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**Article**

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the transaction price is sufficiently below par. Market discount is taxable as ordinary income. The tax code provides a *de minimis* exemption, so that if the market discount is small, the investor pays capital gains tax instead of income tax. Finally, if the transaction price is above par, then the muni is not subject to tax. The tax code does not require the amortization of muni premiums, as it does for taxable bonds. I find that, as expected, yields on market-discount munis are higher than yields on munis that are fully tax exempt; this compensates for their additional tax liabilities.<sup>6</sup> But the implied tax rates are much larger than can be supported by present-value models. These higher yields are not due to illiquidity or other effects. The implicit tax rates sometimes exceed 100 percent! A rational story for the high yields of market-discount munis could be a convenience yield demanded by individuals to deal with the complexities of computing tax liabilities. A behavioral story

is that individuals have a particular aversion to taxes not justified by rational models. The tax premium can persist because the muni market is fragmented: even if investors were to know about the effect, many may not be offered market-discount bonds by dealers. Large mutual funds also tend to shy away from market-discount munis because they would be required to pass through income taxes to their underlying individual investors—and many individual investors are drawn to these muni mutual funds to avoid income taxes in the first place.

<sup>1</sup> A. Ang and F. A. Longstaff, “Systemic Sovereign Credit Risk: Lessons from the U.S. and Europe,” NBER Working Paper No. 16982, April 2011, and Journal of Monetary Economics, 60 (5), 2013, pp. 493–510. [Return to text](#)

<sup>2</sup> A. Ang and R. C. Green, “Lowering Borrowing Costs for States and

Municipalities Through CommonMuni,” *The Hamilton Project Discussion Paper 2011-01*, The Brookings Institution and Municipal Finance Journal, 34 (3) 2013, pp. 43–94. [Return to text](#)

<sup>3</sup> R. C. Green, B. Hollifield and N. Schürhoff, “Financial Intermediation and Costs of Trading in an Opaque Market,” *Review of Financial Studies*, 20 (2), 2007, pp. 275–314. [Return to text](#)

<sup>4</sup> A. Ang, R. C. Green, and Y. Xing, “Advance Refundings of Municipal Bonds,” NBER Working Paper No. 19459, September 2013. [Return to text](#)

<sup>5</sup> A. Ang, V. Bhansali, and Y. Xing, “Build America Bonds,” NBER Working Paper No. 16008, May 2010, and Journal of Fixed Income, 20 (1) 2010, pp. 67–73. [Return to text](#)

<sup>6</sup> A. Ang, V. Bhansali, and Y. Xing, “Taxes on Tax-Exempt Bonds,” NBER Working Paper No. 14496, November 2008, and Journal of Finance, 65 (2), 2010, pp. 565–601. [Return to text](#)

## The Impact of New Deal Spending and Lending During the Great Depression

Price V. Fishback\*

The Great Recession of the 2000s has led many policymakers and scholars to invoke Franklin Roosevelt’s New Deal as a source of ideas for how to deal with our current problems. Over the past 15 years, I have worked with Shawn Kantor and a number of other co-authors to examine the economic consequences of a variety of New Deal spending and loan programs.

The Great Depression led to a dramatic change in attitudes toward federal spending and regulation. Between 1929

and 1932, real GDP declined by 25 percent and unemployment rates rose above 20 percent. In response, Herbert Hoover and Republican Congresses nearly doubled federal spending from 3 to 5.9 percent of peak 1929 GDP and established the Reconstruction Finance Corporation (RFC) to lend to local governments for poverty relief and to aid troubled banks and businesses. Meanwhile, real tax revenues declined from 4 to 2.4 percent of 1929 GDP by 1932 and the federal budget reached a deficit of 3.5 percent of 1929 GDP. Seeking to balance the budget, Hoover and Congress held spending constant and raised a wide range of taxes in their last year in office.

