the United States that was most like the other categories of New World societies—the South—had an economic structure that resembled those of its Latin American neighbors in some dimensions (its concentration on large-scale agriculture; its higher degree of overall inequality) at the same time that its processes of economic growth were much like those under way in the northern United States.

The South thrived in terms of growth of output per capita but, both before and after the Civil War, lagged behind the North in the evolution of a set of political and economic institutions that were conducive to broad participation in the commercial economy and in the development of extensive capital and product markets.[60] The successes of the antebellum plantation meant that the southern population was more rural than the northern, with generally more production of manufactures as well as foodstuffs on the farm. Together with the greater inequality in income and human capital, this relative self-sufficiency of slave plantations reduced the extent of market development, both relative to the North and to what might otherwise have been in the South.[61] Moreover, the scale of labor requirements and the nature of differing seasonal patterns of production encouraged a greater degree of diversification on the part of southern slave plantations than was the case in small-scale northern agriculture, resulting in relatively few commercial cities and towns. Because manufacturing productivity was strongly associated with proximity to extensive markets, the limited extent of markets in the South likely contributed to that region's lower levels of manufacturing output per capita as well as lower productivity.[62] Inventive activity, at least as gauged by patenting, was also much lower than in the North.

The Civil War and the emancipation of the slaves led to dramatic changes in southern agriculture, with the disappearance of the plantation as a producing unit. While concentration of landholdings persisted, the dominant producing unit became the small farm, whether owner-operated or worked by tenants under various arrangements.[63] These tenants in the South, particularly blacks, generally had limited incomes and wealth relative to farmers in the North, and they faced major obstacles to their accumulation of both physical and human capital.[64] It was several decades before the South began to develop a more urbanized economy with a larger manufacturing base, and the region continued to trail the rest of the nation for nearly a century.

Despite many parallels with other New World economies that relied on slavery early in their histories, however, the South's economy was a unique case and ultimately realized a record of growth more like those of the northern United States or Canada. Within our analytical perspective, there are two features of the South that we would highlight in explaining why its economy performed better over the long run. First, its general unsuitability for sugar meant that the scale of slave plantations and the share of the population composed of slaves were never as great in the South as in the Caribbean or Brazil. Inequality in income, human capital, and political power was accordingly never as extreme. Second, much of the political and economic institutional framework in the South was determined at the federal level, or through competition between states, and therefore had many features in common with the North. These circumstances help explain why the South evolved a more commercialized and competitive economy, with a broader range of its population participating fully, than other New World economies with a legacy of slavery. Nevertheless, when one notes the similarities between the records of the South and of these others, it is hard not to be impressed with the influence of factor endowment and with the basis for employing evidence from the United States to assess, in general, how New World economies developed—or might have developed with a different factor endowment.[65]

Many scholars have long been concerned with why the United States and Canada have been so much more successful over time than other New World economies since the era of European colonization. As we and others have noted, all of the New World societies enjoyed high levels of product per capita early in their histories. The divergence in paths can be traced back to the achievement of sustained economic growth by the United States and Canada during the eighteenth and early nineteenth centuries, while the others did not manage to attain this goal until late in the nineteenth or in the twentieth century, if ever. Although many explanations have been offered, in this chapter we have highlighted the relevance of substantial differences in the degree of inequality in wealth, human capital, and political power in accounting for the divergence in the records of growth. Moreover, we have suggested that the roots of these disparities in the extent of inequality lay in differences in the initial factor endowments of the respective colonies. Of particular significance for generating extreme inequality were the suitability of some regions for the cultivation of sugar and other highly valued commodities, in which economies of production could be achieved through the use of slaves, as well as the presence in some colonies of large concentrations of Native Americans. Both of these con-

ditions encouraged the evolution of societies where relatively small elites of European descent could hold highly disproportionate shares of the wealth, human capital, and political power—and establish economic and political dominance over the mass of the population. Conspicuously absent from the nearly all-inclusive list of New World colonies with these conditions were the British settlements in the northern part of the North American continent.

