

Financing U.S. Economic Development, 1788-1860

By Robert E. Wright, Nef Family Chair of Political Economy, Augustana College SD

National income statisticians and econometricians will continue to study precisely when, where, and why real per capita income grew in the antebellum U.S., but nobody doubts that it was about two and a half to three times higher on the eve of the Civil War than it had been at the new nation's founding just a lifetime before (Lindert and Williamson 2013; Williamson 2014). Economic historians also generally agree on *how* real income growth occurred: post-Revolution political stability enabled relatively rapid development of ('revolutions in' or, more accurately in these cases, 'evolutions in') the agricultural and transportation sectors that freed up sufficient resources (people and land) to allow growth in the higher value-added manufacturing sector, the so-called Industrial "Revolution." What pre-Sylla scholars¹ generally misconstrued or missed entirely is the role of the financial system in early and antebellum America's political, agricultural, transportation, and industrial evolutions.²

With the partial exception of Perkins (1994),³ pre-Sylla scholars ignored, downplayed, or generally underestimated the complexity, modernity, and size of America's early financial system, i.e., banks, insurers, and securities markets and their interactions (e.g., Nettels 1962). Krooss and Blyn (1971:37) actually apologized for the "failure" of financial intermediaries to make "a substantial contribution to the total economy," arguing that banks and insurers were "in the early stages of experiment." Even in the late antebellum period, they argued, new technologies, like telegraphs and railroads, drove financial development rather than the reverse. "Finance comes of age" in their view only during and after the Civil War (91). Davis et al (1972) claimed that prior to 1828 "many bankers had little commitment to even the concept of reserves"

(347) and that “commercial banks were almost the only type of financial intermediary” (349), and generally portrayed the early financial sector as primitive.

Pre-Sylla scholars lacked a clear conception of an articulated, modern financial system and labored under a dearth of empirical data regarding state finances, securities prices and trading volumes, the proliferation of corporations, and other important metrics of financial sector size and importance. Over his career, Sylla, with help from others under his tutelage, filled those data lacunae and showed that the financial sector was not, as previously assumed, a series of discrete institutions including commercial banks, money, markets for public debt, and so forth, but rather emerged as a dynamic and fully articulated *system*. That system, Rousseau and Sylla (2005) demonstrated econometrically in a widely cited paper, was key to America’s economic growth spurt, which began in 1790 and not the 1820s or later as previously believed.

Like the four standard economic “revolutions,” the financial revolution, or rather the financial system that it forged, was a necessary, though not a sufficient, cause of the new nation’s growth spurt. The financial system cannot quite be said to have “Granger caused” growth, either, because, as explained below, its origins and development were intimately intertwined with the other “revolutions.” The financial system was, however, the linchpin, or central cohesive element, of the burgeoning economy. As Shaw (1973:3) put it in a theoretical piece, the financial system is “unique in the degree to which its markets, prices, institutions, and policies impinge upon all others.” Remove finance from the equation and the wheel of economic growth would have churned slowly, if at all, as in pre-financial revolution Argentina, Canada, and Japan (Sylla 1999a; Wright 2008) and the institutional quality and stability initially wrought by the new federal system of government likely would have disintegrated, as it has in most less developed nations throughout history (Acemoglu and Robinson 2012).

Funding the Union

To Sylla we owe the insight that the U.S. Constitution may not have taken hold had it not been for the financial revolution of the early 1790s. Here, the term revolution is actually apt. It took warriors and politicians almost 15 years to win independence from Britain and to establish a viable national government. Financial modernization took no more than a third as long. In 1788, when the new constitution took effect, the United States effectively enjoyed none of the six major components of a modern financial system: strong public finances and debt management, a known and stable unit of account; a central bank; a commercial banking *system*; mechanisms for sharing or trading risks; integrated securities markets; and numerous limited liability corporations (Sylla 2002, 2003). By 1792, the United States enjoyed all six (including derivatives markets, cf. Banner 1998), thanks in large part to the efforts of Sylla's policy hero Alexander Hamilton, that bastard son of a Scottish peddler, as John Adams infamously described him.

It was Hamilton, after all, who developed and steered to passage legislation that defined the dollar in terms of gold and silver; who encouraged the development of securities markets and corporations (Wright 2002a; Wright and Cowen 2006), including insurers; who established a central bank that could branch across state lines, act as a lender of last resort to the government or to the entire commercial sector during crises, and tie the nation's growing number of banks into a coherent system (Cowen 2000); and who funded the national debt through tariffs and import duties and assumed the debts of the several states, thereby fostering the development of liquid securities markets and binding the allegiance of bondholders -- past, present, and prospective -- to the federal government (Wright 2008). We cannot know for certain if the Union would have come apart without funding and assumption but many contemporaries (e.g. Coxe

1794) believed, and many historians (e.g., Cunningham 1987; Schoen 2010) believe, that the young nation was quite fragile because of, for example, the slavery and tariff issues. Tellingly, the men behind three important challenges to the Union, the Hartford Convention (1814-15), the Nullification crisis (1832-33), and the secession crisis (1860-61), did not own appreciable sums of federal bonds (Wright 2008).

Of course the nation's early financial system did not arise fully formed from the head of Hamilton as many other individuals were involved, people such as bankers Thomas Willing and Stephen Girard, financiers William Duer and Robert Morris, manufacturing advocate Tench Coxe, and treasury secretary Albert Gallatin (Wright and Cowen 2006). Scores of other important early financiers could be adduced, including serial corporate entrepreneur and investor Israel Thorndike (Forbes 1953), longtime U.S. treasurer Michael Hillegas (Wright 2005), merchant banker William Bingham (Alberts 1969), entrepreneur and speculator John Nicholson (Arbuckle 1975), banker and insurance man Alexander Bryan Johnson (Todd and Sonkin 1977), and a slew of long-lived bank cashiers.

Moreover, the financial system Hamilton and the others founded continued to develop as financiers innovated in response to changing market and political conditions (Sylla 2001). The locus of innovation first centered in Philadelphia, but by the late 1830s it had shifted to Manhattan (Wright 2005). Wall Street symbolized American high finance into the Third Millennium AD but Manhattan never monopolized financial innovation in the United States, which has always been home to competitive regional securities exchanges (Vitiello and Thomas 2010; Wright 2002a, b), money centers, and bank and insurance regulators. Overall, the early U.S. financial system was competitive and innovative even if parts of it, like the unit banks that dominated some states, were relatively uncompetitive and fragile (Calomiris and Haber 2014).

Thanks to the revolutions in governance and finance, Americans in the 1790s were willing and able to launch an unprecedented amount of new economic activity. Coxe (1794:xi) claimed “there was never applied, to the improvement and advancement of Pennsylvania, so great an aggregate of money as is employed directly or indirectly at the present time.” He then listed a series of canals, river improvements, the Lancaster turnpike, bridges, and “mills, workshops and dwelling houses in every town and every quarter of the state.” “The actual situation of many parts” of the country, he asserted, was “nearly *the reverse* [emphasis in original] of what it was at times within the memory of children” (1). It was all due, he believed, to the expectation that the new government would maintain “with sincerity and vigilance *the freedom of its citizens*, and with energy and firmness, *the rights of property*” [emphases in original] (4). Many others concurred (Opal 2008; Wright 2008).

