

The Short-Term Success of New Deal Work Relief Programs:
An Evaluation of Private Sector Employment, 1929-1940

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Abstract

This paper examines government work relief programs created by President Roosevelt's Hundred Days Congress aimed at immediate relief, namely, the Civil Works Administration. While the symbolic importance of these programs must be acknowledged, there is some evidence that these programs had little overall effect on recovery. They may have improved the lives of some Americans in the short run, although it is unclear how many Americans truly benefited. That is the question to be addressed by my research: Did the programs aimed at addressing the unemployment crisis work in the immediate context of the period for the demographic groups toward whom they were addressed? My empirical model aims to evaluate the association between work relief spending and private sector employment across diverse industries. I find industry-specific growth rates to be highly volatile, generally negative in the aggregate, and uncorrelated with work relief spending. Given my empirical evaluation, I posit that the sudden influx of money from New Deal work relief programs played a role in sustaining the retail industry through the later years of the Great Depression, but this benefit did not extend to wholesale or manufacturing. The Civil Works Administration was valuable because it put a few dollars in the pockets of desperate Americans, but the far-reaching economic impact claimed by Roosevelt's administration most likely did not materialize as a result of this program.

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“The country needs and, unless I mistake its temper, the country demands bold, persistent experimentation. It is common sense to take a method and try it: If it fails, admit it frankly and try another. But above all, try something.”
- President Franklin Delano Roosevelt, 1932¹

The Great Depression of the 1930s engendered an unprecedented economic crisis. By 1933, unemployment was nearly 25% nationally.² In many of America’s urban areas, 50% of the work force was idle.³ The newly elected president, Franklin Delano Roosevelt, promised immediate action to address the problem. His approach was twofold; programs enacted within his “first hundred days” were aimed at quickly providing short-term relief for the chronically unemployed. At the same time and over the years that followed, long-term regulatory statutes were enacted to prevent a similar crisis from occurring in the future. While the fate of these programs varied, this period produced sweeping reforms that fundamentally altered the manner in which Americans perceived the role of government.

One of the most innovative of the immediate-relief programs was that of work relief, first administered on a wide scale by the Civil Works Administration (CWA)⁴ but also used as a basis for other programs such as the Civilian Conservation Corps, Federal Emergency Relief Administration, and Works Progress Administration (WPA). This paper focuses primarily on the CWA while also including Agricultural Adjustment Act grants to account for capital intake of the agriculture industry. Roosevelt claimed that these work relief programs succeeded in stimulating

¹ David M. Kennedy, *Freedom from Fear: The American People in Depression and War, 1929-1945* (New York: Oxford University Press, 1999), 104.

² “The Great Depression of the 1930s and its Origins,” San Jose State University Department of Economics, <http://www.sjsu.edu/faculty/watkins/dep1929.htm> (accessed August 16, 2016).

³ Robert S. McElvaine, *The Great Depression: America, 1929-1941* (New York: Times Books, 1984), 75.

⁴ Forrest Anderson Walker, “The Civil Works Administration: An Experiment in Federal Work Relief, 1933-1934,” (PhD diss., The University of Oklahoma, 1962), 2.

private sector employment; this paper empirically examines that claim using multiple linear regression.

Civil Works Administration

The creation of the Civil Works Administration was announced via press release on Wednesday, November 8, 1933 and the official executive order establishing the agency and appointing Henry Hopkins, the successful president of New York's Temporary Emergency Relief Administration, its administrator was dated for the following day.⁵⁶ The public response was immediate; unemployed professionals clamored to apply for positions, congressmen played pork barrel politics in an effort to bring projects to their districts, and a general "wave of optimism" pervaded the country.⁷ The timing of the CWA was most opportune; September and October, 1933 saw a renewed dip in the economy and November, 1933 had the greatest spike in unemployment of any month during Roosevelt's presidency.⁸ Boston, Massachusetts mayor James Curley lauded Hopkins for rendering aid in a timely manner and claimed the federal government's actions may have saved the nation from revolution.⁹

Roosevelt's Aid Strategy and CWA Genesis

While the Civil Works Administration was revolutionary in its implementation, it was not so in its conception; nor was it the brainchild of President Roosevelt. Many scholars credit Samuel Gompers – the turn-of-the-century labor union leader – with being the first American to publicly suggest such a system of government employment for poverty relief. Gompers wrote about this system in an article for *American Federationist* – at the time, the official publication

⁵ United States. Executive Order. No. 6420-B, Public No. 67, (November 9, 1933).