We have also called attention to the tendencies of governmental policies toward maintaining the basic thrust of the initial factor endowment or the same general degree of inequality along their respective economy's path of development. The atypical immigration policies of Spanish America have been given special emphasis in this regard; while other European nations promoted and experienced mushrooming immigration to their New World colonies, Spain restricted the flows of Europeans, leading to a stagnant or declining number of migrants to its settlements during the late seventeenth and eighteenth centuries. It was not until late in the nineteenth century that former Spanish colonies like Argentina began to recruit and attract Europeans in sufficiently large quantities to shift the composition of their populations and erode the rather elite status and positions of the small communities of old families of European descent. The New World economies that had long histories of importing slaves to exploit the advantages of their soils and climates for the production of crops like sugar also continued to be characterized by much inequality and to be dominated by small, white segments of their populations. Why extreme inequality persisted for centuries in these classes of New World economies is unclear. Certainly large deficits in wealth, human capital, and political power, such as plagued Native Americans and slaves (and free blacks, after emancipation), are difficult to overcome, especially in preindustrial societies. Elites would be expected to (and did) use their political control to restrict competition they faced over resources, and large gaps in literacy, familiarity with technology or markets, and in other forms of human capital could take generations to close in even a free and seemingly evenhanded society. Indeed, these factors undoubtedly go far in explaining the persistence of inequality over the long run in the New World cases of concern here. The close correspondences between economic standing and race, however, may also have contributed to the maintenance of substantial inequality, either through natural, unconscious processes or by increasing the efficacy of direct action by elites to retain their privileged positions and holdings.

Our discussion of why the United States and Canada led other New World economies in the realization of sustained economic growth during the eighteenth and nineteenth centuries raises another old controversy. Past treatments of the relationship between economic growth and inequality have tended to focus either on the effect of equality on rates of capital accumulation or on the impact of growth on the extent of inequality. Our emphasis on the implications of greater equality for the evolution of markets, institutions conducive to widespread commercialization, and technological change, proposes a different direction for future research. This hypothesis is suggested by recent findings about the process of early industrialization in the United States and should be understood as pertaining to a particular era and range of inequality. It is based on the idea, consistent with the evidence examined to date, that preindustrial economies of the late eighteenth and early nineteenth centuries had a large potential for sustained productivity growth derived from an accumulation of innumerable incremental improvements discovered and implemented throughout an economy by small-scale producers with rather ordinary sets of skills. These advances in practice were induced in the United States by alterations in incentives and opportunities associated with the spread of markets, and were made possible by a broad acquaintance with basic technological knowledge as well as by broad access to full participation in the commercial economy.

Our conjecture—that other New World economies might have been able to realize growth in much the same way as the United States if not for their initial factor endowments and the governmental policies that upheld their influence—is obviously speculative and requires further study. Nevertheless, regardless of the outcome of such evaluations, the systematic patterns we have identified in the development of the New World economies should stand. Moreover, we hope that our attempt to outline a theory of how the paths of various New World economies diverged will stimulate more work on the subject and will ultimately lead to a better understanding of the interplay between factor endowments, institutions, and economic growth—in this context and in general.

Notes

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1. See, for example, the discussion of colonial economic growth in McCusker and Menard 1985.

2. See the regional breakdowns provided in Denevan 1976: 289–92.

3. For general discussions of the role of institutions in worldwide economic growth, see North 1981; E. L. Jones 1988. For a recent comparison of Argentina and Canada that discusses the role of institutions and makes reference to factor endowments, see Adelman 1994.

4. For a general discussion of the diversity among British colonies in the New World, as well as of its sources, see Greene 1988. For a fascinating recent account of radical divergence even among the Puritan colonies in the New World, see Kupperman 1993, especially the discussions of the quite unusual patterns of land ownership and settlement.

5. This paragraph is based on readings in numerous primary and secondary sources. For Latin America, particularly useful secondary works were Lockhart and Schwartz 1983; McAlister 1984; Gibson 1966; Burkholder and Johnson 1994; Bethell 1984. For the British colonies, see McCusker and Menard 1985; Gallman and Wallis 1992.

6. For studies comparing records of growth in various New World economies, see Bernecker and Tobler 1993, particularly the essays by John H. Coatsworth and Daniel D. Garcia. The editors' introduction provided several of the comparisons made earlier in this section. For a useful guide to an earlier debate, see Hanke 1964; Mosk 1951.

7. Table 10.1 is based on the estimates of David Eltis. For estimates through 1830, see Eltis 1983. For recent discussions and descriptions of migration flows in the period studied, see, in particular, R. Davis 1973; Sanchez-Albornoz 1974; Curtin 1969; Emmer and Mörner 1992; Altman and Horn 1991; and the essays by Woodrow Borah, Peter Boyd-Bowman, and Magnus Mörner in Chiappelli 1976.

8. The decline in Spain's population during the early seventeenth century is generally attributed to the war between Spain and the Netherlands as well as an increased prevalence of disease throughout the Mediterranean, including outbreaks of the plague and cholera. As seen in Table 10.2, population had still not recovered by 1700. Whether the decline heightened Spanish concern about depopulation, and was a factor in accounting for the restrictive immigration policies that were implemented, is an interesting issue deserving of study. See de Vries 1976: 4–5.