Financing Farming and Other Extractive Industries

It has long been known that agriculture, “the spring of our commerce, and the parent of our manufactures” (Coxe 1794:7), received indirect aid from a financial sector purportedly dominated by merchants, men who exchanged the nation’s agricultural surpluses for manufactured goods, mostly foreign at first but later increasingly domestic (e.g., cotton textiles). Pre-Sylla scholars (e.g., Nettels 1962), however, long underestimated the importance of bank finance and insurance to America’s agricultural evolution, the “modest annual growth in output per worker” (Weiss 1991:14) and crop yields that took place over the first half of the nineteenth century.

Part of that productivity growth was due to mechanization, of course, i.e. substituting machines for human and/or animal labor (Lindstrom 1978; Weiss 1991), but a surprising amount of it, up to half in fact, was driven by biological and cultural advances, to wit strains of grain

better adapted to local climatic conditions, better pest management techniques, and more efficient fertilizing, planting, and sowing practices (Nettels 1962). As Coxe explained (1794:356), agriculturalists

have abundant matter for increased attention in perfecting their cultivation, in ascertaining those species of their valuable plants, which are most excellent, most certain, and most productive, in the improvement of their implements of husbandry, in the acquisition of auxiliary implements and machinery, in perfecting the modes of curing their produce, and preparing it for market, and particularly in the attainment of adequate substitutes for the ordinary species of labourers.

As the transportation evolution progressed, specialization (into von Thunen rings some have claimed [Lindstrom 1978]) brought additional productivity gains.

Cotton productivity increased dramatically after 1800 because yields per acre increased forty to sixty percent and because labor productivity (which is largely to say slave management) improved markedly. In 1800, the average cotton slave produced around 600 pounds of cotton, while in 1840 the average cotton slave produced at least 1,000 and as much as 1,500 pounds of the fluffy white gold (Whartenby 1977). Higher yields per acre were due partly to bringing newer and better land under cultivation but also to planters experimenting with new cotton varieties, some of which proved themselves superior to earlier varieties. Some of the new varieties were imported while others were deliberately created hybrids that thrived under certain soil and climate conditions. Careful selection of seeds also gradually improved the stock. Much the same story can be told about tobacco as well as livestock, including beef cattle, dairy cattle, draft horses, goats, hogs, and sheep (Olmstead and Rhode, 2008).

Working harder and smarter also improved the productivity of the North's corn and grain farmers so, again, increased mechanization was not the entire story (Craig 1993; Rothenberg 1992). Varieties of corn (maize) naturally hybridized and farmers were quick to cultivate those, like Reid Yellow Dent (1846-47), that displayed superior characteristics: faster maturation, more rows of kernels, and so forth. Big biological improvements came relatively late to corn, however, because, until the corn borer appeared in the early twentieth century, it was relatively hardy compared to small grains like wheat (Olmstead and Rhode 2008). In 1840, farmers grew 41 different varieties of wheat in New York; in 1857, 111 varieties were sowed in Ohio, all in response to different soils, pests, and so forth. Farmers, non-profit agricultural improvement associations (Peskin 2003; Neem 2008), and governments imported some of the varieties from abroad, but others arose from natural mutations and crosses, and yet others stemmed from deliberate hybridization.

Carefully selecting seeds, planting new varieties, or trying new planting or labor management techniques did not entail large, obvious outlays like purchasing mechanical equipment did, but they did entail risks that farmers without access to credit markets would have been unable to undertake (Rothenberg 1992). Certainly some early American farmers were rural rubes content to scratch out a bare subsistence, but many were ambitious men who wanted to accumulate wealth, men who were not content merely to maintain their absolute condition (Opal 2008; Kulikoff 1992). Climatic variability and the Red Queen problem, the fact that agriculturalists have to innovate simply to maintain yields in the face of rapidly evolving rusts, smut fungi, flies, midges, weeds, and other threats, means that many farmers would have been bankrupted if they did not have inexpensive methods for smoothing their incomes (Olmstead and Rhode 2002). Moreover, it is difficult to see how farmers in regions like Northern Virginia, who

switched from tobacco to grain in the late eighteenth and early nineteenth centuries, could have done so without some ways of smoothing their incomes and mitigating other risks (Crothers 1999, 2001).

The percentage of farmers that had access to credit markets in any given place and year is not known with precision, but it was usually closer to one hundred percent than zero or even fifty. The interesting question is the terms by which farmers could borrow. Pre-Sylla scholars like Kulikoff, who claimed that early “banks served capitalists but ignored farmers” (Kulikoff 1992: 108), took complaints about a lack of banking facilities too seriously and charter stipulations that required banks lend to farmers or other specific groups not seriously enough. Most complaints about banks came from men who had limited understanding of actual commercial practices or, more often, were fighting legislative battles to establish banks of their own in the period before general incorporation statutes (Hammond 1957; Papenfuse 1975; Wright 1997).

Early American agriculturalists indeed borrowed from banks. Coxe claimed that (1794:352) that by 1792 banks, still few but multiplying, ministered to the “convenience, the necessities, and the interests of . . . the planter, the farmer, the merchant . . . the fisherman.” Wright (1997, 2001) showed that rural banks like the Bank of Utica regularly lent to farmers. Lockard (2000) showed that 28 percent of the people who borrowed from the Hampshire Bank of Northampton, Massachusetts between 1813 and 1837 were farmers and that they received 27 percent of the total sum lent. Farmers were 37 percent of all borrowers and received a third of all loans from the Franklin Bank in Greenfield, Massachusetts between 1827 and 1829. The nearby Franklin Savings Institute lent almost 18 percent of its funds to farmers between 1838 and 1850. Farmers’ share dropped to 14 percent between 1851 and 1860 but the total number of loans

almost doubled and the total dollar volume of loans to farmers increased two and a half times. Between 1843 and 1860, the Northampton Institute for Savings of Northampton, Massachusetts lent 18 percent of its funds to farmers. Wang (1996) showed that by the 1840s, the Plymouth Bank lent about 7 percent of its funds to farmers (and another 9 to 10 percent went to mariners, Massachusetts farmers of the sea). The Worcester Bank also lent to agriculturalists (Brooke 1989). Bodenhorn (2000) showed that in the early 1850s more than 10 percent of the loans of Branch & Company of Petersburg, Virginia went to agriculturalists.

According to Hammond (1957:678), in 1840 a little less than half of the Bank of Indiana's loans went to merchants; the balance went to "manufacturers, mechanics, farmers" and miscellaneous others. But that is not to say that merchants received more than their seeming due as agriculturalists also borrowed from banks indirectly, via the factors, millers, and merchants who could extend farmers and planters credit because they had access to bank discounts by virtue of the superior cash flow characteristics of their businesses (Kilbourne 1995, 2006). Such indirect loans of course cost farmers more than borrowing directly from banks, which rationed on quantity due to usury laws and costly charters as well as asymmetric information (Wright 2002a). There is little reason to believe, however, that "out of doors" markets, markets for informal person-to-person loans often made at usurious (illegally high) rates, were uncompetitive. Making usurious loans was illegal and hence entry and exit into the market were unrestricted, so interest rates and other terms typically reflected rational expectations of the risks inherent in agricultural activities.

