Journal of Business and Economics, ISSN 2155-7950, USA
July 2014, Volume 5, No. 7, pp. 972-989
DOI: 10.15341/jbe(2155-7950)/07.05.2014/005

http://www.academicstar.us

Specially Incorporated Transportation Companies in the United States to 1860: A Comprehensive Tabulation and Its Implications

Robert E. Wright
(Augustana College, Sioux Falls, SD57106, USA)

Abstract: New data on corporate chartering activity show the extent to which large scale U.S. transportation networks were privately controlled prior to the Civil War. By means of special acts of incorporation, entrepreneurs chartered over 10,000 for-profit transportation corporations with total minimum and maximum authorized capitals of $2.89 and $4.48 billion, respectively. Not all of those corporations completed their infrastructure improvements (bridges, canals, railroads, or roads) but total investment in private transportation companies clearly outpaced government transportation expenditures. Private control was encouraged because prevailing views, bolstered by the failure of several state-controlled canal systems in the late 1830s and early 1840s, held that private managers were better at controlling costs than public ones were. The view that corporate managers had more powerful incentives than government officials did to forge incentive-aligned agreements with construction contractors was largely correct. Although they made numerous mistakes and were constrained by the inherent nature of the transportation modes that they managed, private managers built and maintained transportation networks that dramatically reduced travel times and freight costs over the antebellum era. In addition, their companies earned risk-adjusted returns acceptable to many investors.

Key words: antebellum America; business history; capital investment; corporations; incentive structures; private enterprise; public goods; transportation infrastructure

JEL codes: L33, N71

New data on corporations formed by special charters (as opposed to general incorporation statutes) establishes that prior to the Civil War most large scale transportation improvements—as measured by dollars invested in right-of-way improvements such as bridges, canals, roads, and railroads—were controlled by for-profit companies, typically chartered corporations,[1] and not by governments. That is surprising because early nineteenth century Americans were notoriously and simultaneously fond of their republican institutions and wary of corporate special privileges.[2] The prevailing sentiment, however, held that private control of transportation infrastructure was more efficient than government control because private managers had stronger incentives to minimize maintenance and especially construction costs. The confidence reposed in private managers was not misplaced, at least as measured by the increased efficiency (reduced travel times and freight costs) of the nation's

Robert E. Wright, Ph.D., Augustana College; research areas/interests: business, economic, and financial history. E-mail: robert.wright@augie.edu.

[1] Non-profit organizations that solicited "shares" from nearby landowners but never planned on charging tolls also existed. Craig's Creek Company; Dunbar, *A History of Travel*, Vol. 2, p. 665; Opal, *Beyond the Farm*, pp. 51-55.

[2] Maier, "Corporations"; Wood, *Creation*, pp. 593-615.

transportation infrastructure over the period 1790 to 1860 and the adequate average financial performance (dividends, stock prices, and indirect returns) of the corporations that built and maintained early transportation networks. Although managers of early U.S. transportation corporations often blundered, their record on large scale internal improvement projects was generally superior to that of government officials.

1. Public and Private Investment in Early U.S. Transportation Networks

The prospect of economic success induced antebellum entrepreneurs to charter almost 11,000 transportation sector corporations and allowed them to raise several billion dollars in equity capital from investors large and small.[3] Tables 1-4, inclusive, provide the details by state, company type, and decade and are the most comprehensive yet compiled.

Tables 1 and 2 show the number and minimum and maximum authorized equity capitalization of all specially incorporated transportation companies chartered in each state by decade. Unsurprisingly, eastern states show earlier activity than western ones. The states of the deep south remained laggards throughout the period but states in the upper south, particularly Maryland and Kentucky, matched their northern rivals in terms of both corporate numbers and capitalization. In most states the number and total authorized capitalization of newly chartered transportation corporations increased each decade until the economically troubled 1820s, grew rapidly in the 1830s, shrank in the depressed 1840s, and exploded upward in the 1850s.

Table 1 Number of Specially Incorporated Transportation Companies Chartered by State and Decade

State	1790-1799	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1860	Totals
Alabama	0	0	1	22	50	26	125	**224**
Arkansas	0	0	0	0	14	9	29	**52**
California	0	0	0	0	0	0	10	**10**
Colorado	0	0	0	0	0	0	6	**6**
Connecticut	22	43	15	7	2	17	37	**143**
Delaware	1	7	10	4	19	6	26	**73**
District of Columbia	0	0	1	1	1	0	0	**3**
Florida	0	0	0	5	23	6	27	**61**
Georgia	0	2	9	8	49	33	123	**224**
Illinois	0	0	4	3	84	40	249	**380**
Indiana	0	1	4	5	120	174	103	**407**
Iowa	0	0	0	0	3	5	0	**8**
Kansas	0	0	0	0	0	0	89	**89**
Kentucky	1	1	13	10	129	100	468	**722**
Louisiana	0	1	5	9	42	6	29	**92**
Maine	0	0	0	59	149	82	134	**424**
Maryland	9	9	48	34	35	42	135	**312**
Massachusetts	41	136	44	48	88	117	136	**610**
Michigan	0	0	3	4	48	97	53	**205**
Minnesota	0	0	0	0	0	1	71	**72**
Mississippi	0	1	1	3	54	23	95	**177**
Missouri	0	0	0	0	34	35	158	**227**
Nebraska	0	0	0	0	0	0	24	**24**

[3] Some of this economic success manifested itself in financial returns, as described below, but some also manifested itself in increased land values wrought by proximity to more efficient systems of transportation.

(**Table 1 continued**)

New Hampshire	22	51	29	34	36	48	27	**247**
New Jersey	7	29	37	18	61	52	225	**429**
New Mexico	0	0	0	0	0	0	5	**5**
New York	12	147	196	167	275	101	76	**974**
North Carolina	9	3	30	17	50	38	171	**318**
Ohio	0	3	30	33	260	294	276	**896**
Oregon	0	0	0	0	0	1	38	**39**
Pennsylvania	15	43	156	112	308	232	715	**1,581**
Rhode Island	6	12	12	20	18	8	16	**92**
South Carolina	3	3	9	16	26	18	52	**127**
Tennessee	0	1	10	5	88	52	43	**199**
Texas	0	0	0	0	4	11	113	**128**
Utah	0	0	0	0	0	0	7	**7**
Vermont	13	35	21	25	20	30	32	**176**
Virginia	6	22	104	51	173	131	352	**839**
Washington	0	0	0	0	0	0	10	**10**
Wisconsin	0	0	0	0	7	32	157	**196**
Totals	**167**	**550**	**792**	**720**	**2,270**	**1,867**	**4,442**	**10,808**

Source: See appendix.

Table 2 Minimum and Maximum Authorized Capitalization (Millions USD) of Specially Incorporated Transportation Companies by State and Decade

State	1790-1799	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1860	Totals
Alabama	$0.000	$0.000	$0.000	$3.178	$12.660	$3.365	$14.558	**$33.761**
	$0.000	$0.000	$0.000	$3.438	$25.980	$30.835	$96.357	**$156.610**
Arkansas	$0.000	$0.000	$0.000	$0.000	$0.282	$0.868	$3.521	**$4.671**
	$0.000	$0.000	$0.000	$0.000	$3.299	$1.990	$21.605	**$26.894**
California	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	**$0.000**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	**$0.000**
Colorado	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.003	**$0.003**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.003	**$0.003**
Connecticut	$0.030	$0.095	$0.000	$0.000	$0.000	$10.635	$12.637	**$23.397**
	$0.030	$0.175	$0.000	$0.000	$0.000	$17.715	$16.282	**$34.202**
Delaware	$0.100	$0.585	$0.197	$0.586	$3.418	$0.375	$4.731	**$9.992**
	$0.300	$0.585	$0.197	$0.586	$3.718	$0.425	$5.021	**$10.832**
District of Columbia	$0.000	$0.000	$0.025	$0.075	$0.250	$0.000	$0.000	**$0.350**
	$0.000	$0.000	$0.025	$0.075	$0.250	$0.000	$0.000	**$0.350**
Florida	$0.000	$0.000	$0.000	$0.019	$5.078	$2.550	$5.393	**$13.040**
	$0.000	$0.000	$0.000	$0.022	$9.760	$5.300	$13.970	**$29.052**
Georgia	$0.000	$0.000	$0.830	$3.920	$29.346	$14.693	$40.488	**$89.277**
	$0.000	$0.000	$1.430	$4.287	$43.700	$17.903	$54.050	**$121.370**
Illinois	$0.000	$0.000	$0.250	$1.001	$24.094	$7.412	$58.926	**$91.683**
	$0.000	$0.000	$1.230	$1.010	$38.425	$14.413	$165.193	**$220.271**
Indiana	$0.000	$0.100	$2.001	$0.259	$7.158	$5.959	$2.516	**$17.993**
	$0.000	$1.000	$2.003	$1.009	$27.521	$28.278	$9.593	**$69.404**
Iowa	$0.000	$0.000	$0.000	$0.000	$1.300	$0.154	$0.000	**$1.454**
	$0.000	$0.000	$0.000	$0.000	$1.300	$0.154	$0.000	**$1.454**
Kansas	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$241.433	**$241.433**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$445.898	**$445.898**
Kentucky	$0.016	$0.050	$2.020	$2.588	$21.598	$8.307	$118.569	**$153.148**
	$0.016	$0.050	$2.035	$2.588	$23.205	$9.212	$124.882	**$161.988**
Louisiana	$0.000	$0.000	$0.555	$0.426	$19.595	$1.150	$145.632	**$167.358**