9. There is now a substantial literature documenting the existence of very significant economies in the production of certain agricultural products on large slave plantations. The magnitude of these economies varied from crop to crop, but appear to have been most extensive in the cultivation of sugar, coffee, rice, and cotton; small, but present, in tobacco; and absent in grains. Overall, there are two types of

compelling evidence in support of this generalization. The first consists of comparisons of total factor productivity by size of the producing unit, as has been done for the U.S. South prior to the Civil War. The second is the consistent pattern across economies of dramatic and persistent differences in the sizes and types of farms producing different crops or in the shares of output of those crops accounted for by different classes of farms. For example, virtually all sugar in the New World was produced by large slave plantations until the wave of slave emancipations during the nineteenth century. In contrast, the great bulk of wheat and other grains were produced on small-scale farms. For further discussions of the subject and evidence, see Fogel 1989; Engerman, 1983: 635–59; Deerr 1950.

10. See, in particular, Dunn 1972 on the English colonies; Schwartz 1985 on Brazil.

11. On the Caribbean in general, and for a discussion of the patterns of Cuban settlement, see Knight 1990. For an ethnic breakdown of Caribbean populations in 1750, 1830, and 1880, see Engerman and Higman forthcoming.

12. In addition to the works cited in note 4, see also the discussions of Spanish migration in Altman 1989; Mörner 1985; Kritz 1992; as well as several old classics: Bourne 1904; Moses 1898; Haring 1947. Spanish policies also reduced the numbers of slaves being imported, through both direct limitations and decreasing demand by placing more restrictions on the use of slaves in its colonies (lessening their value to slaveholders) than other New World economies adhered to. These policies may help to account for why Spanish colonies like Mexico, Cuba, and Puerto Rico were relatively slow to turn to production of sugar on large-scale plantations. See Fogel (1989: 36–40) for discussion.

13. See Coatsworth 1993; Eltis 1995.

14. Domar 1970. The problem of growth with "unlimited supplies of labor" occupied most of W. Arthur Lewis's work on economic development. Probably the first full presentation of this model can be seen in Lewis 1955.

15. On the early Caribbean sugar plantations, see Dunn 1972; Sheridan 1974; Fraginals 1976.

16. For a detailed examination of how unequal the distribution of wealth among free heads of household on a sugar island was, see the analysis of the census of 1680 for Barbados in Dunn 1972: chap. 3.

17. See Engerman 1982.

18. See the excellent and comprehensive overview of the *encomienda*, of the evolution of large-scale estates, and of their relation to preconquest forms of social organization in different parts of Spanish America provided by Lockhart and Schwartz 1983. As they emphasize, the paths of institutional development varied somewhat in the Spanish colonies, reflecting significant differences between Indian populations in "social capabilities" and other attributes. For example, the preconquest forms of social organization for Indians in highland areas were quite different from those of populations on the plains or in the jungle. For fascinating discussion of the workings of the early *encomienda* system in Peru, including differences in the system among the colonies, of the different interests of early and late arrivals, and of the relevance of mineral resources, see Lockhart 1994.

19. For a discussion of a more traditional form of conflict between the colonies and the metropolis in respect to the empire's trade policy, however, see Walker 1979. For a discussion of a particular case—early Peru—see Lockhart 1994.

20. Indeed, there are striking similarities even in colonies that did not retain substantial native populations. In formulating policies, the Spanish authorities seem to have focused on circumstances in major colonies like Mexico and Peru, but applied them systemwide. Hence, policies like restrictions on migration from Europe and grants of large blocs of land, mineral resources, and native labor to the early settlers were generally in effect throughout Spanish America. See Lockhart and Schwartz 1983; and Lockhart 1994.

21. In addition to Lockhart and Schwartz 1983, see treatments of Mexico and Peru in Chevalier 1963; Van Young 1983; Lockhart 1994; and Jacobsen 1993: chaps. 1–4.

22. For a dissenting analysis of the Brazilian slave distributions, based on early nineteenth-century data, see Schwartz 1985: chap. 16, which is based on Schwartz 1982. For another skeptical view, see Irwin 1988.

23. On the late and never really important Argentine sugar industry, see Guy 1980. On the Argentine economy in general, see Diaz Alejandro 1970.