⁶ Jean Edward Smith, *FDR* (New York: Random House, 2007), 251.

⁷ Walker, "The Civil Works Administration," 56.

⁸ U.S. Bureau of the Census, "Statistical Abstract of the United States," (Washington: Government Printing Office, 1934), 730.

⁹ *Washington Post*, November 16, 1933, 1.

of the American Federation of Labor – 30 years prior to Roosevelt’s election.¹⁰ While numerous other activists took up the flag of public work relief in the decades following Gompers’ opinion piece, Roosevelt was essentially the first student of this school of policy to find himself in a position to enact such policy on a national scale. Most previous efforts were directed toward municipal governments and popular support was consistently anemic.¹¹

The Civil Works Administration was largely conceived as a result of the relative failure of other similar federal programs in the first eight months of Roosevelt’s presidency. Reasons for failure ranged from poor administrative structure to lack of congressional support to subpar construction from a policy standpoint.

The first of these measures, the Wagner-Lewis Bill of 1933, established the Federal Emergency Relief Administration in mid-May of that year. In keeping with the popular, 30-year-old strategy of simply sending money to states and municipalities and allowing them to use it as they wished, FERA was granted \$500,000,000 to distribute to all 48 states, Alaska, Hawaii, the District of Columbia, Puerto Rico, and the US Virgin Islands.¹² Even with these grants, however, FERA aid was meant merely to be a supplement to state and local aid.

June, 1933 saw the passing of the National Industrial Recovery Act, which created the National Recovery Administration and the Public Works Administration. The PWA endeavored to take the first step in promoting economic recovery by employing Americans to repair the nation’s infrastructure. It was not a public employment program and was not aimed at providing work or public aid. It was a program aimed solely at developing infrastructure; employment was

¹⁰ Harry L. Hopkins, *Spending to Save: The Complete History of Relief* (New York: W. W. Norton & Co., 1936), 116.

¹¹ Leah H. Feder, *Unemployment Relief in Periods of Depression: A Study of Measures Adopted in Certain American Cities, 1857 through 1922* (New York: Russell Sage Foundation, 1936), 224.

¹² U.S. Congress, House of Representatives, Committee on Appropriations, *Hearings on HR 7257, Federal Emergency Relief and Civil Works Program*, 73rd Cong., 2nd sess., 1934, 2.

a positive externality.¹³ However, the agency's fear of waste and fraud led to extremely conservative spending and the program ultimately had little impact.¹⁴

In addition to the minimal impact of the PWA, complaints against FERA abounded. A common subject of complaint concerned the low wage rates set by states and municipalities, to which FERA responded by limiting work hours to 35 per week and threatening to cut aid to any localities paying less than 30 cents per hour.¹⁵ Another complaint mounted against state aid agencies was the widely-used strategy of means-testing, in which a lengthy string of questions was to be answered by the applicant before one could qualify for aid. The head of FERA, Harry Hopkins, believed this to be unnecessary and degrading to the applicant.¹⁶ In an ironic twist, Hopkins himself decried FERA jobs as being little more than "leaf-raking enterprises;" (CWA jobs often received the same criticism even though they were intended to be the solution to this problem).¹⁷ These issues, among others, contributed to the perceived need for a federally funded and administered aid program in which applicants were provided with meaningful – or at the very least, productive – jobs without the necessity of means-testing. This sparked the infancy of the Civil Works Administration.

CWA Structure and Regulation

Because severe time constraints complicated Hopkins' work, the organization of the CWA was less organizational constructs and more situational improvisation on the part of Hopkins. The CWA's administrative workforce was nearly entirely comprised of officials from other government and non-profit programs: FERA provided welfare administrators; private

¹³ Harold L. Ickes, *Back to Work: The Story of PWA* (New York: Macmillan Co., 1935), vii.

¹⁴ Walker, "The Civil Works Administration," 34.

¹⁵ Federal Emergency Relief Administration, "Monthly Report of the Federal Emergency Relief Administration," December, 1933 (Washington: Government Printing Office, 1933), 2.

¹⁶ Hopkins, *Spending to Save*, 99.