(**Table 2 continued**)

	$0.000	$0.000	$0.745	$0.590	$29.250	$1.450	$146.632	**$178.667**
Maine	$0.000	$0.000	$0.000	$0.803	$10.798	$7.280	$112.723	**$131.604**
	$0.000	$0.000	$0.000	$0.803	$16.888	$16.752	$136.830	**$171.273**
Maryland	$0.932	$0.985	$5.831	$18.703	$10.103	$5.379	$35.379	**$77.312**
	$1.646	$0.985	$5.831	$18.503	$11.998	$6.524	$44.745	**$90.232**
Massachusetts	$0.026	$0.000	$0.900	$0.886	$25.771	$30.254	$32.098	**$89.935**
	$0.026	$0.000	$0.900	$1.106	$28.631	$33.424	$32.483	**$96.570**
Michigan	$0.000	$0.000	$0.000	$0.050	$12.545	$20.788	$2.590	**$35.973**
	$0.000	$0.000	$0.000	$0.050	$13.015	$22.558	$2.664	**$38.287**
Minnesota	$0.000	$0.000	$0.000	$0.000	$0.000	$0.025	$166.977	**$167.002**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.025	$371.799	**$371.824**
Mississippi	$0.000	$0.002	$0.005	$0.055	$7.803	$5.060	$8.544	**$21.469**
	$0.000	$0.002	$0.005	$0.520	$37.263	$10.059	$45.286	**$93.135**
Missouri	$0.000	$0.000	$0.000	$0.000	$11.837	$21.419	$198.703	**$231.959**
	$0.000	$0.000	$0.000	$0.000	$16.167	$23.939	$211.809	**$251.915**
Nebraska	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$41.936	**$41.936**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$64.335	**$64.335**
New Hampshire	$0.000	$0.000	$0.000	$2.000	$5.738	$20.361	$2.595	**$30.694**
	$0.000	$0.000	$0.000	$2.000	$5.738	$22.561	$4.430	**$34.729**
New Jersey	$0.020	$0.330	$1.008	$2.991	$10.246	$5.282	$14.683	**$34.560**
	$0.039	$1.580	$2.282	$4.129	$24.521	$10.875	$45.875	**$89.301**
New Mexico	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$12.565	**$12.565**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$12.565	**$12.565**
New York	$0.259	$1.786	$2.380	$7.998	$56.522	$20.215	$116.467	**$205.627**
	$0.540	$6.703	$5.929	$12.318	$78.735	$36.988	$174.256	**$315.469**
North Carolina	$0.145	$0.175	$0.735	$0.364	$10.558	$2.206	$11.534	**$25.717**
	$0.313	$0.175	$1.388	$0.582	$26.720	$11.508	$47.377	**$88.063**
Ohio	$0.000	$0.020	$1.220	$2.504	$70.724	$52.359	$66.542	**$193.369**
	$0.000	$0.020	$1.220	$2.504	$70.768	$53.709	$71.197	**$199.418**
Oregon	$0.000	$0.000	$0.000	$0.000	$0.000	$0.005	$13.175	**$13.180**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.005	$19.455	**$19.460**
Pennsylvania	$1.230	$4.006	$8.160	$18.723	$46.221	$58.746	$122.472	**$259.558**
	$2.796	$4.006	$8.620	$18.933	$68.466	$70.654	$159.419	**$332.894**
Rhode Island	$0.011	$0.047	$0.092	$0.602	$3.631	$3.225	$2.573	**$10.181**
	$0.011	$0.050	$0.112	$0.757	$4.186	$3.225	$4.595	**$12.936**
South Carolina	$0.000	$0.000	$2.100	$0.606	$12.283	$8.705	$21.709	**$45.403**
	$0.000	$0.000	$2.100	$0.630	$15.351	$11.495	$26.609	**$56.185**
Tennessee	$0.000	$0.012	$0.310	$0.045	$12.090	$1.867	$8.132	**$22.456**
	$0.000	$0.012	$0.525	$0.190	$32.015	$6.689	$21.270	**$60.701**
Texas	$0.000	$0.000	$0.000	$0.000	$1.175	$1.180	$85.330	**$87.685**
	$0.000	$0.000	$0.000	$0.000	$1.300	$1.180	$93.925	**$96.405**
Utah	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	**$0.000**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	**$0.000**
Vermont	$0.000	$0.000	$0.000	$1.950	$3.975	$3.754	$3.332	**$13.011**
	$0.000	$0.000	$0.000	$3.030	$9.205	$7.927	$7.086	**$27.248**
Virginia	$0.286	$0.857	$7.378	$13.467	$26.616	$25.534	$93.631	**$167.769**
	$1.186	$0.857	$7.378	$13.467	$28.302	$29.387	$112.459	**$193.036**
Washington	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$16.620	**$16.620**
	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$31.625	**$31.625**
Wisconsin	$0.000	$0.000	$0.000	$0.000	$0.365	$1.216	$104.036	**$105.617**
	$0.000	$0.000	$0.000	$0.000	$2.650	$8.419	$266.753	**$277.822**
Total Min.	**$3.055**	**$9.050**	**$35.997**	**$83.799**	**$463.780**	**$350.328**	**$1,942.753**	**$2,888.762**
Total Max.	**$6.903**	**$16.200**	**$43.955**	**$93.127**	**$698.327**	**$515.578**	**$3,108.333**	**$4,482.423**

Source: See appendix.

Tables 3 and 4 parse data on the number and minimum and maximum authorized capitalization by corporation type and decade. Bridge, canal, ferry, railroad, and road companies constructed, owned, and operated the type of transportation infrastructure mentioned in their name. Mixed transportation companies constructed, owned, and operated some combination of transportation infrastructure, like a road and bridge, or a railroad and harbor facilities. Mixed commercial companies controlled some transportation infrastructure but also a non-transportation business, such as a bank, insurance company, or manufacturer. Harbor companies controlled some combination of docks, piers, and/or wharves. Waterway improvement companies specialized in clearing waterways, usually rivers but sometimes other bodies of water, and later collecting tolls thereon. Navigation companies transported people and/or freight via water, usually on steamboats but sometimes also via more traditional watercraft. Transportation companies did likewise but by land, typically via stage coach or wagon. All types of transportation corporations were important to the transportation age but the focus of this article will be the four main modes of transportation infrastructure: bridges, canals, toll roads (turnpikes), and railroads.

The tables also show the influence of macroeconomic conditions (down in the 1820s and 40s, up in the 1830s and 50s) but also reveal that toll road and canal companies continued to be built in substantial numbers even as the number of new railroads increased dramatically after 1830. Even in the 1830s, however, most of the new money invested in the transportation sector went to railroads.

Table 3 Number of Specially Incorporated Transportation Companies Chartered by Type and Decade

Company type	1790-1799	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1860	Totals
Bridge	65	89	143	150	320	199	344	**1,310**
Canal	50	25	49	84	86	50	60	**404**
Ferry	0	1	9	12	28	42	73	**165**
Harbor	1	8	14	16	57	25	78	**199**
Mixed commercial	0	1	2	16	74	28	93	**214**
Mixed transportation	1	23	22	30	94	26	225	**421**
Navigation	0	15	86	115	190	135	364	**905**
Railroad	0	0	1	37	714	496	1,255	**2,503**
Road	50	388	464	250	682	858	1,922	**4,614**
Transportation	0	0	2	10	25	8	28	**73**
Totals	**167**	**550**	**792**	**720**	**2,270**	**1,867**	**4,442**	**10,808**

Source: See appendix.

Even if the dollar figures reported in Tables 2 and 4 overestimate total private equity investment in large scale transportation projects by twice their actual extent (see the Appendix for an extended discussion), total private investment exceeded $1 billion and hence was at least several times larger than total expenditures by all levels of government. Before the Civil War, the federal and state governments expended a total of about $187 million on canals, improved rivers, harbors, and roads.[4] Over $130 million of that was spent on the large state-owned canal systems of New York, Pennsylvania, Ohio, Indiana, and Illinois, all of which had to be curtailed, sold, or abandoned in the wake of the panics of 1837 and 1839. Local and state governments also expended about $125 million and $300 million, respectively, on roads and bridges.[5]

[4] Historical Statistics of the United States, “Federal Aid for Internal Improvements”, “State and private investment in canals, by region: 1817-1860”; “Statement of Appropriations and Expenditures for Public Buildings, Rivers and Harbors, Forts, Arsenals, Armories, and Other Public Works from March 4, 1789 to June 30, 1882 (Washington: Government Printing Office, 1882), p. 340; Nelson, “Presidential Influence on the Policy of Internal Improvements”, pp. 3-69; Larson, *Internal Improvement*, p. 191; Malone, *Opening the West*, 17, pp. 121-136.