24. One of the reasons that government policies and other institutions tended to reproduce the sort of factor endowments that gave rise to them is that politically powerful classes sought to maintain their positions over time through limitations over who had the right to vote and who had the right to vote in secret. This could be a quite effective way of obstructing peaceful change, as seen in the classic account of how such restrictions on the franchise helped a white elite retain dominance over blacks, by Kousser 1974. Countries with greater inequality, like Mexico, Brazil, and Argentina, were characterized by much lower rates of eligibility for voting than was the United States until well into the twentieth century; higher rates of violence in effecting political change (Mexico especially); and generally less secrecy or privacy at the ballot box. Each of these conditions worked to the advantage of the politically and economically powerful. The voting situation in the United States was quite different, with very high rates of adult male suffrage throughout the nineteenth century. In the last decade of the century, many states introduced the so-called Australian ballot, which may have increased the prevalence of the "secret ballot." Nevertheless, even before this change, American politics featured much secrecy in balloting, high turnouts, party competition, close elections, and considerable peaceful political turnover, so that the system was quite different from those seen in these other countries and in Latin America overall. For a discussion of the record in the United States, see Albright 1942; Kelly, Harbison, and Belz 1983: 438–43. For discussions of the extent of suffrage and other aspects of elections in the three Latin American countries, see Perry 1978; Love 1970; Scobie 1971: 202–3.

25. See Galenson 1981; Kussmaul 1981.

26. Some of the colonies on the North American continent, such as Pennsylvania, began with proprietors—like William Penn—who were awarded very large grants of land. However, it was typically not long before these blocs began to be broken up and sold off in small plots at flexible terms. The desire to attract many immigrants appears to have been the major impetus, and "not many of the original proprietors intended to retain their holdings intact or to manage them as large estates." See Bidwell and Falconer 1941: 60–61. For detailed discussion of the experience in Pennsylvania, see Craven 1968; and Nash 1993.

27. At first it seems somewhat puzzling, or contradictory to the idea that the factor endowment was the crucial determinant of policy, that Spanish authorities did not actively encourage immigration to colonies, like Argentina, without a substantial supply of readily available Indian labor. On reflection, however, it seems likely that Spanish policy toward immigration to places like Argentina was simply incidental, with the overall policy regarding immigration to the New World based on the factor endowments and politics in all of Spanish America. Hence, Spanish policy was probably driven by conditions in Mexico and Peru—the most populous and valued colonies. Because these centers of Spanish America had an abundance of Indian labor, the local elites and the authorities in Spain were able to maintain restrictive policies.

28. See the sources cited in note 9.

29. For the basic data on international migration during this period, see Ferenczi and Willcox 1929, 1931. Clayne Pope, David Galenson, and others have recently suggested that substantial in-migration to a sparsely settled region will generate major improvements in the position of the early arrivals as well as higher inequality overall. This may help to explain why economies like Argentina continued to be characterized by high levels of inequality. See, for example, Kearl, Pope, and Wimmer 1980; Galenson 1991.

30. See Eltis 1987.

31. For data and references on contract labor movements, see Engerman 1986.

32. See Mathew 1976.

33. For a comparison of the streams of Italian migrations to North and to South America, pointing to a different pattern for this group, see Klein 1983: 306–29, and the discussion below.

34. See the comprehensive overview of U.S. land policy in Gates 1968. There are discussions of Canadian land policy in Solberg 1987; Pomfret 1981: 111–19; Adelman 1994: chap. 2.

35. See Dean 1971; Viotti da Costa 1985: chap. 4; Solberg 1987; Solberg's essay in Platt and di Tella 1985; Adelman 1994: chap. 3.

36. On northern U.S. agriculture, see Atack and Bateman 1987; Danhof 1969. For an example of a country in Spanish America that came to be characterized by small-scale agriculture—along with a path of institutional development more like that in the U.S.—evidently for other reasons, see the discussion of Costa Rica in R. L. Woodward 1976; Perez-Brignoli 1989.

37. See Solberg 1970; Solberg 1987. In addition to grains, livestock production also increased dramatically during the late nineteenth century on the basis of large landholdings. Indeed, scale economies in the raising of livestock may have helped maintain the large estates.

38. The theme is developed by Henry Charles Carey in many of his works, such as 1858–60. The clearest statement by Wakefield is found in Wakefield 1849.

39. For systematic information on the extent of U.S. income and wealth inequality, see Williamson and Lindert 1980; Soltow 1992.