¹⁷ Walker, "The Civil Works Administration," 40.

contracting firms and professional organizations furnished project managers, engineers, and inspectors; the Veterans Administration allowed the use of their accountants and check-printing technology for payment disbursements.¹⁸ Hopkins initially desired a highly centralized operation, choosing to appoint all state administrators himself instead of remanding the responsibility to state governors. Additionally, he federalized all workers already on state or county work projects under the umbrella of FERA – approximately two million workers.¹⁹ This immediately put Hopkins halfway to the agency’s goal of four million employed. However, this initial employment number is misleading, as these individuals were already employed prior to the creation of the CWA; no new jobs were created in this initial stage, putting the agency’s total employment impact closer to two million as opposed to the four million number championed by administration officials. Hopkins’ desire for centralized control quickly evaporated, however, as he realized the logistical necessity of delegating to state and local administrations the ability to approve projects, purchase materials, and ascertain the appropriate number of employees to hire.²⁰

Key to understanding the CWA’s hiring procedure is the designation of the CWA as an employment agency, not a welfare disbursement office. Commensurately, the still-fledgling United States Employment Service handled the hiring of the remaining two million employees, conducting onboarding procedures in terms of applicants’ “skill, training, and experience” as opposed to hiring on the basis of need.²¹ In keeping with its goal to provide continuous employment, the agency also hired with preference given to those who had previously worked on

¹⁸ Bonnie Fox Schwartz, *The Civil Works Administration, 1933-1934* (Princeton, NJ: Princeton University Press, 2014), 40.

¹⁹ Corrington Gill, *Wasted Manpower* (New York: W.W. Norton and Company, 1939), 166.

²⁰ Civil Works Administration, “Rules and Regulations, Number 3,” November 15, 1933 (Washington: Government Printing Office, 1933), 8.

²¹ Schwartz, *The Civil Works Administration*, 43.

FERA or CWA projects as opposed to the need-based hiring criteria that would have been used by welfare programs.²² In the interest of expediting hiring to meet Roosevelt's December 15 deadline, the agency set quotas for individual states calculated based 75 percent on state population and 25 percent on total state relief obligations. This criterion, however, led to a decidedly unequal disbursement pattern; "this formula favored urban-industrial areas... and gave eleven states 57 percent of all jobs. 39 percent of the total went [to]... 93 large cities, generally confined to New York, Illinois, Ohio, Pennsylvania, Michigan, California, Indiana, Massachusetts, New Jersey, Texas, and Wisconsin."²³ Federal policy did not specifically address rural areas until FERA began rural rehabilitation programs in April 1934, after the CWA had already been disbanded.²⁴

CWA wage guidelines were based upon the Public Works Administration's wage formula, since initial CWA funding came from PWA appropriations. This system divided the country into southern, central, and northern regions and provided minimum wages for skilled labor of \$1.00, \$1.10, and \$1.20 per hour for each region, respectively. Minimum wages for unskilled labor were set at \$0.40, \$0.45, and \$0.50 per hour for each region, respectively. However, the CWA was free to set its own wages for professional and clerical employment, and it did so at the rate of \$12.00, \$15.00, and \$18.00 per week for each region, respectively.²⁵

These white-collar workers were primarily recruited through professional organizations, to whom Hopkins reached out for assistance soon after the CWA's conception. Hopkins

²² Civil Works Administration, "Rules and Regulations, Number 2," November 15, 1933 (Washington: Government Printing Office, 1933), 18.

²³ Schwartz, *The Civil Works Administration*, 45.

²⁴ U.S. National Resources Planning Board, *Security, Work, and Relief Policies: Report of the Committee on Long-Range Work and Relief Policies to the United States Resources Planning Board* (New York: De Capo Press, 1973), 31.

²⁵ Viola Wyckoff, *The Public Works Wage Rate* (New York: Columbia University Press, 1946), 92.

recognized the importance of leveraging professional organizations due to their vast bureaucratic reach and ability to craft specialized, industry-specific programs and projects. Hopkins also realized their ability to attract professional labor far outweighed his; white-collar workers were far more likely to approach a professional organization in search of employment before they lined up in relief offices. To that end, Hopkins created an entirely new division within the agency, the Civil Works Service, to manage and take advantage of these business relationships in the effort to employ specialized professionals. This cooperation also tempered any public perception of the CWA as being detrimental to established industry practices. New York City, with 40,000 white-collar workers on the CWA rolls, became a symbol of hope for unemployed professionals nationwide.²⁶

Rhetoric and Response

In addressing the immediate need of unemployment curtailment, Roosevelt's administration turned to work relief as a strategy to "deliver assistance... and stimulate aggregate demand."²⁷ The result was first FERA, followed by the CWA, a work relief agency dedicated to genuine employment and the prevailing wage. Key to the CWA's implementation was Roosevelt's insistence that it be only a temporary program to stimulate private employment growth and occupy citizens until private sector employment could be procured. For this reason, working hours were strictly limited to encourage CWA beneficiaries to seek employment in the private sector. In a message to the National Emergency Council, Roosevelt curtly stated that "we

²⁶ Schwartz, *The Civil Works Administration*, 132.