[5] Durrenberger, *Turnpikes*, 43, p. 139; Goodrich, *Government Promotion;* Bruchey, *Roots*, p. 132; Goodrich, “Internal Improvements

Table 4 Minimum and Maximum Authorized Capitalization (Millions USD) of Specially Chartered Transportation Companies by Type and Decade

Company type	1790-1799	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1860	Totals
Bridge	$0.446	$1.896	$2.921	$1.720	$4.327	$3.969	$18.219	**$33.498**
	$0.730	$2.011	$3.234	$1.833	$5.999	$5.873	$24.621	**$44.301**
Canal	$1.448	$1.380	$6.836	$33.840	$13.855	$13.735	$19.792	**$90.886**
	$3.470	$2.454	$7.783	$37.586	$20.578	$15.685	$65.122	**$152.678**
Ferry	$0.000	$0.000	$0.492	$0.175	$0.710	$2.349	$2.662	**$6.388**
	$0.000	$0.000	$0.575	$0.194	$1.020	$3.186	$5.610	**$10.585**
Harbor	$0.000	$0.000	$0.460	$0.564	$6.219	$2.727	$9.475	**$19.445**
	$0.000	$0.000	$0.460	$0.747	$7.330	$3.862	$12.131	**$24.530**
Mixed commercial	$0.000	$0.000	$1.000	$4.198	$18.204	$16.850	$37.254	**$77.506**
	$0.000	$0.000	$1.000	$4.337	$37.343	$22.330	$55.235	**$120.245**
Mixed transportation	$0.000	$0.110	$1.181	$8.389	$26.688	$22.755	$19.379	**$78.502**
	$0.000	$0.476	$1.976	$8.930	$41.355	$25.305	$39.724	**$117.766**
Navigation	$0.000	$0.069	$6.885	$11.193	$26.977	$15.342	$101.375	**$161.841**
	$0.000	$0.072	$8.922	$13.286	$52.854	$27.535	$143.578	**$246.247**
Railroad	$0.000	$0.000	$0.200	$16.635	$322.893	$240.581	$1,664.180	**$2,244.489**
	$0.000	$0.000	$0.500	$17.515	$473.091	$366.462	$2,661.638	**$3,519.206**
Toll Road	$1.161	$5.595	$15.922	$6.968	$41.579	$31.809	$62.290	**$165.324**
	$2.703	$11.188	$19.405	$8.501	$55.631	$45.158	$86.779	**$229.365**
Transportation	$0.000	$0.000	$0.100	$0.115	$2.325	$0.710	$7.686	**$10.936**
	$0.000	$0.000	$0.100	$0.195	$2.925	$0.710	$13.196	**$17.126**
Total Min.	**$3.055**	**$9.050**	**$35.997**	**$83.797**	**$463.777**	**$350.827**	**$1,942.312**	**$2,888.815**
Total Max.	**$6.903**	**$16.201**	**$43.955**	**$93.124**	**$698.126**	**$516.106**	**$3,107.634**	**$4,482.049**

Source: See appendix.

2. The Rationale for Private Control

What the data presented here suggest is that antebellum Americans preferred to place control over large scale transportation projects in private rather than public hands. That preference apparently was not due primarily to government fiscal incapacity because governments regularly purchased transportation company securities. In other words, governments had funds to invest but did not want to manage projects themselves. Some states, like Virginia, invested in the sector primarily by purchasing shares in corporations and almost all states purchased the securities of at least some of their transportation companies. Numerous cities and counties also subscribed to stock and all told probably contributed more cash to transportation age corporations than state governments did. By some estimates, governments at all levels provided antebellum railroads with between a quarter and a half of their total capital.[6] (Those estimates, however, might overestimate the proportion of government input because the

Reconsidered", p. 297; Dunbar, *A History of Travel*, Vol. 2, pp. 691-740, Vol. 3, pp. 821, 823, 828, 835-839. Roberts, *America's First Great Depression*, pp. 74-76. Fishlow, "Internal Transportation", pp. 478-481. *North Branch Canal*; Stuyvesant, *Memorial of the New York and Erie Railroad*, p. 6.

6 Reed, "Government Investment", pp. 183, 195, 200; A Citizen of Burlington, *Letters to the People of New Jersey*, p. 48; Godman and Roberts, *First Annual Report*, p. 4; Fernon, *Municipal Subscriptions Made by the City of Philadelphia*, 17; *Proceedings of the First Meeting of the Stockholders of the Manasses Gap R. R.*, pp. 36-37; "To the Senate and House of Representatives of the United States in Congress Assembled", Board of Directors' Minutes, 1834-1835, Richmond, Fredericksburg, and Petersburg Records. Bruchey, *Roots*, pp. 134-136; Durrenberger, *Turnpikes*, 102; Dobbin and Dowd, "How Policy Shapes Competition", p. 506; Goodrich, "Internal Improvements Reconsidered", p. 297; Roy, *Socializing Capital*, p. 88.

scholars who made them may have underestimated total railroad capital.[7]) Similarly, several corporate canals, including the Chesapeake and Delaware Canal, the Dismal Swamp Company, the Chesapeake and Ohio Canal Company, and the Louisville and Portland Canal, were at various times mixed enterprises owned partly by the federal government and partly by private investors.[8]

Government purchases of transportation corporation equity, debt, and contingent liabilities stemmed from three main causes: rent-seeking, political opportunism, and a widespread belief in the virtues of limited government. Some transportation companies successfully engaged in rent seeking and extracted unwarranted payments from taxpayers.[9] Those companies, in the words of a contemporary, that suffered "a want of confidence on the part of capitalist, in the feasibility of the enterprise, or in its value as a paying investment, or some other cause", sometimes received funds from pliant politicians,[10] often leading to waste and over building.[11] Virginia's Board of Public Works, for example, appears to have encouraged some projects of marginal value as well as several outright frauds.[12]

In such instances, society would have been better off if the government had allowed the projects to founder rather than investing public money in endeavors that private investors had found too risky to fund. That early capital markets were deficient (any more "imperfect" than capital markets are today or somehow lacking in "capital" as it is often put) is a myth long since exploded. Except in the aftermath of financial panics, projects with a reasonable prospect of economic success (as defined in note 3) were almost always able to obtain funding. For such projects, government backing was superfluous but hardly unknown. Governments that wanted to invest could do so by subscribing to DPOs (direct public offerings of stock) or by purchasing shares in the secondary market (which were ubiquitous at the broker-dealer level long before the dominance of stock exchanges).[13]

Government officials purchased securities even when corporations did not need their support for two major reasons: investment revenue and votes. Early U.S. governments often invested budget surpluses in corporate securities in order to reduce taxes and/or to increase future government expenditures. Officials also used such investments to curry favor with voters interested in banks or infrastructure improvements. If a project went well, politicians could take some credit for the improvement and the revenue stream. If a project failed, they could cast

[7] Regional differences also explain why some contemporaries saw relatively little government involvement in transportation corporations. According to one, "more than 15,000 miles of railroad have been constructed or put in process of construction all over the country, by private enterprise, without one dollar of State aid. Within that time individuals of Massachusetts alone have invested tens of millions of dollars in the construction of new roads, north, south, east and west." Phelps, *Hoosac*, p. 9. In New England and the Midwest, governments invested relatively little in railroads, especially compared to the South, where governments actually did pitch in half. Overall, Fishlow's and Goodrich's estimate of 25 percent is more accurate though probably still too high as, relying on the census, they knew of only about $1 billion of total railroad investment. Fishlow, "Internal Transportation", pp. 495-496; Goodrich, "Internal Improvements Reconsidered", p. 297.

[8] White, *The Jacksonians*, pp. 479-481; Burt, *Report of the Indiana Canal Company*, p. 6. The histories of those early mixed enterprises have generally been ignored, even by students of government corporations like McDiarmid, *Government Corporations*, p. 22.

[9] Instead of working harder and smarter, some companies used valuable resources pleading for government aid on various pretexts. See, for example, Wales and Loring, *Proceedings of the Western Rail-Road*, pp. 5-6; *Report of the Committee Appointed by the Directors of the Winnipiseogee Canal*, p. 12; Dodge, *First Annual Report*, pp. 8-9; Burt, *Report of the Indiana Canal Company*, pp. 19-23; Fernon, *Municipal Subscriptions Made by the City of Philadelphia*, p. 13; Ingersoll, *Argument of Joseph R. Ingersoll*, 13; Stuyvesant, *Memorial of the New York and Erie Railroad*, p. 16; Marsh, *Address of the Directors of the New York and Erie Railroad Company*, p. 7; *Panama Rail Road Company*, pp. 3-4; A Stockholder of the Morris Canal, *A Review by a Stockholder*, 6; Murphy, "Empire State Building", p. 252.