Agriculturalists also borrowed long term by mortgaging their land, livestock, and/or slaves (Kilbourne 1995, 2006). Lenders included individuals, insurers, and trust companies (Haeger 1981; Murphy 2010; Stickle 2011; Thornton 2007). Scholars have not tied specific

agricultural loans to specific innovations in a systematic way but they do not have to exert the effort because the proceeds of loans are fungible and the mere knowledge that one can smooth one's income over time, whether one actually does so or not, will increase innovation and risk-taking.

Banks and securities markets (Vitiello and Thomas 2010) financed other extractive industries, most importantly the over 1,300 mining corporations, nominally capitalized at almost \$350 million, that received special charters prior to the Civil War (Table 1). They also financed niche extractive industries, including the largely unincorporated Kanawha salt producers of western Virginia (Stealey 2000) and the whalers of New Bedford, Massachusetts (Wright 2011b). Whalers also obtained marine insurance, increasingly from incorporated insurers (Wright and Kingston 2012).

[Insert Table 1 about here.]

Agriculturalists did not benefit directly from marine insurance until the development of inland insurance in the early nineteenth century allowed them to insure produce in transit, which allowed them to ship to more distant markets more cheaply. They also insured their property against fire – by forming specialized mutual farm insurers when necessary -- and eventually against hail, wind, livestock theft, and other perils, including the death of their slaves (Crothers 2001; Murphy 2010; Wright 2010). Agriculturalists, especially northern farmers, also insured their own lives in rapidly increasing numbers after 1820. It is a pre-Sylla, sociological myth that agriculturalists eschewed income protection. Young and/or leveraged farmers especially understood the risks that their premature death would pose for their families (Murphy 2010).

Insurance constituted an important part of the financial system in its own right, one almost as important as commercial banking. Before the Civil War, over 2,100 insurance

companies chartered under special acts of incorporation and the combined initial capitalization of the almost 1,300 joint stock and hybrid (as opposed to mutual) specially incorporated insurers totaled between \$212 and \$388 million. Specially incorporated banks were less numerous (1,564) but more highly capitalized (\$445 to \$668 million) (Wright and Kingston 2012). Insurers also directly aided economic growth. In addition to serving as important intermediaries, they created significant positive externalities related to safety in the home, shop, and vessel (Wright 2010).

[Insert Table 2 about here.]

Importantly, early agriculturalists were a major class of investor. Savings allowed farmers and planters to assume greater risks in their agricultural pursuits by allowing them to smooth their incomes over time. Instead of borrowing when a new strain of wheat or cotton did not take hold, in other words, farmers could divest financial assets instead.

In addition to lending to other individuals on note and mortgage (Rothenberg 1992; Kilbourne 1995, 2006), farmers and planters purchased corporate bonds and equities and government bonds. Careful study by Rothenberg (1992) showed that financial assets owned by agriculturalists at their death increased dramatically over the nation's first decades across all wealth levels except the poorest. By 1850, about 15 percent of total investor wealth at death was invested, on average, in corporate stocks and bonds, up from an average of less than 4 percent in 1800 (Sturm 1977).

Stock subscription lists tell a similar story (Wright 1997, 2001). Of the initial 100 investors in the Bank of Gettysburg, chartered in Pennsylvania in 1814, for example, 53 were farmers (Karmel 1999). Many of the subscribers in the Bank of Concord, chartered in Massachusetts in 1832, were described as “gentlemen farmers,” i.e., older, more affluent,

agriculturalists (Patterson 1971:20). While Majewski (2006) did not attempt to identify the occupations of stockholders in Pennsylvania banks, they were so numerous, even in agricultural districts, that many must have been farmers. The same could be said of many of the thousands of stockholders in Maine's banks, manufacturers, and transportation companies in the 1830s and 1840s documented by Wright (2002b).

Transportation Finance

Agriculturalists, especially northern farmers, were avid investors in transportation corporations, including bridges, canals, railroads, and turnpikes. Some of the return from such investments came in the form of coupon and dividend payments or securities price appreciation and some came in the form of lower transportation costs, higher land values, and construction contracts (Forbes 1953; Klein 1990; Klein and Majewski 1992). Merchants and land speculators invested in transportation companies for similar reasons, while others concentrated on the direct investment returns (e.g., dividends), which were not so bad as sometimes portrayed (Sanderlin 1946; Wright 2014c). In fact, before the Civil War, private investment in the transportation sector far outpaced public investment (Wright 2014b), which also leaned heavily on the financial system through the sale of bonds to savings banks and other investors (Bernstein 2005; Olmstead 1976).

Insurance companies and banks also helped transportation companies (Wright 2001, 2002b). Lockard (2000), for example, showed that over a quarter of the money lent by Franklin Savings Institute of Greenfield, Massachusetts went to the Connecticut River Railroad Company. Bodenhorn (2000) showed that banks in both the North and South in the 1850s typically made loans to transportation companies, though in prudent sums of less than 5 percent of their total loan portfolios. Banks and insurers also bought transportation company securities, sometimes at

the behest of state governments (Perkins 1994), but often to diversify their securities portfolios (Wright 2002b). Many transportation companies, especially roads but canals and others as well, issued bonds but almost all issued equity (Wright 2014a, b, c). As Table 3 shows, before the Civil War 10,775 transportation companies of different sorts received special acts of incorporation and were authorized to raise over \$2.8 billion in capital.

[Insert Table 3 about here.]

Skeptics point out that many transportation companies never began operations or soon failed. That is true, but many did form and raised capital in securities markets. Between 1800 and 1821, more than 23,000 different investors in Pennsylvania alone owned toll bridge or turnpike stock (Majewski 2006). Moreover, the improvements in the transportation sector were very real as both costs and travel times dropped considerably for both passengers and freight (a point graphically made in Ratner, Soltow, and Sylla, 1993, 125). For example, the cost of shipping flour from Harpers Ferry, Virginia sixty miles east to Washington, D.C. fell from \$1 to 7 cents per barrel, toll included, after the Chesapeake and Ohio Canal connected the two points in the early 1830s. Competition between that canal and the Baltimore and Ohio Railroad kept rates low and people and goods – agricultural, extractive, and manufactured -- flowing. Tonnage doubled to over 200,000 tons between 1850 and 1851 alone (Sanderlin 1946). Thousands of similar improvements substantially increased market size and improved efficiency (Taylor 1951).