²⁷ Elliot A. Rosen, *Roosevelt, the Great Depression, and the Economics of Recovery* (Charlottesville, VA: University of Virginia Press, 2012), 152.

must not take the position that we are going to have permanent depression in this country, and it is very important that we have somebody to say that quite forcefully.”²⁸

Public reaction to the CWA was rather immediate; most who opined gave the agency’s work a positive assessment, but the program also came under fire for its costliness. A member of Maryland’s Old Town Merchants and Manufacturers Association agreed with the mayor of Boston, saying of the CWA, “it is impossible to tell what might have happened without it. We should not consider ourselves immune to riots and revolutions that break out in other countries.”²⁹ FERA referred back to the original goal of the CWA and claimed success in its final report, citing the CWA’s legacy of “reducing the number of relief cases not only directly by providing jobs for persons on the relief rolls but also indirectly by providing public employment for a large number of potential relief cases and stimulating employment in private industry through demand for materials and increased purchasing power.”³⁰ This was the fundamental concept of which Roosevelt and Hopkins had attempted to persuade the American people, but the extent to which this stimulus actually occurred has never been empirically confirmed.

Not everyone willingly accepted these claims at face value, however. The CWA was also decried as “costly, competitive with private industry, and incompatible with American individualism”³¹ while the *Los Angeles Times* accused Roosevelt and Hopkins of attempting to capitalize upon the “unrealistic Socialist dogma that the world owes every man a living.”³² While

²⁸ Lester G. Seligman and Elmer E. Cornwell, Jr., eds., *New Deal Mosaic: Roosevelt Confers with his National Emergency Council, 1933-1936* (Eugene, OR: University of Oregon Press, 1965), 76.

²⁹ Maryland Civil Works Administration, “Civil Works Administration Activities in Maryland,” n.d., 157 in Walker, “The Civil Works Administration,” 109.

³⁰ *Final Statistical Report of the Federal Emergency Relief Administration*, prepared under the direction of Theodore E. Whiting (Washington: Government Printing Office, 1942), 24.

³¹ Richard S. Kirkendall, *The United States 1929-1945: Years of Crisis and Change* (New York: McGraw-Hill, Inc., 1974), 51.

³² “Theory and Practice,” *Los Angeles Times*, January 7, 1934, 20.

the average man in need of employment did not pay much mind to the overall costliness of the program, larger societal institutions took immediate notice. Whether Hopkins' initial promise of employment stimulation was realized or simply a pipe dream, the immense cost associated with the largest employment program ever pursued by the United States eventually brought that program to a close.

Program Cessation

In keeping with the financial theme of the 1930s, the CWA quickly exhausted its fiscal resources. In fact, the program ceased to be soluble months prior to the date estimated by Hopkins. The program had originally obtained \$400,000,000 for operating costs, which Hopkins had intended to stretch through the end of the winter. However, even with supplementary funding from other government appropriations, funding for the CWA was sapped dry by early February, 1935.³³ The program reached its zenith on January 18, 1935, when 4,263,644 Americans claimed employment by the CWA and after which hours and wages began to be subject to strict quotas. Even with this tapering and an additional \$450,000,000 appropriation by Congress, the program was set for complete closure by May 1 of that year.³⁴ In an effort to retain work for some of those who would lose their CWA income, Roosevelt created the Works Progress Administration (WPA) and instructed the new agency to hire as many of the 3.5 million "employables" as possible of the 5 million people on relief rolls.³⁵

Although this paper does not examine the WPA in depth, its structure was relatively similar to that of the CWA and it provided government work for the unemployed. However, WPA work was far closer to federal employment than it was to civil work relief. For the purposes of

³³ Walker, "The Civil Works Administration," 192.

³⁴ Ibid., 206.

³⁵ Schwartz, *The Civil Works Administration*, 156.

this paper, however, it may be considered a continuation of the CWA's work relief policies, as the primary role of the WPA was to distribute funds to individuals who required financial assistance.