[10] *Hoosac Tunnel*, pp. 3-5; Phelps, *Hoosac*, p. 11.

[11] "Under public capitalization policies [1825-1871], the consensus strategy was to found railroads wherever possible." Dobbin and Dowd, "How Policy Shapes Competition", p. 525. See also Stow, *The Capitalist's Guide*, p. 14.

[12] Larson, *Internal Improvement*, pp. 95-97.

[13] Wright, *Wealth of Nations Rediscovered*; Sylla, "Financial Foundations".

blame on the company. Whenever possible, government officials avoided undertaking projects directly themselves because failure was not easily deflected or hidden.[14]

Also, government officials and their constituents realized that governments were more deficient in managerial expertise and (or) incentives to cut costs than corporate managers were.[15] Transportation construction costs varied over time, over space, by mode, and also within modes, but were always substantial so keeping costs in check was often the difference between success and failure. Early governments often suffered cost overruns because they awarded construction and maintenance contracts to the *lowest* rather than the *best* bidders.[16] "The lowest-bidder system, never worked well," noted a contemporary, because "whenever it has been adopted, it has almost invariably resulted in loss to the commonwealth, by the abandonment of the work."[17] "It has been suggested," another writer explained in 1835, "that the State should take into its own hands the construction of all these works … rail roads, turnpikes, canals, &c. … but … such an idea will be generally rejected" due to "the well known extravagance of government contracts—the abuses of government patronage."[18] Many government transportation infrastructure projects failed financially in part because "questions of State policy, and especially those which pertain to expenditure on the improvements of the commonwealth, are seldom decided upon their merits."[19] Governments, for example, sometimes successfully cleared rivers of obstacles that impeded riverboat traffic but at other times expended considerable sums without making significant progress.[20] Although by no means perfect, corporations were better than governments at developing incentive-compatible contracts and mutually beneficial long-term relationships with contractors and suppliers because infrastructure improvements were made "at immense cost of private wealth, and at the hazard of private fortunes."[21]

Private companies were also generally better than governments at deciding the best routes, technologies, and marketing techniques to use,[22] and were also relatively better at estimating costs and sticking to budgets. In 1846, for example, construction engineer J. B. Francis enlarged a corporate canal in New England at the expense of $500,000, "which hardly exceeded his estimate."[23] Such clear foresight was unusual, as some estimates were too sanguine and others overly conservative, but major cost overruns were less common on private than public projects, many of the largest of which ended badly during the recession that followed the panics of 1837 and 1839.[24]

Pennsylvania, for example, spent some $25 million to connect Philadelphia to Pittsburgh and the northern corners of the state with a hodge-podge of mostly unprofitable railroads and canals that it later sold to private companies.[25] Heavily indebted Ohio also sold off or abandoned most of its portfolio of partially completed improvements. Illinois's state canals were also unprofitable, kept alive financially by rents from a grant of federal

[14] Sylla, Legler, and Wallis, "Banks and State Public Finance".
[15] See, for example, Smith, *A Manual of Political Economy*, pp. 258-259.
[16] Gunn, *Decline of Authority*, 111; Lively, "The American System", pp. 90-91; Taylor, "Turnpike Era", p. 191.
[17] Haupt, *Documents Referring to the Controversy*, p. 15.
[18] A Citizen of New York, *What Is a Monopoly?*, p. 33.
[19] Haupt, *Documents Referring to the Controversy*, p. 11.
[20] Paskoff, *Troubled Waters*; Curtis, *Engineer's Report No. 1*, p. 5.
[21] *Address of the Delaware and Raritan Canal*, p. 5.
[22] For example, several contemporaries argued that "the name of a rail-road should be significant of its route, so as to convey a distinct and correct idea by its name alone". Whittlesey, Scott, and Child, *Report Upon the Tonawanda Rail Road Company*, p. 7. Colton, *Address to the Stockholders of the Vermont and Massachusetts Rail Road.*
[23] Appleton, *Introduction of the Power Loom*, p. 35.
[24] Dunbar, *A History of Travel*, Vol. 2, pp. 691-740, Vol. 3, pp. 821-823; Wright, *Fubarnomics*, pp. 69-82; Ingersoll, *Argument of Joseph R. Ingersoll*, p. 7; Belknap, *Report of the Directors of the Boston Exchange*, p. 19; Dodge, *First Annual Report*, p. 26.
[25] Dunbar, *A History of Travel*, Vol. 3, p. 828; Anon., 1845; Stuyvesant, *Memorial of the New York and Erie Railroad*, p. 6; Fishlow, "Internal Transportation", pp. 478-479; Durrenberger, *Turnpikes*, p. 139.

land. After defaulting on its bonds, Maryland offered to turn over control of its interests in several transportation infrastructure companies to bondholders. Most of the large state-controlled canals had tried to emulate New York's system, which was highly profitable at first because of its reliance on private construction contractors and private bondholders. After its initial success, however, the Erie system also ran into difficulties due to political pressures to build numerous branches of dubious commercial merit. Those and other episodes soured taxpayers on state-controlled transportation improvements and led to a spate of constitutional reforms that restricted the ability of lawmakers to finance large scale projects.[26]

3. Assessing Antebellum Transportation Management

Private control of large scale transportation infrastructure proved an economically and financially viable alternative to government control. Between 1790 and 1860, the largely privately controlled U.S. transportation network became much more efficient as travel times and freight costs plummeted for both short and long hauls and for information, people, bulk goods, and everything in between. The stimulus that cheaper, faster travel provided the economy was palpable and included increased competition between suppliers (which lowered prices for consumers), larger markets (which led to a more refined division of labor), and faster flows of financial, human, and physical capital (which among other benefits sped the economy's ability to adapt to shocks).[27]

Privately controlled modes of transportation tended to be more technologically sophisticated than their government controlled counterparts. Toll road companies, not governments, were the primary forces behind new road construction technologies, including gravel, macadamized, and plank roads (which despite their bad reputation worked well in some circumstances).[28] The general consensus of both contemporaries and historians was that the median public road was inferior to corporate toll roads, if only because the latter were maintained with more care.[29] The "badness" of most government roads was so notorious that some claimed that they actually impeded commerce and contemporaries typically described them as horrid, abominable, nauseating, painful, dusty, rocky, and rough.[30] Travelling via toll road became faster than previously but modest by modern standards: as a general rule, twenty miles a day for a loaded wagon was considered good and thirty extraordinary, achievable only in daylight with ideal weather conditions on straight, flat roads and with a skilled driver and team. Traveling too fast for conditions quickly threatened life and limb as well as cargo.[31]

---

[26] Dunbar, *A History of Travel*, Vol. 3, No. 2, pp. 821, 835-839; Fishlow, "Internal Transportation", pp. 480-481; Roberts, *America's First Great Depression*, pp. 74-76; Scheiber, "The Transportation Revolution and American Law", pp. 20-21; Durrenberger, *Turnpikes*, p. 101.

[27] Not all of the improvements were made by corporations but most were private nonetheless. Corporations owned many steamboats, especially the coastal ones, but others were owned by limited liability partnerships, general partnerships, or sole proprietors. A reader of an earlier draft of this article suggested that public improvements may have accounted for the bulk of the increased efficiency. I think that a network approach is more realistic so the question is who provided the bulk of the nodes. The state-owned Erie Canal was an important trunk, for example, but only because it was fed by numerous commercial tributaries, most of which were privately controlled.

[28] "The First Plank Road", Trenton *State Gazette* (22 July 1850), p. 2; Durrenberger, *Turnpikes*, pp. 144-152; Taylor, "The Turnpike Era in New England", pp. 325-328; Wood, *Turnpikes of New England*, pp. 14-16. But see also Klein and Majewski, "Plank Road Fever".

[29] Many were paved but in some places, like New Jersey, they were left unpaved. Nevertheless, they were better maintained than government roads. Durrenberger, *Turnpikes*, p. 95. But in New England and elsewhere, "the turnpike roads were to be better by far than their predecessors." Taylor, "The Turnpike Era in New England", pp. 169, 183-185.

[30] Shirley, "Fourth New Hampshire Turnpike", pp. 221-222; Opal, *Beyond the Farm*, p. 56; Diary of Blair Bolling, Volume 3, 1838-1839, pp. 32-33; Durrenberger, *Turnpikes*, pp. 26-44; Keyser, "Early Transportation to Germantown", p. 42.

[31] Paskoff, *Industrial Evolution*, pp. 45-49; Diary of Blair Bolling, Volume 2, 1822, p. 3; Durrenberger, *Turnpikes*, p. 118; Diary of Blair Bolling, Volume 1, 1810-1837, pp. 46-47.