Improvements in transportation costs and times wrought by bridges, canals, harbor facilities, railroads, steamboats, and turnpikes were crucial to agriculturalists because the improvements helped them to trade with the wider world more cheaply and quickly (Wright 2014a). Most improvements in time and costs were regional affairs, not national or sectional ones as once believed. Transportation improvements tied emerging and established urban areas

to enlarged hinterlands, as was the case with Philadelphia (Lindstrom 1978) as well as Boston, New York, Baltimore, and the emerging cities of the tramontane west, like Cincinnati and Louisville (Wade 1959; Wright 2009). Always important (Coxe 1794), the coasting trade also became more efficient through improvements in lighthouses, ships, tugs, and so forth as well introduction of packet services. Before the Civil War, coastwise vessels, along with the Erie Canal-Great Lakes complex and the major river systems, not trunk railroads, tied together East and West, North and South.

Investing in Industry

The transportation evolution, combined with the evolution in agriculture and the revolutions in governance and finance, made America's industrialization possible by reducing interest rates, country risk, and labor and transportation costs to the point that domestic manufacturers, sometimes with significant tariff protection and sometimes without, could compete against foreign manufacturers in many markets. The fact that palm-leaf hats were one of central Massachusetts's largest industries throughout the 1830s, 40s, and 50s is one indication of how far matters had progressed: palm leaves had to be imported from Cuba and the quantity of lightweight palm-leaf hats produced, 70,000 in 1837 alone, far exceeded local demand so most were "exported" to Boston and further abroad (Brooke 1989).

With access to larger markets, artisans, mechanics, home manufacturers/farmers, and other proto-manufacturers, as well as merchants seeking to diversify their investment portfolios (Coxe 1794; Livesay and Porter 1971), expanded operations to tap scale economies (Wright 2002b, 2014) and/or specialized to an extent impossible to achieve in a smaller market (Lindstrom 1978). Economies of scale did not entail building factories considered large by later

standards but simply enlarging existing facilities such as those described in an 1815 bank loan application by soap boiler John Wirt:

I ask the favour of inlargeing my accommodation as I have been making soap & candles in the small way & find it will answer well ... will make from 3 to 4000 weight of soap per week if I can get Capitall to Lay in Stock” (as quoted in Wright 2002b:205).

Wirt had “Good workmen” as did other manufacturing establishments that found former farmers, shopkeepers, and artisans; children no longer needed to work the family farm or shop; and/or immigrants willing to work for wages that they could afford to pay. Other manufacturers, including Oliver Evans, opted to mechanize instead (Coxe 1794; Ware 1924; Cochran 1979).

By 1820, some American manufactured goods were already being exported and exports grew, albeit modestly, between then and the Civil War (Peskin 2003). Industrial production for domestic markets grew much faster and was substantially larger (Davis 2004). By 1860, over 140,000 manufacturers were in operation in the United States, with a total of over \$1 billion in capital invested. The ten largest industries, by value added, were cotton, lumber, boots and shoes, flour, men’s clothing, iron, machinery, woolens, carriages, wagons, and carts, and leather (Taylor 1951). The cotton, woolen, and iron industries were extremely competitive, which drove consumer prices down and created strong incentives to improve operating efficiency (Spalding 1963; Knowles 2013).

The notion that manufacturers received minimal help from the financial system is almost as well entrenched as the notion that agriculturalists did not receive bank loans (cf. Bodenhorn 2000 for a discussion). Pre-Sylla scholar Douglass (1971:251), for example, claimed that “capital accumulation in the New England companies came mostly from within the industry.” In fact,

manufacturers relied heavily on all major parts of the financial system. For starters, they used inland marine and fire insurance to protect their products and businesses from loss. The Pepperell Mill, for example, insured cotton in transit from the port of purchase to its facilities in Maine. Most manufacturers had to pay higher fire insurance premiums than other businesses did but that was because they posed higher risks until they began to adopt sundry safety measures (Knowlton 1948). When extant insurers resisted underwriting certain risks, so-called class mutuals, like mutual mill insurers, arose to meet the demand. The interaction between insurers and insured led to the adoption of cost-efficient new safety and design features, like fire-resistant mills that kept blazes contained until workers could respond and put them out (Wright 2010).

Manufacturers also received short-term bank loans. Coxe (1794:352) claimed that by 1792 banks ministered to the “convenience, the necessities, and the interests of ... the ship-builder, the manufacturer, and the mechanic.” Lamoreaux (1994) showed that manufacturers in eastern New England formed their own banks and lent to themselves without compunction. In places where outsider lending was more the norm (Wang 1996), Adams showed that for over two decades some 10 to 15 percent of the depositors/borrowers in Stephen Girard’s private bank in Philadelphia were artisans or mechanics (Adams 1978). Wright (1997, 1999, 2001, 2002a) showed that banks like the Bank of Utica, the Bank of Geneva, the Bank of Germantown, the Bank of New York, and the Bank of North America regularly lent to artisans and mechanics.

In addition, Lockard (2000) showed that 20 percent of the entities that borrowed from the Hampshire Bank between 1813 and 1837 were artisans or manufacturers and that they received about 20 percent of the total sum lent. Borrowers included several ax makers, paper millers, and hatters, a broom maker, a tanner, a carding machine manufacturer, and a saddle and harness maker. Manufacturers and artisans constituted one in three borrowers in the Franklin Bank and

received a third of all sums lent between 1827 and 1829. Loan recipients included tanners, iron works, a flaxseed oil producer, and a satinet manufacturer. The nearby Franklin Savings Institute lent 7 percent of its funds to artisans and manufacturers between 1838 and 1850 but their share increased to 10 percent between 1851 and 1860. Borrowers included grain, woolen, and saw mills, boot and shoe and cutlery manufacturers, and a baby carriage maker. Between 1843 and 1860, the Northampton Institute for Savings of Northampton, Massachusetts lent about 17 percent of its funds to artisans and manufacturers. Borrowers included sundry textile companies, a sash and blind manufacturer, and a brickyard. The Worcester Bank and other Worcester County banks “readily granted” loans to the many artisans and manufacturers of central Massachusetts (Brooke 1989) and the Plymouth Bank by the 1840s lent over 27 percent of its loan funds to artisans and manufacturers (Wang 1996).

Moreover, Bodenhorn (2000) showed that in the early 1850s, more than 20 percent of the loans of Branch & Company of Petersburg, Virginia went to manufacturers. The Black River Bank of Watertown, New York, also regularly invested more than 10 percent of its loan portfolio in borrowers primarily engaged in manufacturing, while at the same time the Bank of Tennessee’s branch at Memphis usually had 5 percent or more of its loan portfolio lent out to manufacturers (Bodenhorn 2000).

According to Knowlton (1948), the Pepperell Mill regularly received short and medium (up to one year) term loans from commercial, private, and savings bankers as well as from trusts (individuals and companies) and note brokers. In the two decades before the Civil War, some twenty commercial banks and several note brokerages throughout New England discounted the mill’s accounts receivable to the tune of hundreds of thousands of dollars.