Promising a New Deal to combat the

problems of the Great Depression, Franklin Roosevelt and a Democratic majority in Congress were elected in a landslide in 1932. Inundated by a broad range of problems, they offered dozens of new programmatic and regulatory fixes. Many new programs involved large increases in funding; real federal outlays increased from 5.9 percent of 1929 real GDP in 1933 to nearly 11 percent by 1939. The deficit fluctuated but the budget never got too much further out of balance because real tax revenues expanded by roughly the same amount.<sup>1</sup>

The grant and loan programs covered a wide variety of issues. About half of the grants went to federal funding of poverty relief, largely delivered as work relief with limited work hours and hourly earnings of

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less than two-thirds of the earnings on traditional government projects. Seventeen percent went to veterans. Another 18 percent financed the building of roads and large public works, paying workers regular wages. To offset the lost income of farm owners, the Agricultural Adjustment Administration (AAA) used 11 percent of the grants to pay farmers to take land out of production and thus limit output and raise farm prices. The majority of loans went to farmers for mortgages and crop loans or to the Home Owners' Loan Corporation (HOLC) to purchase troubled mortgages and refinance them.

To gauge the impact of these New Deal programs, we compiled and digitized panel data sets for cities, counties, and states from a variety of sources. Many of the datasets used in the published papers can be found at my website at the University of Arizona (<https://econ.arizona.edu/faculty/fishback.asp>). New data sets will continue to be posted there as we publish papers that use them. We analyze the data using the econometric methods developed for panel data sets with multiple observations for each location. The analysis usually identifies the impact of a particular New Deal program by focusing on changes over time within the same locations while holding constant changes at the national level, such as changes in the money supply or in national regulations that vary from year to year. In some cases the identification comes from deviations from time trends within the same locations while controlling for the national changes. In nearly every setting, we need to deal with feedback effects from the economy to the New Deal policies, and with potential inability to control for relevant factors that are correlated with the New Deal policy as well as the outcome being studied. We have therefore used a variety of instrumental variable techniques that tighten the focus of the analysis on aspects of each New Deal policy that are not correlated with the outcome variable of interest. A number of ideas for instruments have come from the political economy literature on the distribution of New Deal funds. The latest research in that literature was presented at two New Deal conferences sponsored by the NBER and

the Bradley Foundation.<sup>2</sup> A number of papers from the conferences on a variety of aspects of the New Deal were published in a special issue of *Explorations in Economic History* in October 2013.

The fiscal stimulus package of 2009 has led to renewed policy interest in fiscal multipliers. I worked with several people to compile annual evidence on federal funds distributed to each state for over 50 programs between 1930 and 1940.<sup>3</sup> Valentina Kachanovskaya and I then used the panel to estimate the multiplier for federal funds at the state level using several definitions of federal funding.<sup>4</sup> Except for AAA payments, the multiplier estimates ranged between 0.4 and 1.0. We typically could not reject the hypothesis that the multiplier was one. A multiplier of one means that an additional dollar of federal funding distributed to the state was associated with a rise in state income of one dollar. Some of that money was spent on consumer durables like automobiles; we found that an additional dollar of federal funds was associated with a rise in the value of car registrations of about 15 cents.

### Public Works and Relief Spending

The form of federal spending during the 1930s also mattered a great deal. The public works and relief programs generally raised economic activity, but the AAA farm payments had conflicting effects. In the state multiplier study, public works and relief grants had the highest multipliers, ranging from 0.88 to 1.1. Several other studies also show positive effects on other socioeconomic outcomes. Counties with more public works and relief spending had higher growth in retail sales per capita during the 1930s, as well as more net immigration.<sup>5</sup> The inflows of new migrants had mixed effects on the welfare of the existing population because the inflow was associated with shorter work weeks, more difficulties in obtaining relief when unemployed, and some out-migration.<sup>6</sup> Relief spending reduced crime rates and many death rates. A 10 percent increase in work relief spending was associated with a 1.5 percent reduction in property crime. An