Most government controlled bridges were trivial affairs while almost all of the great bridges over the Charles, Delaware, Susquehanna, Schuylkill, and Potomac Rivers, as well as many more modest but still substantial structures, were the work of corporations. Travelers often remarked favorably on the nation's "handsome" bridges, many of which were "covered at the top, and left open at the sides".[32] By the mid-1830s, "every stream that is to be passed from Philadelphia to Jersey City" was "covered with a well constructed bridge, which ice cannot harm, and which tempests cannot be expected to destroy".[33] Railroads, the vast majority of which were privately controlled, vigorously competed with each other as well as with rival transportation modes. Unsurprisingly, they were also technologically innovative.[34]

Although investors in transportation corporations typically understood the indirect benefits that their shares help to purchase, like social harmony, increased land values,[35] lucrative construction contracts,[36] and free or subsidized travel, most were also, if not primarily, motivated by the prospect of pecuniary gain in the form of dividends or share price appreciation.[37] Financial returns were rarely spectacular and often disappointing but not so low that well-conceived and managed transportation projects experienced difficulty raising funds in non-panic periods. Average risk-adjusted returns for transportation corporation investors were not as bad as some scholars have painted them. By 1831, for example, Virginia's Board of Public Works had purchased about $2.1 million worth of transportation corporation securities. About $475,000 of its investment was "at present unproductive" but the rest generated annual income of almost $122,000, a return of roughly 5.8 percent on the entire sum invested.[38] Although slightly less than the traditional 6 percent benchmark, the state's investment was less risky than most as it was well-collateralized with tangible assets of considerable value, including completed or partial bridges, canals, and toll roads.[39]

Returns of course varied from company to company and market to market but ultimately were bound by the nature of the different transportation modes then available. Bridges and railroads were, ceteris paribus, more remunerative than canals, which in turn were more profitable than toll roads. Managers of toll roads were not necessarily less skilled than those of canals, bridges, or railroads but rather faced a more challenging set of

[32] An English Gentleman, *An Excursion*, p. 17. See also the Diary of Blair Bolling, Volume 3, 1838-1839, p. 31 and Durrenberger, *Turnpikes*, p. 92.

[33] Ingersoll, *Argument of Joseph R. Ingersoll*, p. 9.

[34] Robinson, *First Annual Report of the President and Managers*, p. 22; West, *Two Hundred Years*, p. 53; Dunbar, *A History of Travel*, Vol. 3, 1044-1045; Swift and Hale, *Report on the Present State*, pp. 25-26; A Stockholder of the Morris Canal, *A Review by a Stockholder*, p. 7. See also Tanner, *A Description of the Canals and Rail Roads*, p. 25; Davis, Schuyler, Binney, and Lee, *Report of a Committee of Investigation*, pp. 23-25.

[35] The Grand Canal was said to have increased real estate values in New York by $100 million. *Report of the Grantees of the Nashua and Lowell Rail Road*, p. 13. See also *Report of the Directors to the Stockholders of the Illinois Central*, p. 27; *Annual Report of the South-Carolina Canal and Rail Road*, p. 15.

[36] Boorman, *Communications*, p. 8; Dunbar, *A History of Travel*, Vol. 3, p. 1100.

[37] Investing for both personal and social reasons was not contradictory or unusual. "The chief inducement with most of the undertakers was the advancement of their own interest," one railroad promoter admitted in 1838, "yet very many of them were greatly influenced by the hope of thereby promoting the prosperity of the country." *Substance of Argument*, p. 7. "Cope combined personal financial interest with a genuine concern for the improvement of Philadelphia's commerce." Harrison, *Philadelphia Merchant*, ix. Turnpike promoter Fisher Ames reassured investor Benjamin Goodhue in 1802, for example, that "the stock will rise above par", adding that it was "easy to procure adventurers". He later told Goodhue that "the stock promises fair, and will be productive after the first year or two". If extended all the way to Boston, Ames added, "the property will be good and even if it is not …, I think it cannot be very bad." In yet another letter, Ames told Goodhue that the "property will prove profitable" because "the intercourse is great and growing, and the Directors who superintend the work are good men who neither neglect it nor suffer the money to be wasted." Fisher Ames to Benjamin Goodhue, 29 May, 10 June, 14 August 1802, in Ames and Allen, *Works of Fisher Ames*, Vol. 2, 1430-1433.

[38] "Internal Improvement," *American Almanac* (1831), pp. 222-223.

[39] *Report Made to the President and Directors of the Albany and Schenectady Turnpike Company.*

constraints: tolls were more difficult to collect on land, over large distances (compared to bridges, canals, and railroads); turnpikes provided only a right of way (unlike railroads which were also common carriers); toll road companies faced adverse selection (they were used most frequently during the worst weather and when wagons were most heavily laden[40]).

In the words of one researcher, toll roads were "very unprofitable"[41] and according to another "the stock of such companies [was] all but worthless".[42] Such scholars explain that stock subscription books filled because stockholders expected to be compensated by rising land prices and direct use of the improved road itself. Free riding (not buying a share but gaining the benefits of the road) was minimized by boosterism and social pressure (like the fear of ostracism in small communities).[43] Such forces certainly spurred demand but more ordinary incentives were present, too.

Not all toll roads, it turns out, were financial fiascos. The Philadelphia and Lancaster Road, for example, returned 3 to 4 percent on average.[44] The Trenton and New Brunswick Turnpike returned 6 percent before a competing railroad took control of the market. New Jersey's Red Bank and Woodbury Turnpike Company recouped the cost of its road in its first two years, at the end of which it declared a two percent dividend. It accurately predicted its early toll revenues and, like other well managed toll road companies, it eagerly sought out ferry and other connections to increase traffic. It was still in business and paying taxes in the 1880s. Many of Pennsylvania's early roads were said to "give stockholders six percent; some have divided as high as eight."[45] Between 1820 and 1840, the Fourth New Hampshire Turnpike annually paid $4.55 on average for each $100 share and even in the recession year of 1838, when it paid no dividends, its revenues exceeded its expenditures. By the mid-1840s, 18,000 tons of freight annually traversed it. The Baltimore and York, by contrast, typically paid only in the vicinity of 3 percent. Virginia's Alleghany Turnpike Company appears to have been profitable in 1828-1829, when its tolls totaled $1,031.105 (yes, a half penny) and its expenditures amounted to only $563.50.[46] The Berryville and Charlestown Turnpike remained operational until at least the late 1870s and the Valley Turnpike of Virginia, which was chartered in 1817, survived until at least 1862. In some states, new toll roads continued to be chartered into the 1870s. In the 1880s, 400 to 600 toll roads were still in operation.[47] Over 100 toll roads survived into the early twentieth century before falling into the government's hands.[48]

Contemporary newspaper reports, advertisements, and price currents also support the claim that some toll roads paid dividends.[49] So, too, do tax records.[50] None of this is to say that toll roads were great investments,

---

40 Durrenberger, *Turnpikes*, pp. 78, 110-111; *Executive Communication*, pp. 5-6, 29.
41 Klein, "The Voluntary Provision of Public Goods?", pp. 788-812; Majewski, *A House Dividing*, p. 55.
42 Durrenberger, *Turnpikes*, p. 109. See also Cadman, *The Corporation in New Jersey*, p. 396 and Fishlow, "Internal Transportation", p. 474.
43 Klein and Majewski, "Economy, Community and Law".
44 Fishlow, "Internal Transportation", p. 474.
45 Shirley, "Fourth New Hampshire Turnpike", pp. 428-429, 448, 453; "Red Bank and Woodbury Turnpike Company", Trenton *State Gazette* (17 January 1850), p. 1; *Report of the Joint Committee on Treasurer's Accounts to the Legislature of New Jersey*, pp. 22, 30; Breck, *Sketch of the Internal Improvements*, p. 11.
46 Ingersoll, *Argument of Joseph R. Ingersoll*, p. 5; Haddock, *Address of the Northern Rail Road*, p. 7; Bruchey and Bruchey, *Money and Banking in Maryland*, p. 21; *Executive Communication*, pp. 27-28, 45; Alleghany Mountain Road Accounts, 1828-1836.
47 Klein and Majewski, "America's Toll Road Heritage".
48 Berryville and Charleston Turnpike Company Records; John W. Rice Account Books, 1857-1866; Durrenberger, *Turnpikes*, pp. 154, 164; Dunbar, *A History of Travel*, Vol. 1, No. 2, p. 322; Taylor, "The Turnpike Era in New England", pp. 321-325, 357-360; Wood, *Turnpikes of New England*, p. 12.
49 Richard Sylla, Jack Wilson, and Robert E. Wright, "Early U.S. Securities Prices".
50 See, for example, "Report of Taxes Due on Dividends".