In addition, and against received wisdom, thousands of early manufacturers received help from the securities markets. Navin and Sears (1955) were right that relatively few industrials were listed on stock exchanges until late in the nineteenth century. Only about 100 appear in the Sylla, Wilson, Wright antebellum securities database (<http://eh.net/database/early-u-s-securities-prices/>), which lists the prices of securities published in newspapers in Boston, New York, Philadelphia, and elsewhere. Before the Civil War, however, over 3,500 manufacturers obtained special corporate charters and were authorized to raise almost \$472 million in capital. They issued stock directly to investors and the stock subsequently traded via the nation's ubiquitous over-the-counter markets (Wright 2002a, b). Banks and insurers bought stock in early manufacturers, as did individual investors, including farmers (Davis 1958). Due to corporate governance strictures that limited stock watering, liquidity was largely one-sided: stockholders could sell whenever they wanted to but investors had to await the appearance of sellers before they could buy in (Spalding 1963; Wright 2002b, 2014).

[Insert Table 4 about here.]

Like agriculturalists, manufacturers also used the financial system to smooth their incomes by saving at times and diversifying their incomes even during good times. Patterson (1971), for example, noted that artisans were stockholders in the Concord Bank. Majewski (2006) showed that artisans and manufacturers invested heavily in Philadelphia bank shares in the 1810s and of course artisans and mechanics were well represented in savings banks, the poorer as depositors and the richer as borrowers (Olmstead 1976; Payne and Davis 1956; Wright 1997).

Construction, Utility, and Service Corporations

Few speak of utilities or construction revolutions, perhaps because they are seen as part and parcel of the Industrial “Revolution.” As shown in Table 5, both sectors also utilized the securities markets. Both needed and obtained insurance, primarily fire but also life in the case of the unincorporated construction contractors ubiquitous throughout the nation in the early national and antebellum periods (Rilling 2000). Like other artisans, those contractors received bank loans and were eager recipients of mortgages and, in places like Philadelphia and Baltimore, ground rents, an early form of interest-only perpetual mortgages (Wright 2005).

[Insert Table 5 about here.]

The term service revolution is usually associated with the latter half of the twentieth century but of course provision of various services is as old as the country itself. What is interesting is that before the Civil War some service providers, detailed in Table 6, were large enough to benefit from special incorporation. While clearly third in importance to the primary and manufacturing sectors, the service sector was already growing and some service providers were already in need of external financing from securities markets.

[Insert Table 6 about here.]

Conclusions

Unfortunately, no state or section can be used to test the notion that finance proved the lynchpin of economic development. The South lagged the north in corporate development at first but by the Civil War had come to a rough parity with it in per capita terms. Similarly, newer, western states soon also joined the “corporation nation” by chartering corporations, including banks and insurers as well as manufacturing, mining, service, transportation, and utilities companies, in prodigious quantities in per capita terms (Wright 2011a; Wright and Sylla 2011).

Sylla therefore espoused comparisons with other nations, including Canada, which lagged its southern neighbor economically until it experienced governance and financial revolutions of its own after the U.S. Civil War (Wright 2008). No early-industrializing nation, Sylla has argued, developed economically without the aid of a modern financial system and its bed partner, a responsible government, and I have yet to hear the claim refuted (Sylla 2003).

Tables

Table 1: Number and Capitalization of Specially Chartered Extractive Sector Corporations,
1790-1860

Business Type	Number Chartered, 1790-1860	Total Minimum Authorized Capital (\$)
Agriculture	35	\$1,395,000
Fishery	41	\$2,251,000
Lumber	122	\$1,563,500
Mining	1,322	\$349,237,500
Quarry	116	\$16,873,500
Totals	1,636	\$371,320,500

Source: Richard Sylla and Robert E. Wright, "U.S. Corporate Development, 1801-1860," NSF
SES Grant No. 0751577. (Hereafter, Sylla and Wright database).

Table 2: Number and Capitalization of Specially Chartered Insurance Corporations, 1790-1860

Business Type	Number Chartered, 1790-1860	Total Minimum Authorized Capital (\$)
insurance and banking	10	\$2,257,500
insurance, fire	782	\$35,990,000
insurance, general	411	\$44,091,500
insurance, health	25	\$1,942,500
insurance, life	87	\$14,455,000
insurance, livestock	23	\$365,000
insurance, marine	172	\$24,905,000
insurance, multiline	609	\$88,945,000
insurance, slave	3	\$200,000
Totals	2,122	\$213,151,500

Source: Sylla and Wright database.

Table 3: Number and Capitalization of Specially Chartered Transportation Corporations, 1790-1860

Business Type	Number Chartered, 1790-1860	Total Minimum Authorized Capital (\$)
bridge	1,310	\$33,471,855
canal	404	\$90,884,734
dock	45	\$5,055,500
ferry	165	\$6,782,400
harbor	18	\$804,000
mixed	542	\$118,333,683
navigation	628	\$133,042,500
pier	11	\$256,500
plank road	931	\$45,410,375
railroad	2,503	\$2,243,929,250
telegraph	135	\$6,875,128
transportation	73	\$10,936,000
tunnel	4	\$3,450,000
turnpike	3,683	\$119,265,719
waterway improvement	213	\$27,450,100
wharf	110	\$12,355,500
Totals	10,775	\$2,858,303,244

Source: Sylla and Wright database.

Table 4: Number and Capitalization of Specially Chartered Manufacturing Corporations, 1790-1860

Business Type	Number Chartered, 1790-1860	Total Minimum Authorized Capital (\$)
alcohol	9	\$860,000
bricks	16	\$1,025,000
chemicals	21	\$2,775,000
copper	13	\$3,720,000
fertilizer	7	\$145,000
finished goods	182	\$20,515,000
firearms	28	\$5,495,000
foodstuffs	24	\$2,915,000
footware	31	\$1,281,000
glass	76	\$6,940,000
ice	29	\$1,335,000
india rubber	20	\$1,715,000
iron	215	\$26,677,250
lead	12	\$1,505,000
lime	8	\$252,500
locomotive	38	\$6,195,000
lumber	28	\$3,575,000
machinery	52	\$6,478,000
metallurgy	67	\$8,975,000
mill	210	\$10,189,900
mixed	674	\$112,119,000
oil	12	\$920,000
paper	54	\$3,523,300
plaster	4	\$310,000
pottery	10	\$1,011,000
printing	21	\$2,053,000
salt	19	\$2,128,000
ships	18	\$3,891,000
steam engines	16	\$1,935,000
sugar	35	\$7,240,000
textiles	1,183	\$180,360,850
unknown	434	\$43,593,500
Totals	3,566	\$471,653,300

Source: Sylla and Wright database.

Table 5: Number and Capitalization of Specially Chartered Construction and Utilities Corporations, 1790-1860

Business Type	Number Chartered, 1790-1860	Total Minimum Authorized Capital (\$)
construction	193	\$41,831,400
dam	58	\$2,120,000
energy	19	\$1,761,400
gas	367	\$37,072,000
mixed	56	\$19,701,625
water	472	\$26,434,530
Totals	1,165	\$128,920,955

Source: Sylla and Wright database.

