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Review: Building 'The Source' of America's Cash Flows and Liquid Assets.

Canals, dams and river projects—given the capital they require—have altered the course of public debt.

'Why is it,' Martin Doyle asks, "that sewers are often at the cutting edge in finance?" The question isn't meant as a slur on the financial industry but as testimony to the oversized but underrated role that waterworks have played in the economic annals of the United States. Throughout history, Mr. Doyle argues, our penchant for big-ticket water projects—canals, dams, waste-treatment plants, the wholesale engineering of rivers—has altered the course of public finance and even shifted the balance of power among federal, state and local governments. Instead of "The Source," his book might have been called "Water and Money."

Since colonial times we have bent rivers to our own ends. Originally we harnessed them to power gristmills, whose crucial role and monopolistic status earned them the label of "America's first public utilities," complete with government regulation of the fees that millers could charge. In the early 19th century, entrepreneurs began to extend the reach of rivers with canals and thus ease the movement of goods and people to and from the East Coast. The canal companies were among America's earliest private corporations, and their massive enterprises became the first great public works.

The legendary Erie Canal proved spectacularly lucrative, operating at a profit even before its completion in 1825 and helping to position New York state as a commercial powerhouse. Other canals, scattered from New Hampshire to Virginia to Indiana, hoped to follow suit but had only limited success. When private capital dried up, Mr. Doyle tells us, state governments floated bonds to prop up the too-big-to-fail projects until, by the late 1830s, 86% of all public debt was owed by the states, with the lion's share—more than \$100 million—tied up in canals. (Federal debt at the time amounted to just 1.5% of the total.) When the country was plunged into the Panic of 1837, some states were forced into default, only deepening the economic misery.

In the late 1800s, as cities began to install water mains and sewer lines, the once-burned state governments refused to pony up, and cities had no choice but to assume the debt themselves. By the first years of the 20th century waterworks accounted for most municipal indebtedness, and by the 1940s the cities had replaced the states as the leading public debtors, issuing more than 70% of all government bonds. Local property taxes, meanwhile, swelled to 42% of total government revenues. Throughout U.S. history, Mr. Doyle writes, "paying for sewers has resulted in tectonic shifts in the political and financial structures."

THE SOURCE

By Martin Doyle

Norton, 349 pages, \$26.95

Another such shift would come during the Great Depression. With local governments on the verge of

financial collapse, Washington began sponsoring infrastructure projects, including waterworks (whose ambitious scale made them ideal for absorbing labor), and before long the federal government had replaced the cities as the primary carrier of public debt. For the first time, income taxes (enabled by the 16th Amendment, ratified in 1913), and not property taxes, made up the largest part of all taxes collected. But a portion of what flowed to Washington eventually returned to its source, as the federal government redistributed part of the funds to cities and states. By the late 1970s, federal grants accounted for almost a third of state and local government revenues.

Washington also paid to scrub sewage and industrial pollution from the nation's rivers. But with the funds came new regulations, culminating in the Clean Water Act of 1972, which introduced federal standards for water quality. A decade later, the Reagan Revolution stanching the tide of federal aid to the cities. But the regulations remained, and now local governments had to shoulder more of the expense of treatment plants.

Pressed to maximize their limited capital, some water boards, as Mr. Doyle shows, made Faustian investments in interest-rate swaps, auction-rate securities and other high-risk instruments, until by 2005 more than a quarter of all municipal debt was locked in such ventures. When the crash came two years later, more than a few local governments found themselves in bankruptcy, just as the overextended states had been during the Panic of 1837.

While tracing water's central, shifting role in public finance, Mr. Doyle plumbs such subjects as the transformation of the Mississippi and other major rivers into "highly engineered, optimized hydraulic machines"; the moral hazards created by federal flood insurance, which encourages development in high-risk areas; the restoration of rivers through a kind of cap-and-trade system known as stream credits; and the Western water wars, a fierce, zero-sum game that pits environmentalists against farmers and Native Americans and raises complex issues of property rights and sovereignty.

It is a story more tortuous than the Mississippi itself, but Mr. Doyle, a professor of river studies at Duke, tells it well. His writing, which tacks effortlessly from economics to history to science, is clear and absorbing, whether he is describing intricate credit schemes or the channelizing of rivers. Also welcome are the occasional field trips, including an excursion on a Mississippi towboat and a surprisingly engrossing tour of a waste-treatment plant.

On technical subjects, Mr. Doyle helpfully strips his explanations to the easily grasped essentials. But when he writes on history, this approach serves him less well. In the interest of providing a compelling narrative and advancing his argument, he sometimes falls into overstatement, as when he claims that "the whole economic history of the United States is the saga of negotiating the fiscal roles and responsibilities of the different levels of government in providing the most basic of services for their citizens—the water supply and sewer systems." Even so, "The Source" is an original and thought-provoking exploration of the sinuous course that water has carved through our economic and political landscape.

The Wall Street Journal

By Gerard Helferich

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—Mr. Helferich's most recent book is *"An Unlikely Trust: Theodore Roosevelt, J.P. Morgan, and the Improbable Partnership That Remade American Business."*