even by the standards of the day, simply that outcomes were variegated as one would expect to see in a competitive market. In 1819, for example, attorney Ferris Pell noted that turnpike owners "were *generally* sufferers" but like other types of businesses, toll roads were sometimes successful, sometimes not, and sometimes roller coasters that started badly but ended well (or that started well only to end badly).[51] After an expensive and shaky start, the Baltimore to Reistertown Turnpike began to pay 6 percent dividends starting in the latter part of the War of 1812 on the strength of toll revenue three times greater than expenses. Similarly, the Louisville Turnpike nearly failed early on but later reorganized and rallied enough to pay 5 percent annual dividends and survive well into the postbellum period. (It may have survived because its stock was much more closely held than the stock of most toll roads. Men who invested many thousands of dollars in the road had a strong incentive to see it thrive.[52])

Although low by today's standards, expected returns on toll roads were competitive with other investments once the low risk of their physical destruction was accounted for. According to a contemporary "average dividends have not exceeded four and a half dollars on the hundred" in early New York toll roads, but that was slightly superior to the return on Manhattan real estate and twice the average return on common agricultural pursuits.[53] The same commentator argued that toll roads returned less than mercantile activities, banks, and insurers but also exposed investors to less risk.[54] Like the national debt, toll roads were impervious to most physical threats so "the safety of the capital can only be endangered by the pillage of a public enemy."[55] In other words, contemporaries believed that turnpike stock was "safe" even if toll road companies paid low dividends because the road right of way was a valuable and virtually indestructible form of collateral securing the capital stock. As a general rule, such investors overestimated the value of the collateral, but that became clear only later in the period as toll roads failed and escheated to the state.

Those caveats aside, it is clear that toll roads were the least lucrative form of internal improvement infrastructure. Bridges, canals, and railroads all returned substantially more on average, even accounting for the somewhat greater physical risks that they faced. Notwithstanding the expense of long spans, stone piers, wooden coverings, glazed windows, and so forth, many toll bridges paid dividends of six percent and better. The Stanislaus Bridge and Ferry Company of California, for example, was in "a highly prosperous condition" in 1860, its bridge, foot bridge, ferry, and toll roads together earning enough over maintenance costs to pay almost $11,000 in dividends on a paid-in capital of only $48,000.[56] The Trenton City Bridge Company paid a dividend of 8 percent in 1850. Soon thereafter, 300 of its $25 par shares traded at $50.50 to $51 on the Philadelphia Stock Exchange.[57]

Some canals returned "nearly six percent" while others "scarcely defray[ed] their ordinary expenses".[58] Some companies, like the Schuylkill Navigation Company, experienced both good and bad eras. Others were

---

[51] Pell, *Review of the Administration,* p. 30; Durrenberger, *Turnpikes*, pp. 112-115; Taylor, "The Turnpike Era in New England", pp. 271-274.
[52] Louisville Turnpike Co. Journal and Minutes, 1818-1886.
[53] *A Citizen*: *Observations on the Real*, pp. 7, 17.
[54] *A Citizen*: *Observations on the Real*, pp. 18-19; *Executive Communication to the General Assembly of Maryland*, pp. 4-5.
[55] *A Citizen: Observations on the Real*, p. 18.
[56] *Philadelphia Gazette* (28 May 1800), p. 3; Breck, *Sketch of the Internal Improvements*, pp. 11-13; "Stanislaus Bridge and Ferry Company," (Stockton, CA) *Weekly San Joaquin Republican* (28 January 1860), p. 4.
[57] "On a Bill Filed in Chancery," Trenton *State Gazette* (27 February 1850), p. 2; "The Bill Appointing Receivers", Trenton *State Gazette* (20 May 1850), p. 3; "The Receivers", Trenton *State Gazette* (9 July 1850), p. 3; "The Trenton Delaware Bridge", Trenton *State Gazette* (3 April 1850), p. 3; "At the Philadelphia Exchange", Trenton *State Gazette* (18 April 1850), p. 3.
[58] Tanner, *A Description of the Canals and Rail Roads*, p. 22. Sanderlin, *The Great National Project*, p. 46.

fairly steady. Virginia's Upper Appomattox Company, for example, paid dividends of $8 per share (8%) in 1842, a recession year, and $10 per year for a decade thereafter, when the dividend was cut back to $8 due to extraordinary repair costs for its locks. It survived at least into the 1870s, perhaps because it retained considerable discretion over its toll structure, with which it often tinkered.[59]

Railroad dividends averaged 5.5 percent in 1839, a good return given the deepening recession. By the late 1840s, solid economic growth and overall railroad profitability spurred a major growth boom, with mileage increasing from 7,000 to over 30,000 miles between 1849 and 1860. Bonds helped to finance that spurt to the point that by the Civil War only New England railroads had more stock than bonds outstanding. Much of the bond financing came from abroad, some in dollar and some in sterling denominated issues. In 1850, for instance, the Camden and Amboy Railroad issued $800,000 worth of 6 percent coupon bonds, £210,000 of 5 percents, and £250,000 of 6 percents. At first such bonds were sold through Philadelphia brokers like Thomas Biddle and Company but after the demise of the Bank of the United States most of the business drifted to Boston before settling on Wall Street in the 1850s. Preferred shares, or hybrid debt and equity instruments that lacked voting privileges so long as guaranteed dividends were met, were another financial innovation that induced foreign and domestic investors to finance the railroad boom of the 1850s.[60]

4. Conclusions

Before the Civil War, many Americans adored the Constitution and other republican institutions but disdained or feared for-profit corporations. Yet, the country's transportation networks were largely privately controlled as evidenced by the fact that equity investment in transportation corporations outstripped government transportation expenditures by as much as an order of magnitude. Private control predominated because the consensus view held, particularly after the state canal crisis of the late 1830s, that private managers had better incentives to reduce costs than government officials did. Private management was clearly imperfect as many of the 10,000 plus transportation corporations charted by early entrepreneurs failed to form or soon went bankrupt due to mismanagement or poor governance, hurting their shareholders and creditors in the process. Many other corporations, however, performed well financially and helped to build and maintain transportation networks that greatly improved economic efficiency by reducing travel times and costs. Overall, then, private control of transportation infrastructure proved suboptimal but preferable to government control.

References:

American Almanac, 1831.

A Citizen (1806). *Observations on the Real, Relative and Market Value of the Turnpike Stock of the State of New York*, New York: S. Gould.

A Citizen of Burlington (1848). *Letters to the People of New Jersey on the Frauds Extortions, and Oppressions of the Railroad Monopoly*, Philadelphia: Carey and Hart.

---

[59] *Schuylkill Navigation Company*; Fishlow, "Internal Transportation", p. 481; Sanderlin, *The Great National Project*, p. 46; Upper Appomattox Company Minute Book, 1842-1872, pp. 2, 6, 42, 53-56.

[60] Dodge, *First Annual Report*, p. 6; Robinson, *First Annual Report of the President and Managers of the Philipsburg and Juniata Rail Road*; Staten Island Railroad, *Reports of the Committee and Engineer*, p. 11; Dunbar, *A History of Travel*, Vol. 4, 1389-1392; Johnson, *Engineer's Report on the New York and Boston Railroad*, p. 56; Kennedy, *Address of the President and Directors of the Northern Central Railway*, pp. 13-14; *Proceedings of a Meeting of Representatives*, pp. 14-16; Tanner, *A Description of the Canals and Rail Roads*, p. 22; Chandler, "Patterns of American Railroad Finance", pp. 248-263; Evans, *Fortune's Epitome of the Stocks*, p. 251; Spackman, *Statistical Tables*, p. 71; Evans, *British Corporation Finance*, pp. 6, 73.

A Citizen of New York (1835). *What Is a Monopoly? Or Some Considerations upon the Subject of Corporations and Currency*, New York: George P. Scott & Co..

(1848). *Address of the Delaware and Raritan Canal and Camden and Amboy Railroad Companies to the People of New Jersey,* Trenton: Sherman and Harron.

A Stockholder of the Morris Canal. *A Review by a Stockholder of the Morris Canal of the "Views of a Stockholder, in Relation to the Delaware and Hudson Canal Company."* Jersey City, N.J.: E. B. Spooner, 1831.

Alleghany Mountain Road Accounts. Virginia Historical Society. Richmond, Va.

Ames Seth and Allen W. B. (Eds.) (1983). *Works of Fisher Ames,* 2 Vols. Indianapolis, Ind.: Liberty Fund.

An English Gentleman. *An Excursion through the United States and Canada during the Years 1822-23*, New York: Negro Universities Press.

Annual Report of the South-Carolina Canal and Rail Road Company, by the Direction, Charleston, S.C.: Irishman & Democrat, 1831.

Appleton Nathan (1858). *Introduction of the Power Loom and Origin of Lowell*, Lowell, Mass.: B. H. Penhallow.

Berryville and Charleston Turnpike Company Records. Virginia Historical Society. Richmond, Va.

Board of Directors' Minutes. Richmond, Fredericksburg, and Petersburg Records. Virginia Historical Society. Richmond, Va.