Table 6: Number and Capitalization of Specially Chartered Service Corporations, 1790-1860

Business Type	Number Chartered, 1790-1860	Total Minimum Authorized Capital (\$)
cemetery	77	\$413,900
colonization	3	\$1,030,000
education	6	\$215,000
entertainment	35	\$2,537,600
fire protection	16	\$15,000
hospital	2	\$75,000
hospitality	90	\$10,146,600
hotel	322	\$24,691,500
library	6	\$234,000
livery	2	\$3,000
market	48	\$6,091,500
mercantile	35	\$6,026,000
mixed	9	\$3,280,000
museum	3	\$360,000
newspaper	5	\$410,000
park	6	\$444,750
salvage	7	\$1,515,000
scientific	2	\$25,000
warehouse	18	\$1,363,000
Totals	692	\$58,876,850

Source: Sylla and Wright database.

References

- Acemoglu, Daron and James Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Business.
- Adams, Donald R. 1978. *Finance and Enterprise in Early America: A Study of Stephen Girard's Bank, 1812-1831*. Philadelphia: University of Pennsylvania Press.
- Alberts, Robert C. 1969. *The Golden Voyage: The Life and Times of William Bingham, 1752-1804*. Boston: Houghton Mifflin Company.
- Arbuckle, Robert D. 1975. *Pennsylvania Speculator and Patriot: The Entrepreneurial John Nicholson, 1757-1800*. University Park: Pennsylvania State University Press.
- Banner, Stuart. 1998. *Anglo-American Securities Regulation: Cultural and Political Roots, 1690-1860*. New York: Cambridge University Press.
- Baskin, Jonathan and Paul J. Miranti. 1997. *A History of Corporate Finance*. New York: Cambridge University Press.
- Bernstein, Peter L. 2005. *Wedding of the Waters: The Erie Canal and the Making of a Great Nation*. New York: W.W. Norton.
- Bodenhorn, Howard. 2000. *A History of Banking in Antebellum America: Financial Markets and Economic Development in an Era of Nation-Building*. New York: Cambridge University Press.
- Bordo, Michael and Richard Sylla, eds. 1995. *Anglo-American Financial Systems: Institutions and Markets in the Twentieth Century*. Burr Ridge, IL: Irwin Professional Publishing.
- Brooke, John L. 1989. *The Heart of the Commonwealth: Society and Political Culture in Worcester County, Massachusetts, 1713-1861*. Amherst: University of Massachusetts Press.

- Calomiris, Charles and Stephen Haber. 2014. *Fragile by Design: The Political Origins of Banking Crises & Scarce Credit*. Princeton: Princeton University Press.
- Cochran, Thomas C. 1979. "An Analytical View of Early American Business and Industry." In *Business Enterprise in Early New York*, 1-15, ed. Joseph R. Frese and Jacob Judd. Tarrytown, N.Y.: Sleepy Hollow Press.
- Cowen, David J. 2000. *The Origins and Economic Impact of the First Bank of the United States, 1791-1797*. New York: Garland Publishing.
- Coxe, Tench. 1794. *A View of the United States of America*. Philadelphia: William Hall.
- Craig, Lee. 1993. *To Sow One Acre More: Childbearing and Farm Productivity in the Antebellum North*. Baltimore: Johns Hopkins University Press.
- Crothers, A. Glenn. 1999. "Public Culture and Economic Liberalism in Post-Revolutionary Northern Virginia, 1780-1820." *Canadian Review of American Studies* 29, 3: 61-90.
- _____. 2001. "Agricultural Improvement and Technological Innovation in a Slave Society: The Case of Early National Northern Virginia." *Agricultural History* 75, 2:135-67.
- Cunningham, Noble E. 1987. *In Pursuit of Reason: The Life of Thomas Jefferson*. New York: Ballantine Books.
- Davis, Joseph H. 2004. "An Annual Index of U.S. Industrial Production, 1790-1815." *Quarterly Journal of Economics* 119, 4.
- Davis, Lance E. 1958. "Stock Ownership in the Early New England Textile Industry." *Business History Review* 32, 2.
- Davis, Lance E. et al. 1972. *American Economic Growth: An Economist's History of the United States*. New York: Harper & Row.

- Douglass, Elisha P. 1971. *The Coming of Age of American Business: Three Centuries of Enterprise, 1600-1900*. Chapel Hill: University of North Carolina Press.
- Forbes, J. D. 1953. *Israel Thorndike, Federalist Financier*. New York: Exposition Press.
- Haeger, John D. 1981. *The Investment Frontier: New York Businessmen and the Economic Development of the Old Northwest*. Albany: State University Press of New York.
- Hammond, Bray. 1957. *Banks and Politics in America: From the Revolution to the Civil War*. Princeton: Princeton University Press.
- Homer, Sidney and Richard Sylla. 1991. *A History of Interest Rates*, 3rd ed. New York: Basic Books.
- Karmel, James. 1999. "Banking on the People: Banks, Politics, and Market Evolution in Early National Pennsylvania, 1781-1824." Ph.D. Diss., SUNY Buffalo.
- Kilbourne, Richard H., Jr. 1995. *Debt, Investment, Slaves: Credit Relations in East Feliciana Parish, Louisiana, 1825-1885*. Tuscaloosa: University of Alabama Press.
- _____. 2006. *Slave Agriculture and Financial Markets*. London: Pickering & Chatto.
- Klein, Daniel. 1990. "The Voluntary Provision of Public Goods? The Turnpike Companies of Early America." *Economic Inquiry* 28 (October).
- Klein, Daniel and John Majewski. 1992. "Economy, Community and Law: The Turnpike Movement in New York, 1797-1845." *Law & Society Review* 26, 3.
- Knowles, Anne. 2013. *Mastering Iron: The Struggle to Modernize an American Industry, 1800-1868*. Chicago: University of Chicago Press.
- Knowlton, Evelyn. 1948. *Pepperell's Progress: History of a Cotton Textile Company, 1844-1945*. Cambridge: Harvard University Press.

- Krooss, Herman E. and Martin R. Blyn. 1971. *A History of Financial Intermediaries*. New York: Random House.
- Krooss, Herman E. and Charles Gilbert. 1972. *American Business History*. Englewood Cliffs, N.J.: Prentice-Hall.
- Kulikoff, Allan. 1992. *The Agrarian Origins of American Capitalism*. Charlottesville: University Press of Virginia.
- Lamoreaux, Naomi. 1994. *Insider Lending: Banks, Personal Connections, and Economic Development in Industrial New England*. New York: Cambridge University Press.
- Lindert, Peter and Jeffrey Williamson. 2013. "American Incomes Before and After the Revolution." *Journal of Economic History* 73, 3 (September 2013): 725-65.
- Lindstrom, Diane. 1978. *Economic Development in the Philadelphia Region, 1810-1850*. New York: Columbia University Press.
- Livesay, Harold and Glenn Porter. 1971. "the Financial Role of Merchants in the Development of U.S. Manufacturing, 1815-1860." *Explorations in Economic History* 9:63-87.
- Lockard, Paul. "Banks, Insider Lending and Industries of the Connecticut River Valley of Massachusetts, 1813-1860." Ph.D. diss., University of Massachusetts, Amherst.
- Majewski, John. 2006. "Toward a Social History of the Corporation: Shareholding in Pennsylvania, 1800-1840." In *The Economy of Early America: Historical Perspectives and New Directions*, 294-316, ed. Cathy Matson. University Park: Pennsylvania State University Press.
- Murphy, Sharon. 2010. *Investing in Life: Insurance in Antebellum America*. Baltimore: Johns Hopkins University Press.