increase in private employment was even better because a 10 percent rise in private employment was associated with a 10 percent reduction in property crime.<sup>7</sup> Meanwhile, our estimates suggest that an additional \$2 million of relief spending, measured in the prices of year 2000, in a city was associated on average with one fewer infant death, one less suicide, 2.4 fewer deaths from infectious disease, and one less death from diarrhea, in that city. Such spending would also lead to an increase in the birth rate back to its long-term trend.<sup>8</sup> Old age assistance, on the other hand, did not reduce the death rates of the elderly, possibly because it largely replaced payments in regular programs.<sup>9</sup>

Relief spending had weak and sometimes negative effects on measures of private employment. Valentina Kachanovskaya and I find that additional federal spending in a state had a negative effect on private employment.<sup>10</sup> In a study of monthly panel data for cities, Todd Neumann, Kantor and I find small positive effects of relief spending on private employment before 1936—one private job for eight relief cases—but a negative effect in later years.<sup>11</sup> The lack of strong positive employment effects of the relief grants may be one reason why the unemployment rate failed to fall below 10 percent over the course of the decade.

### AAA Farm Program

The New Deal introduced modern farm subsidies. AAA payments to farmers to take land out of production had conflicting effects. In the cross-state study of multipliers, an additional dollar of AAA payments was associated with an increase in personal income of at most 15 cents, and the effect was negative in other specifications. The AAA mostly aided landowners, particularly large landowners, by paying them to take land out of production, but this came at the expense of many farm workers. In a paper that was presented at two recent NBER New Deal conferences, Briggs Depew, Paul Rhode, and I find that the AAA led to sharp drops in the employment of white and black farm laborers, sharecroppers, and tenants.<sup>12</sup>



These mixed effects are also found in our earlier studies. AAA grants had slight negative effects on retail sales per capita and on net migration.<sup>13</sup>

## Mortgage Policies

During both the 1930s and the 2000s, there were sharp rises in home mortgage delinquencies and foreclosures. The New Deal sought to solve the mortgage crisis by creating the Home Owners' Loan Corporation (HOLC). I worked with Jonathan Rose and Kenneth Snowden to examine the operations and impact of the HOLC.<sup>14</sup> We expanded upon earlier NBER-sponsored research by C. Lowell Harriss.<sup>15</sup> The HOLC issued bonds, which they used to purchase from lenders over a million nonfarm mortgages in which the borrowers were in trouble through no fault of their own. They then refinanced the mortgages for the borrowers. At its peak, the HOLC held mortgages on roughly 10 percent of all nonfarm homes in America. The HOLC came close to fully replacing toxic mortgages on lenders' books because it often paid prices that covered the principal owed, interest owed, and taxes paid by the lender. When the loan was refinanced, the HOLC used the amount paid to the lender as the basis of the refinanced loan; therefore, the borrowers did not get a break on the amount owed. Borrowers benefitted because the HOLC refinanced at a low interest rate, lengthened the period of the loan, and used a modern, direct-reduction loan contract where each loan payment immediately retired part of the principal owed. They also benefitted because the HOLC was very slow to foreclose, often waiting through more than 1.5 years of delinquency to allow borrowers more time to get back on their feet in the horrendous economy of the 1930s. Even so, the agency ended up foreclosing on 20 percent of its loans. The HOLC benefitted from a federal guarantee on its bonds, which allowed it to issue bonds at low interest rates and to practice its patient foreclosure policy. The *ex ante* risk for the HOLC probably implies a federal subsidy of 20 to 30 percent of the value of the loans. After the HOLC closed down its opera-

tions in 1951, however, its losses added up to only about 2 percent of the value of the loans because it was often able to sell foreclosed homes when housing prices recovered during World War II. The HOLC also had positive effects on housing markets, helping to stave off further declines in home prices and home ownership rates after 1933. In smaller counties throughout the U.S., we estimate that the HOLC prevented housing prices from dropping another 16 percent and kept about 11 percent of nonfarm homeowners from losing their homes.