Belknap A. E. (1843). *Report of the Directors of the Boston Exchange Company*, Boston: S. N. Dickinson.

Bird H. D. (1845). *Comparison of the Petersburg and Roanoke Railroad Company with the Richmond, Fredericksburg and Potomac Railroad Company*, Petersburg, Va..

Boorman James (1849). *Communications from James Boorman to the Stockholders of the Hudson River Railroad Company in Reply to Mr. A. C. Flagg, Late President of That Company,* New York: Wm. C. Bryant & Co..

Breck Samuel (1818). *Sketch of the Internal Improvements Already Made by Pennsylvania*, Philadelphia: J. Maxwell.

Burt John S. G. (1856). *Report of the Indiana Canal Company on the Improvement of the Falls of the Ohio*, Cincinnati: T. Wrightson & Co..

Bruchey Stuart (1965). *The Roots of American Economic Growth*, New York: Harper & Row, 1965.

Bruchey Stuart and Eleanor Bruchey (1996). *Money and Banking in Maryland: A Brief History of Commercial Banking in the Old Line State*, Baltimore: Maryland Historical Society.

Cadman John (1949). *The Corporation in New Jersey: Business and Politics, 1791-1875*, Cambridge: Harvard University Press, 1949.

Chandler Alfred D. (1954). "Patterns of American railroad finance, 1830-50", *Business History*, Vol. 28.

Colton Richard (1846). *Address to the Stockholders of the Vermont and Massachusetts Rail Road Company, Issued by the Convention Held at Montague*, Brattleboro: Wm. E. Ryther.

Craig's Creek Company, Allen Family Papers. Virginia Historical Society. Richmond, Va.

Curtis Samuel (1849). *Engineer's Report No. 1 to the Directors of the Navigation and Hydraulic Company of the Mississippi Rapids*, Cincinnati: George W. Tagart.

Davis John, Robert Schuyler, Amos Binney and W. Raymond Lee (1846). *Report of a Committee of Investigation into the Affairs of the Philadelphia and Reading Rail Road Company*, Boston: Eastburn's Press.

Diary of Blair Bolling. Virginia Historical Society. Richmond, Va.

Dodge Francis (1854). *First Annual Report of the President and Directors to the Stockholders of the Metropolitan Railroad Company*, Georgetown: A. L. Settle.

Dobbin Frank and Timothy Dowd (September 1997). "How policy shapes competition: Early railroad foundings in Massachusetts", *Administrative Science Quarterly*, Vol. 42.

Dunbar Seymour (1915). *A History of Travel in America*, 4 Vols., Indianapolis: Bobbs-Merrill.

Durrenberger Joseph (1931, 1968). *Turnpikes: A Study of the Toll Road Movement in the Middle Atlantic States and Maryland*, Cos Cob, Conn.: John E. Edwards.

Evans D. Morier (1850). *Fortune's Epitome of the Stocks and Public Funds, English, Foreign and American* (15th ed.), London: Letts, Son, and Steer.

Executive Communication to the General Assembly of Maryland … On the Subject of Turnpike Roads, Annapolis: Jehu Chandler, 1819.

Evans George Heberton (1936). *British Corporation Finance, 1775-1850: A Study of Preference Shares*, Baltimore: Johns Hopkins Press.

Fishlow Albert (1972). "Internal transportation", in: Lance Davis et al., *American Economic Growth: An Economist's History of the*

United States, New York: Harper & Row.

Fernon Thomas (1854). *Municipal Subscriptions Made by the City of Philadelphia and the Incorporated Districts of Spring Garden, Richmond, and the Northern Liberties in the County of Philadelphia to the Capital Stock of the North Pennsylvania Rail Road Company*, Philadelphia: Crissy & Markley.

Gilpin Joshua (1926). "Journal of a tour from Philadelphia thro the western counties of Pennsylvania in the months of September and October, 1809", *Pennsylvania Magazine of History and Biography*, Vol. 50, No. 1.

Goodrich Carter (June 1970). "Internal improvements reconsidered", *Journal of Economic History*, Vol. 30, No. 2.

Goodrich Carter (1960). *Government Promotion of American Canals and Railroads*, New York: Columbia University Press.

Gunn L. Ray (1988). *The Decline of Authority: Public Economic Policy and Political Development in New York, 1800-1860*, Ithaca: Cornell University Press.

Harrison Eliza Cope (Ed.) (1978). *Philadelphia Merchant: The Diary of Thomas P. Cope, 1800-1851*, South Bend, Ind.: Gateway Editions.

Haddock Charles B. (1845). *Address of the Northern Rail Road Company to the Friends of Internal Improvement in New Hampshire*, Hanover: Hanover Press.

Haupt Herman (1852). *Documents Referring to the Controversy Between the Canal Commissioners of the State of Pennsylvania and the Harrisburg and Lancaster and the Pennsylvania Railroad Companies with Remarks Upon the Relative Position of the State Improvements and the Pennsylvania Railroad*, Philadelphia: T. K. and P. G. Collins.

Hoosac Tunnel: The Memorial of the Western Railroad Corporation, Boston: Eastburn's Press, 1853.

Ingersoll Joseph R. (1834). *Argument of Joseph R. Ingersoll, Esq. Before the General Assembly of New Jersey on the Memorial of the Trenton and New Brunswick Turnpike Company for the Amendment of Their Charter*, Philadelphia.

Johnson Edwin F. (1847). *Engineer's Report on the New York and Boston Railroad*, Middletown, Conn.: Charles Pelton.

John W. Rice Account Books. Virginia Historical Society. Richmond, Va.

Kennedy John P. (1855). *Address of the President and Directors of the Northern Central Railway Company to the Stockholders*, Baltimore: John Murphy & Co..

Keyser Naaman (1902). "Early transportation to germantown", *Germantown History*.

Klein Daniel (October 1990). "The voluntary provision of public goods? The Turnpike companies of early America", *Economic Inquiry*, Vol. 28.

Klein Daniel and John Majewski (Fall 1992). "Economy, community and law: The Turnpike Movement in New York, 1797-1845", *Law & Society Review*, Vol. 26, No. 3.

Klein Daniel and John Majewski (1994). "Plank road fever in Antebellum America", *New York History*.

Klein Daniel and John Majewski (2006). "America's toll roads heritage: The achievements of private initiative in the 19th century", in: G. Roth (Ed.), *Street Smart: Competition, Entrepreneurship, and the Future of Roads*, New Brunswick: Transaction Publishers.

Larson John Lauritz (2001). *Internal Improvement: National Public Works and the Promise of Popular Government in the Early United States*, Chapel Hill: University of North Carolina Press.

Lively Robert (1955). "The American system: A review article", *Business History Review*, Vol. 29, No. 1.

Louisville Turnpike Co. Journal and Minutes. Filson Historical Society. Louisville, Ky.

Maier Pauline (1993). "The revolutionary origins of the American corporation", *William and Mary Quarterly*, Vol. 50, No. 1.

Marsh Nathaniel (1850). *Address of the Directors of the New York and Erie Railroad Company to the Stockholders*, New York: Snowden's Printing Establishment.

Murphy Brian P. (2008). "Empire state building: Interests, institutions, and the formation of states and parties in New York, 1783-1845", Ph.D. diss., University of Virginia.

Majewski John (2000). *A House Dividing: Economic Development in Pennsylvania and Virginia before the Civil War*, New York: Cambridge University Press.

Malone Laurence J. (1998). *Opening the West: Federal Internal Improvements before 1860*, Westport, Conn.: Greenwood Press.

McDiarmid John (1938). *Government Corporations and Federal Funds*, Chicago: University of Chicago Press.

Nelson E. C. (1906). "Presidential influence on the policy of internal improvements", *Iowa Journal of History and Politics*, p. 4.

North Branch Canal Company; Its Prospects, and Its Laws of Incorporation, Philadelphia, 1845.

Opal J. M. (2008). *Beyond the Farm: National Ambitions in Rural New England*, Philadelphia: University of Pennsylvania Press.

Paskoff Paul (1983). *Industrial Evolution: Organization, Structure, and Growth of the Pennsylvania Iron Industry, 1750-1860*, Baltimore: Johns Hopkins University Press.

Paskoff Paul (2007). *Troubled Waters: Steamboat Disasters, River Improvements, and American Public Policy, 1821-1860,* Baton Rouge: Louisiana State University Press.

Panama Rail Road Company, New York: Van Norden & Amerman, 1849.

Pell Ferris (1819). *Review of the Administration and Civil Police of the State of New York*, New York: E. Conrad.

Phelps Ansel (1853). *Hoosac Tunnel*, Boston: Eastburn's Press, 1853.

Proceedings of a Meeting of Representatives of the Several Railroad Companies Between New York, Boston, Philadelphia and Baltimore, Chicago, Cincinnati, and the Ohio and Mississippi Rivers, Cleveland, November 28th, 1854.