- Navin, Thomas R. and Marian V. Sears. 1955. "The Rise of a Market for Industrial Securities, 1887-1902." *Business History Review* 29, 2 (June 1955): 105-38.
- Neem, Johann N. 2008. *Creating a Nation of Joiners: Democracy and Civil Society in Early National Massachusetts*. Cambridge: Harvard University Press.
- Nettels, Curtis P. 1962. *The Emergence of a National Economy, 1775-1815*. New York: Holt, Rinehart and Winston.
- Olmstead, Alan L. 1976. *New York City Mutual Savings Banks, 1819-1861*. Chapel Hill: University of North Carolina Press.
- Olmstead, Alan L. and Paul W. Rhode. 2002. "The Red Queen and the Hard Reds: Productivity Growth in American Wheat, 1800-1940," NBER Working Paper 8863.
- _____. 2008. *Creating Abundance: Biological Innovation and American Agricultural Development*. New York: Cambridge University Press.
- Opal, J. M. 2008. *Beyond the Farm: National Ambitions in Rural New England*. Philadelphia: University of Pennsylvania Press.
- Papenfuse, Edward C. 1975. *In Pursuit of Profit: The Annapolis Merchants in the Era of the American Revolution, 1763-1805*. Baltimore: Johns Hopkins University Press.
- Patterson, John A. 1971. "Ten and One-Half Years of Commercial Banking in a New England Country Town: Concord, Massachusetts, 1832-1842." Unpublished ms., Old Sturbridge Village, Sturbridge, Mass.
- Payne, Peter and Lance Davis. 1956. *The Savings Bank of Baltimore, 1816-1866: A Historical and Analytical Study*. Baltimore: Johns Hopkins University Press.
- Perkins, Edwin. 1994. *American Public Finance and Financial Services, 1700-1815*. Columbus: Ohio State University Press.

- Peskin, Lawrence A. 2003. *Manufacturing Revolution: The Intellectual Origins of Early American Industry*. Baltimore: Johns Hopkins University Press.
- Ratner, Sidney, James H. Soltow, and Richard Sylla. 1980, 1993. *Evolution of the American Economy: Growth, Welfare, and Decision-Making*. New York: Basic Books.
- Rilling, Donna. 2000. *Making Houses, Crafting Capitalism: Master Builders in Philadelphia, 1790-1850*. Philadelphia: University of Pennsylvania Press.
- Rothenberg, Winifred. 1992. *From Market-places to a Market Economy: The Transformation of Rural Massachusetts, 1750-1850*. Chicago: University of Chicago Press.
- Rousseau, Peter and Richard Sylla. 2005. "Emerging Financial Markets and Early U.S. Growth." *Explorations in Economic History* 42 (January): 1-26.
- Sanderlin, Walter. 1946. *The Great National Project: A History of the Chesapeake and Ohio Canal*. Baltimore: Johns Hopkins University Press.
- Schoen, Brian. 2010. *The Fragile Fabric of Union: Cotton, Federal Politics, and the Global Origins of the Civil War*. Baltimore: Johns Hopkins University Press.
- Sellers, Charles. 1994. *The Market Revolution: Jacksonian America, 1815-1846*. New York: Oxford University Press.
- Shaw, Edward S. 1973. *Financial Deepening in Economic Development*. New York: Oxford University Press.
- Spalding, Robert V. 1963. "The Boston Mercantile Community and the Promotion of the Textile Industry in New England, 1813-1860." Ph.D. Diss., Yale University.
- Stealey, John Edmund III. 2000. *Kanawhan Prelude to Nineteenth-Century Monopoly in the United States: The Virginia Salt Combinations*. Richmond: Virginia Historical Society.

- Stickle, Mark. 2011. "The Ohio Life Insurance and Trust Company: Eastern Capital and Mortgage Credit in Ohio, 1834-1845." Unpublished ms.
- Sturm, James. 1977. *Investing in the United States, 1798-1893: Upper Wealth-Holders in a Market Economy*. New York: Arno Press.
- Sylla, Richard E. 1969. "La 'New Economic History'--Metodi, Obiettivi, Limiti." *Quaderni Storici delle Marche*, 11 (Maggio-Agosto 1969), 229-264.
- _____. 1971-72. "American Banking and Growth in the Nineteenth Century: A Partial View of the Terrain." *Explorations in Economic History*, 9 (Winter): 197-227.
- _____. 1972. "The United States, 1863-1913." In *Banking and Economic Development: Some Lessons of History*, 232-262, ed. Rondo Cameron. New York, Oxford University Press.
- _____. 1976. "Forgotten Men of Money: Private Bankers in Early U.S. History." *Journal of Economic History* 36 (March): 173-188.
- _____. 1977. "Financial Intermediaries in Economic History: Quantitative Research on the Seminal Hypotheses of Davis and Gerschenkron." In *Recent Developments in the Study of Business and Economic History*, 55-80, ed. Robert Gallman. Greenwich CN: JAI Press.
- _____. 1982a. "Monetary Innovation in America." *Journal of Economic History* 42 (March): 21-30.
- _____. 1982b. "Monetary Innovation and Crises in American Economic History." in *Crises in the Economic and Financial Structure*, 23-40, ed. Paul Wachtel. Lexington, MA: D.C. Heath, 1982.
- _____. 1985. "Early American Banking: The Significance of the Corporate Form." *Business and Economic History* 14:105-123.

- _____. 1988. "The Autonomy of Monetary Authorities: The Case of the U.S. Federal Reserve System." In *Central Banks' Independence in Historical Perspective*, 17-38, ed. Gianni Toniolo. Berlin and New York: Walter de Gruyter.
- _____. 1998. "U.S. Securities Markets and the Banking System, 1790-1840." *Federal Reserve Bank of St. Louis Review* 80, 3 (May/June): 83-103.
- _____. 1999. "Emerging Markets in History: The United States, Japan, and Argentina." In *Global Competition and Integration*, 427-46, ed. R. Sato, R. V. Ramachandran, and K. Mino. Boston: Kluwer Academic Publishers.
- _____. 2001. "The United States: Financial Innovation and Adaptation." In *Transferring Wealth & Power from the Old to the New World: Monetary and Fiscal Institutions in the 17th Through the 19th Centuries*, 231-58, ed. Michael Bordo and Roberto Cortes-Conde. New York: Cambridge University Press.
- _____. 2002. "Financial Systems and Economic Modernization." *Journal of Economic History* 62, 2: 277-92.
- _____. 2003. "Financial Systems, Risk Management, and Entrepreneurship: Historical Perspectives." *Japan and the World Economy* 15:447-58.
- Sylla, Richard and Gianni Toniolo, eds. 1991. *Patterns of European Industrialization: The Nineteenth Century*. London: Routledge.
- Sylla, Richard, John B. Legler, and John J. Wallis. 1987. "Banks and State Public Finance in the New Republic, 1790-1860." *Journal of Economic History* 47 (June): 391-403.
- Sylla, Richard, Richard Tilly, and Gabriel Tortella, eds. 1999. *The State, the Financial System, and Economic Modernization*. New York: Cambridge University Press.