The New Deal led to a huge expansion of government activity in a wide variety of sectors at all levels of government, and I can only cover part of the research that we have performed here.<sup>16</sup> Our ongoing research is focused on four areas of the New Deal: more in-depth work on the impact of the farm spending and lending programs,<sup>17</sup> labor markets,<sup>18</sup> the responses of state governments to the Great Depression and the New Deal, and further research on the boom and bust in housing and mortgage markets, which is one of the subjects addressed in a NBER conference volume on the economic history of housing.<sup>19</sup>

<sup>1</sup> P. V. Fishback, "U.S. Monetary and Fiscal Policy in the 1930s," NBER Working Paper No. 16477, October 2010, and Oxford Review of Economic Policy, 26 (3), 2010, pp. 385–413. [Return to text](#)

<sup>2</sup> S. E. Kantor, P. V. Fishback, and J. J. Wallis, "Did the New Deal Solidify the 1932 Democratic Realignment?" NBER Working Paper No. 18500, November 2012, and Explorations in Economic History, 50 (4), October 2013, pp. 620–33; R. Fleck, "Why Did the Electorate Swing Between Parties During the Great Depression?" Explorations in Economic History, 50 (4), October 2013, pp. 599–619. [Return to text](#)

<sup>3</sup> P. V. Fishback, "New Deal Funding: Estimates of Federal Grants and Loans Across States by Year, 1930–1940," *Forthcoming in Research in Economic History*. (An earlier version was part of NBER Working Paper No. 16561, listed below.) [Return to text](#)

<sup>4</sup> P. V. Fishback and V. Kachanovskaya,

"In Search of the Multiplier for Federal Spending in the States During the Great Depression," NBER Working Paper No. 16561, November 2010, and *forthcoming in Journal of Economic History*.

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<sup>5</sup> P. V. Fishback, W. C. Horrace, and S. E. Kantor, "Did New Deal Grant Programs Stimulate Local Economies? A Study of Federal Grants and Retail Sales during the Great Depression," NBER Working Paper No. 8108, February 2001, and The Journal of Economic History, 65 (1), March 2005, pp. 36–71; P. V. Fishback, W. C. Horrace, and S. E. Kantor, "The Impact of New Deal Expenditures on Mobility During the Great Depression," NBER Working Paper No. 8283, February 2001, and Explorations in Economic History, 43 (2), April 2006, pp. 179–222.

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<sup>6</sup> L. P. Boustan, P. V. Fishback, and S. E. Kantor, "The Effect of Internal Migration on Local Labor Markets: American Cities During the Great Depression," NBER Working Paper No. 13276, July 2007, and Journal of Labor Economics, 28 (4), October 2010, pp. 719–46. [Return to text](#)

<sup>7</sup> R. S. Johnson, P. V. Fishback, S. E. Kantor, "Striking at the Roots of Crime: The Impact of Social Welfare Spending on Crime During the Great Depression," NBER Working Paper No. 12825, January 2007, and Journal of Law and Economics, 53 (4), November 2010, pp. 715–40.

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<sup>8</sup> P. V. Fishback, M. R. Haines, and S. E. Kantor, "Births, Deaths, and New Deal Relief During the Great Depression," NBER Working Paper No. 11246, April 2005, and Review of Economics and Statistics, 89 (1), February 2007, pp. 1–14. [Return to text](#)

<sup>9</sup> A. Stoian, and P. V. Fishback, "Welfare Spending and Mortality Rates for the Elderly Before the Social Security Era," NBER Working Paper No. 14970, May 2009, and Explorations in Economic History, 47 (1), January 2010, pp. 1–27. [Return to text](#)

<sup>10</sup> P. V. Fishback and V. Kachanovskaya, "In Search of the Multiplier for Federal Spending in the States During the Great

Depression,” NBER Working Paper No. 16561, November 2010, and forthcoming in *Journal of Economic History*.