40. See the discussion in Williamson 1960. Williamson draws on Marshall 1919.

41. This point was made for the northern United States by Smith (1979, 2: 571–75) and later became the central argument in the interpretation of the history of the United States by Frederick Jackson Turner. See, for example, the collected essays in Turner 1948. James Maitland, the Eighth Earl of Lauderdale, made reference to both the United States and England in making his argument for why equality and level of income were conducive to growth. See Maitland 1962.

42. For a recent discussion of this long-debated idea, see Davis and Gallman 1994.

43. See Rostow 1960; Strassman 1956. These points were at issue during the debates among development economists during the 1950's and 1960's concerning the relative importance of theorizing about balanced growth in contrast to an emphasis on so-called leading sectors. Robert Fogel's work on the railroads represented a basic criticism of the leading-sector approach as applied to United States growth by Rostow. See Fogel 1964.

44. For a classic discussion of how the extension of markets into agricultural areas radically alters the environment in which small farmers operate, the incentives they face, and thus the decisions they make about the allocation of resources, see Schultz 1964.

45. See Strassman 1956; Sokoloff 1992.

46. See, for example, Rothenberg 1992a; Sokoloff 1986.

47. For the results of such a decomposition of the sources of labor productivity growth, and discussion, see Sokoloff 1986: 723; Sokoloff 1992. The qualitative finding of the relative insignificance of capital deepening in most industries is evident, however, from the pattern in Table 10.6 showing that when output is measured in terms of value added, the rate of total factor productivity growth is nearly as rapid as the rate of labor productivity growth.

48. See Rothenberg 1992b; Majewski, Baer, and Klein 1993.

49. See Sokoloff 1984; Sokoloff 1992.

50. The discussion below draws on Sokoloff 1988; Sokoloff and Khan 1990; Khan and Sokoloff 1993.

51. Sokoloff 1992.

52. This idea is related to the well-established relationship between per capita income and the proportion of expenditures devoted to nonagricultural products known as Engel's Law. The extension does not necessarily hold, however, because slaves were not able to choose their consumption bundles and because Engel's Law itself makes no distinction between manufactures and other nonagricultural products. We are also relying, however, on Tchakerian 1994; Bateman and Weiss 1981. These scholars find relatively little manufacturing output per capita in the South as compared to agricultural areas in the North, as well as a relative lack of firms producing standardized manufactures.

53. For an excellent overview of these developments, see Taylor 1951; Majewski 1994.

54. For discussions of the extensive scale economies in transportation and in financial intermediaries during this era, and of the importance of broad political support for investment in such enterprises, see Fishlow 1965; Goodrich 1960; Davis and Gallman 1978; Davis and Gallman 1994; Majewski 1994.

55. For similar interpretations of the role of the legal framework in promoting growth, but with different evaluations, compare Hurst 1956 with Horowitz 1977.

56. On the changing means of forming corporations in the United States, see Evans 1948. Also see Davis 1917; Livermore 1935.

57. Human capital appears to have been more broadly distributed in the United States, paralleling the greater equality in the distributions of wealth and political power. Higher rates of literacy and schooling may have contributed to the higher rates of innovation, technological diffusion, and entrepreneurship generally, which are thought to have characterized the United States. See DeBow 1854; Schultz 1964; Easterlin 1981; Olmstead and Rhode 1995. The patent system in the United States was more favorable to common people in several dimensions. First, the cost of obtaining a patent was much less, especially relative to the annual wage, than in any other country with a functioning patent system. Second, the granting of patents operated according to prescribed rules, which were independent of the social class of the applicant for the patent and appear to have been adhered to. Third, the property rights in invention entailed in a patent appear to have been well enforced by the courts, making it much easier for a person of limited wealth to secure returns to his or her inventions. No other country had such favorable conditions for inventors from modest backgrounds. For international comparisons of patent systems, as well as a discussion of the concern with enforcement in the United States, see Dutton 1984; Khan 1995; Machlup 1958.

58. See Haber 1989; Haber 1991; Beatty 1993.

59. As highly capital-intensive technologies became available, the need to involve broad segments of the population in the market economy in order to achieve sustained growth may have diminished. For a classic statement of a closely related idea, see Gerschenkron 1962: chap. 1. For a discussion of different stages in technology and in the sources of productivity growth, see Sokoloff 1992.

60. Greene 1988; Majewski 1994; V. Woodward 1971; Kousser 1974.

61. Gallman and Anderson 1977; Parker 1970; Fogel 1989; Genovese 1965.

62. Tchakerian 1994.

63. Fogel 1989; Shlomowitz 1979; Virts 1985.

64. Higgs 1977; Margo 1990.

65. For a different view, see Fogel 1989.

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