- Sylla, Richard, Robert E. Wright, and David J. Cowen. 2009. "Alexander Hamilton, Central Banker: Crisis Management and the Lender of Last Resort in the US Panic of 1792." *Business History Review* (Spring 2009): 61-86.
- Taylor, George. 1951. *The Transportation Revolution, 1815-1860*. New York: Harper & Row.
- Todd, Charles L. and Robert Sonkin. 1977. *Alexander Bryan Johnson: Philosophical Banker*. Syracuse: Syracuse University Press.
- Thornton, Tamara. 2007. "'A Great Machine' or a 'Beast of Prey': A Boston Corporation and Its Rural Debtors in an Age of Capitalist Transformation," *Journal of the Early Republic* 27,4: 567-97.
- Vitiello, Domenic and George Thomas. 2010. *The Philadelphia Stock Exchange and the City It Made*. Philadelphia: University of Pennsylvania Press.
- Wade, Richard C. 1959. *The Urban Frontier: The Rise of Western Cities, 1790-1830*. Cambridge: Harvard University Press.
- Wang, Ta-Chen. 2006. "Courts, Banks, and Credit Markets in Early American Development." Ph.D. Diss., Stanford University.
- Ware, Norman. 1924. *The Industrial Worker, 1840-1860: The Reaction of American Industrial Society to the Advance of the Industrial Revolution*. Boston: Houghton Mifflin Co.
- Weiss, Thomas. 1991. "Long Term Changes in U.S. Agricultural Output Per Worker, 1800 to 1900." NBER Working Paper No. 23.
- Whartenby, Franklee. 1977. *Land and Labor Productivity in the United States Cotton Production, 1800-1840*. New York: Arno Press.
- Williamson, Samuel H. 2014. "What Was the U.S. GDP Then?" MeasuringWorth.
<http://www.measuringworth.org/usgdp/>

- Wright, Robert E. 1997. "Banking and Politics in New York, 1781-1829." Ph.D. diss., SUNY Buffalo.
- _____. 1999. "Bank Ownership and Lending Patterns in New York and Pennsylvania, 1781-1831." *Business History Review* (Spring): 40-60.
- _____. 2001. *Origins of Commercial Banking in America, 1750-1800*. New York: Rowman & Littlefield.
- _____. 2002a. *Hamilton Unbound: Finance and the Creation of the American Republic*. Westport, CT: Greenwood Press.
- _____. 2002b. *The Wealth of Nations Rediscovered: Integration and Expansion in American Financial Markets, 1780-1850*. New York: Cambridge University Press.
- _____. 2005. *The First Wall Street: Chestnut Street, Philadelphia, and the Birth of American Finance*. Chicago: University of Chicago Press.
- _____. 2008. *One Nation Under Debt: Hamilton, Jefferson, and the History of What We Owe*. New York: McGraw-Hill.
- _____. 2009. "Corporations and the Economic Growth and Development of the Antebellum Ohio River Valley," *Ohio Valley History* (Winter): 47-70.
- _____. 2010. "Insuring America: Market, Intermediated, and Government Risk Management Since 1790." In *Encuentro Internacional Sobre la Historia del Seguro*, 239-98, ed. Leonardo Caruana de las Cagigas. Madrid: Fundacion MAPFRE.
- _____. 2011a. "Corporate Entrepreneurship in the Antebellum South." In *Southern Society and Its Transformation, 1790-1860*, 195-214, ed. Susanna Delfino, Michele Gillespie, and Louis Kyriakoudes. Columbia, MO: University of Missouri Press.

- _____. 2011b. "Governance and the Success of U.S. Community Banks, 1790-2010: Mutual Savings Banks, Local Commercial Banks, and the Merchants (National) Bank of New Bedford, Massachusetts." *Business History Online* 9.
- _____. 2014a. *Corporation Nation*. Philadelphia: University of Pennsylvania Press.
- _____. 2014b. "The Pivotal Role of Private Enterprise in America's Transportation Age, 1790-1860." *Journal of Private Enterprise* 29, 2 (Spring 2014), 1-20.
- _____. 2014c. "Specially Incorporated Transportation Companies in the United States to 1860: A Comprehensive Tabulation and Its Implications," *Journal of Business and Economics* 5, 7 (July 2014), 972-89.
- Wright, Robert E. and David J. Cowen. 2006. *Financial Founding Fathers: The Men Who Made America Rich*. Chicago: University of Chicago Press.
- Wright, Robert E. and Christopher Kingston. 2012. "Corporate Insurers in Antebellum America." *Business History Review* 86 (Autumn): 447-476.
- Wright, Robert E. and Richard Sylla. 2011. "Corporate Governance and Stockholder/Stakeholder Activism in the United States, 1790-1860: New Data and Perspectives." In *Origins of Shareholder Advocacy*, 231-51, ed. Jonathan Koppell. New York: Palgrave MacMillan.

Notes

¹ I use this term throughout to distinguish between those whose scholarship reflects Sylla's insights on the importance of finance to economic growth and those whose work does not. Alas, pre-Sylla scholarship is still produced today in the darker corners of the academy but most of it was written before about 1990. Sylla received his Ph.D. from Harvard in 1969 and immediately began producing influential articles and book chapters (1969, 1971-72, 1972). Despite the pressures of raising two children and teaching at a large state school, he continued to publish a steady stream of important work like Ratner, Soltow, and Sylla (1980), Sylla (1976, 1977, 1982a, b, 1985, 1990), and Sylla, Legler, Wallis (1987). It was not until about 1990, however, when he became the inaugural Henry Kaufman Professor at Stern, after a string of NSF grants and a long term as editor of the *Journal of Economic History*, that Sylla's influence was widely felt across business and economic history in both the U.S. and abroad. It was during the 1990s that Sylla authored a new edition of Homer's classic *History of Interest Rates* (1991), collaborated with internationally renowned scholars on edited volumes like Toniolo (1991), Bordo (1995), and Tilly and Tortella (1999), and cultivated students like Cowen, Rousseau, and Wright. By Sylla (1998, 1999), he was clearly America's pre-eminent financial historian. No important book on early American finance published after 1990 lacks his stamp, with the exception of Banner (1998) and Murphy (2010), both of which he reviewed. He was also cited or thanked in, or anonymously refereed, many broader studies, such as Baskin and Miranti (1997).

² I exclude the market revolution of Sellers (1994) because I believe it at worst the fanciful imagining of historians with little understanding of the early American economy or, at best, a squishy concept subsumed by the others.

³ Perkins understood the importance of early banking and insurance activities but largely missed the size and complexity of early securities markets as well as the lender of last resort function of the Bank of the United States (1791-1811) (Cowen 2000; Sylla, Wright, and Cowen 2009).