Proceedings of the First Meeting of the Stockholders of the Manasses Gap R. R. Company, Alexandria: Alexandria Gazette Office, 1850.

Philadelphia Gazette, 1800.

Philadelphia *North American*, 1850.

Scheiber Harry (1982). "The transportation revolution and American law: Constitutionalism and public policy", in: *Transportation and the Early Nation*, Indianapolis: Indiana Historical Society.

Shirley John (October 1881). "The fourth new Hampshire Turnpike", *Granite Monthly*, Vol. 4.

Sylla Richard (2011). "Financial foundations: Public credit, the national bank, and securities markets", in: Douglas Irwin & Richard Sylla (Eds.), *Founding Choices: American Economic Policy in the 1790s*, Chicago: University of Chicago Press.

Sylla Richard, John B. Legler and John J. Wallis (June 1987). "Banks and state public finance in the new republic: The United States, 1790-1860", *Journal of Economic History*, Vol. 47, No. 2.

Reed Merl (May 1962). "Government investment and economic growth: Louisiana's Ante bellum railroads", *Journal of Southern History*, Vol. 28, No. 2.

Report Made to the President and Directors of the Albany and Schenectady Turnpike Company upon Laying a Rail Road upon Their Turnpike, August, 1831.

Report of the Committee Appointed by the Directors of the Winnipiseogee Canal to Prepare a Statement of Such Facts and Circumstances, in Relation to the Proposed Canal, as They Might Deem Proper to be Laid Before the Publick, Dover, N.H.: J. Dickman, 1826.

Report of the Committee on Tolls to the Board of Managers of the Schuylkill Navigation Company, Philadelphia: C. Sherman, 1847.

Report of the Directors to the Stockholders of the Illinois Central Railroad Company, New York: Geo. Scott Roe, 1854.

Report of the Grantees of the Nashua and Lowell Rail Road Corporation, Nashua: Alfred Beard, 1836.

Report of the Joint Committee on Treasurer's Accounts to the Legislature of New Jersey, Trenton, NJ: John L. Murphy, 1884.

Report of Taxes Due on Dividends, Auditor of Public Accounts, Record Group 48, Library of Virginia. Richmond, Va.

Robinson Moncure (1833). *First Annual Report of the President and Managers of the Philipsburg and Juniata Rail Road Company to the Stockholders*, New York: G. F. Hopkins & Son.

Roberts, Alasdair (2012). *America's First Great Depression: Economic Crisis and Political Disorder after the Panic of 1837,* Ithaca: Cornell University Press.

Roy William G. (1997). *Socializing Capital: The Rise of the Large Industrial Corporation in America,* Princeton: Princeton University Press.

Richmond Enquirer, 1834.

Schuylkill Navigation Company, Philadelphia: Crissy & Markley, 1852.

Smith Erasmus (1853). *A Manual of Political Economy*, New York.

Spackman William (1842). *Statistical Tables of the Agriculture, Shipping, Colonies, Manufactures, Commerce, and Population of the United Kingdom of Great Britain and Its Dependencies*, London: Longman and Col..

Staten Island Railroad (1852). *Reports of the Committee and Engineer to the President and Directors of the Staten Island Railroad Company Embracing Surveys and Estimates*, New York: Baker, Godwin & Co..

Stow F. H. (1859). *The Capitalist's Guide and Railway Annual for 1859,* New York: Samuel T. Callahan.

Stuyvesant Peter G. (1837). *Memorial of the New York and Erie Railroad Company to the Legislature of the State of New York*, New York: G. P. Scott and Co..

Substance of Argument of Respondents' Counsel on the Application of the Seekonk Branch Rail Road Company to the Committee of the Legislature, to Run Locomotive Engines on the Providence and Worcester Rail Roads and Through the Worcester Merchandize Depot, Boston: John H. Eastburn, 1838.

Swift William H. and Nathan Hale (1846). *Report on the Present State of the Chesapeake and Ohio Canal*, Boston: Dutton and Wentworth.

(Stockton, Cali.) *Weekly San Joaquin Republican*, 1860.

Sanderlin Walter (1946). *The Great National Project: A History of the Chesapeake and Ohio Canal*, Baltimore: Johns Hopkins University Press.

Sylla Richard, Jack Wilson and Robert E. Wright. "America's first securities markets: 1787-1836—Emergence, development, integration", NSF grant SES-9730692, "Early U.S. Securities Prices", available online at: http://eh.net/databases/early-us-securities-prices.

Sylla Richard and Robert E. Wright, "U.S. corporate development: 1801-1860", NSF grant SES-0751577, available as an Excel file from Wright on request.

Taylor George Rogers (1951). *The Transportation Revolution, 1815-1860*, New York: Harper & Row.

Taylor Philip Elbert (1934). "The Turnpike Era in New England", Ph.D. diss., Yale University.

Tanner H. S. (1840). *A Description of the Canals and Rail Roads of the United States, Comprehending Notices of All the Works of Internal Improvement Throughout the Several States*, New York: T. R. Tanner and J. Disturnell.

Trenton *State Gazette*, 1850.

Upper Appomattox Company Minute Book. Virginia Historical Society. Richmond, Va.

Wales Thomas B. and Ellis Gray Loring (1837). *Proceedings of the Western Rail-Road Corporation*, Boston: Dutton and Wentworth.

Whittlesey Frederick, David Scott and Jonathan Child (1837). *Report Upon the Tonawanda Rail Road Company, Exhibiting its Present Situation and Future Prospects*, Rochester, N.Y.: William Alling & Co..

West Harold (1965). *Two Hundred Years, 1764-1964: The Story of Yarnall, Biddle & Co. Investment Bankers*, Philadelphia: Yarnall, Biddle & Co..

White Leonard (1954). *The Jacksonians: A Study in Administrative History, 1829-1861*, New York: Macmillan Co..

Wood Frederic J. (1997). *The Turnpikes of New England*, Pepperell, Mass.: Branch Line Press, 1997 reprint of 1919 ed.

Wood Gordon S. (1969). *The Creation of the American Republic, 1776-1787*, Chapel Hill: University of North Carolina Press.

Wright Robert (2002). *The Wealth of Nations Rediscovered: Integration and Expansion in American Financial Markets, 1780-1850*, New York: Cambridge University Press.

Wright Robert (2010). *Fubarnomics: A Lighthearted, Serious Look at America's Economic Ills*, Buffalo: Prometheus.

Appendix: Notes on the Numbers

The data presented here stem from Richard Sylla and Robert E. Wright, "U.S. Corporate Development, 1801-1860," NSF grant 0751577. That multiyear project coded the name, location, type, capitalization, and other variables of all specially incorporated business corporate charters in all states and territories from the colonial period to the outbreak of the Civil War. The full corporation charter database in Excel format is available from Wright upon request.

Like all data built from original sources, the data on incorporation activity presented here is imperfect and the imperfections need to be fully understood before the numbers can be used responsibly. On the one hand, the tables underestimate the number and capitalization of transportation companies because they contain only special charters and some states, like Iowa, Connecticut, and Ohio, enacted general incorporation laws that allowed transportation companies to obtain charters quickly and easily. Furthermore, the authorized capitalizations of about 15 percent of transportation corporations were not specified in their charters and were coded as zero, undoubtedly an underestimate. Adjustments in authorized capitalization also took place after chartering but on net they added to total capital, again pointing to the conservative nature of the figures.

On the other hand, not all transportation corporations that received special charters formed, successfully raised their minimum authorized capital, or completed the infrastructure improvements they promised to, so the tables to some extent overestimate the number and capitalization of transportation corporations. Ascertaining the precise number of corporations that failed to perform would require extensive additional research because exits were not usually recorded in the legislative record. Some round estimates, however, have been made. In Pennsylvania, only 58 percent (84 of 146) of the toll road companies chartered before 1821 actually began operations. (That those companies completed 72 percent [1,807 of the 2,521] of the miles that they had been authorized to build suggests that the smaller roads were the most susceptible to failure.) In New Jersey, a little more than half of the 54 toll roads chartered up to 1828 successfully constructed roads. One scholar concluded that "it is safe to say that at least one-third of the turnpike corporations chartered [in the Middle Atlantic states] never built a mile of road." The attrition rate among New England toll roads was also about one-third.[61] Some scholars think that toll road attrition rates were even higher, at least at some times and

[61] Durrenberger, *Turnpikes*, pp. 55, 74, quotation on 107; Taylor, "The Turnpike Era in New England", p. 164.

places,[62] but until researchers track every chartered company (now possible thanks to the database underlying this study but far from a trivial undertaking), or at least an adequate random sample, these estimates will have to serve. Bridges, canals, and railroads tended to be more highly capitalized than toll roads and hence were more likely to begin operations but their failure rates were also non-trivial. Even if the figures in the tables are reduced by half, however, private investment in the nation's early infrastructure network still far outstripped government investment.

[62] Klein and Majewski, "Economy, community and law".