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<sup>11</sup> T. C. Neumann, P. V. Fishback, and S. E. Kantor, “The Dynamics of Relief Spending and the Private Urban Labor Market During the New Deal,” NBER Working Paper No. 13692, December 2007, and *Journal of Economic History*, 70 (1), March 2010, pp. 195–220.

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<sup>12</sup> B. Depew, P. V. Fishback, and P. Rhode, “New Deal or No Deal in the Cotton South: The Effect of the AAA on the Agricultural Labor Structure,” *Explorations in Economic History*, 50 (4), October 2013, pp. 466–86.

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<sup>13</sup> P. V. Fishback, W. C. Horrace, S. E. Kantor, “Did New Deal Grant Programs Stimulate Local Economies? A Study of Federal Grants and Retail Sales during the Great Depression,” NBER Working Paper No. 8108, February 2001, and *The Journal of Economic History*, 65 (1), March 2005, pp. 36–71; P. V. Fishback, W. C. Horrace, S. E. Kantor, “The Impact of New Deal Expenditures

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<sup>14</sup> P. V. Fishback, J. Rose, and K. Snowden, *Well Worth Saving: How the New Deal Safeguarded Home Ownership*, NBER Series on the Development of the American Economy, Chicago, Illinois: University of Chicago Press, 2013, (based in part on P. V. Fishback, A. Flores-Lagunes, W. C. Horrace, S. E. Kantor, J. Treber, “The Influence of the Home Owners’ Loan Corporation on Housing Markets During the 1930s,” NBER Working Paper No. 15824, March 2010. [Return to text](#)

<sup>15</sup> C. L. Harriess, *History and Policies of the Home Owners’ Loan Corporation*, New York, New York: National Bureau of Economic Research, 1951. [Return to text](#)

<sup>16</sup> For more in depth surveys of the entire recent literature, see P. V. Fishback, “U.S. Monetary and Fiscal Policy in the 1930s,” NBER Working Paper No. 16477, October 2010, and *Oxford Review of Economic Policy*, 26 (3): 2010, pp. 385–413; and P. V. Fishback and J.

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<sup>17</sup> C. Kitchens and P. V. Fishback, “Flip the Switch: The Spatial Impact of the Rural Electrification Administration, 1935–1940,” NBER Working Paper No. 19743, December 2013.

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<sup>18</sup> T. C. Neumann, J. Taylor, and P. V. Fishback, “Comparisons of Weekly Hours Over the Past Century and the Importance of Work Sharing Policies in the 1930s,” NBER Working Paper No. 18816, February 2013, and *American Economic Review Papers and Proceedings*, 103 (3), May 2013, pp. 105–10. [Return to text](#)

<sup>19</sup> E. White, K. Snowden, and P. V. Fishback, *Housing and Mortgage Markets in Historical Perspective*, National Bureau of Economic Research Conference Volume, Chicago, Illinois: University of Chicago Press, 2014.

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## Education Inputs and Human Capital Production

### C. Kirabo Jackson \*

Economists have long studied the role of education spending, schools, and teachers in the production of human capital. The recent availability of detailed datasets and powerful computing has permitted researchers to present more

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conclusive evidence regarding these topics. In this summary, I describe my recent work on these issues. I first discuss my work on the basic question of whether increased resources for school districts improve students’ long-run outcomes. I then narrow down the unit of analysis and discuss the effect of individual schools and particular school policies. Finally, I look inside schools and discuss my research on the role of teachers in promoting student learning.

### The Importance of School Spending?

Since the Coleman Report<sup>1</sup> (1966) showed that variation in school resources was unrelated to variation in student outcomes, researchers have questioned whether increased school spending actually improves students’ short- and long-run outcomes. The existing evidence on the effect of school spending on student outcomes used test scores as the