Empirical Evaluation

Comments on Data Collection and Calculation

Dealing quantitatively in matters over 80 years old presents unique complications, namely the availability and consistency of data. The federal government did not begin federally-organized employment data collection until 1937 and data units did not become uniform across government publications until even later, generally not until the 1950s. As a result, I have had to take some liberties with data transformation to procure a holistic data set sufficiently robust for statistical calculation. My transformations are enumerated in this section along with specific data sources.

I have also taken some liberties in the consolidation of certain cities and counties to account for proximity and consequent trade patterns. My decisions to consolidate these metropolitan statistical areas are primarily driven by Civil Works Administration spending data that report expenditures for these municipal agglomerates even though census data separates them into individual observations. I have combined following cities and counties: DeKalb and Fulton counties into Atlanta, GA; Wyandotte, KS and Jackson, MO counties into Kansas City; St. Louis city and St. Louis and St. Clair counties into St. Louis, MO; Bronx, Kings, New York, Queens, and Richmond counties into New York City, NY; Lehigh and Northampton counties into Allentown/Bethlehem, PA; Norfolk city and Norfolk county into Norfolk, VA; Richmond city and Henrico county into Richmond, VA; Roanoke city and Roanoke county into Roanoke, VA.

Population, demographic, employment, and specific industrial and agricultural data for 1930 and 1940 came from their respective United States Census publications, digitized as ICPSR

tape number 0003, as corrected by Michael Haines.³⁶ Additional retail and wholesale data for the year 1930 came from the retail and wholesale distribution components of the 1930 census.³⁷ Agricultural Adjustment Act payments, farm data, and emergency relief expenditure data for the year 1933 came from the Consumer Market Data Handbook for 1933.³⁸ Retail, wholesale, employment, population, and income information came from the Consumer Market Data Handbook for 1935.³⁹ Note that the Consumer Market Data Handbooks were published a number of years later than the data of which they are comprised. Professor Price V. Fishback of the University of Arizona graciously made available his Civil Works Administration and Works Progress Administration expenditure data.⁴⁰ All tax information came from U.S. Bureau of Internal Revenue publications for 1930, 1933, 1935, and 1940.⁴¹ 1930 employment data came from the unemployment component of the 1930 census.⁴² 1940 employment data came from the

³⁶ Michael R. Haines and Inter-university Consortium for Political and Social Research, "Historical, Demographic, Economic, and Social Data: The United States, 1790-2002," *Inter-university Consortium for Political and Social Research*, May 21, 2010 (accessed June 6, 2016).

³⁷ U.S. Bureau of the Census, "Fifteenth Census of the United States: 1930," Distribution vol. 1, Retail Distribution part 1, (Washington: Government Printing Office, 1933). U.S. Bureau of the Census, "Fifteenth Census of the United States: 1930," Distribution vol. 2, Wholesale Distribution, (Washington: Government Printing Office, 1933).

³⁸ Raleigh W. Dawson and U.S. Bureau of Foreign and Domestic Commerce, "Consumer Market Data Handbook: 1936," (Washington: Government Printing Office, 1936).

³⁹ Ben P. Haynes, Guerry R. Smith, and U.S. Bureau of Foreign and Domestic Commerce, "Consumer Market Data Handbook: 1939," (Washington: Government Printing Office, 1939).

⁴⁰ Price V. Fishback, "Data Set for Geographic Distribution of New Deal Spending by Counties," http://www.u.arizona.edu/~fishback/Published_Research_Datasets.html (accessed June 6, 2016).

⁴¹ U.S. Bureau of Internal Revenue, "Statistics of Income for 1930: Compiled from Income Tax Returns and Including Statistics from Estate Tax Returns," (Washington: Government Printing Office, 1932). U.S. Bureau of Internal Revenue, "Statistics of Income for 1933: Compiled from Income-Tax Returns and Including Statistics from Estate-Tax Returns and Gift-Tax Returns," (Washington: Government Printing Office, 1935). U.S. Bureau of Internal Revenue, "Statistics of Income for 1935," part 1 (Washington: Government Printing Office, 1938). U.S. Bureau of Internal Revenue, "Statistics of Income for 1940," part 1 (Washington: Government Printing Office, 1943).

⁴² U.S. Bureau of the Census, "Fifteenth Census of the United States: 1930," Unemployment vol. 1, (Washington: Government Printing Office, 1931).

population component of the 1940 census.⁴³ Government employment data came from annual reports of the U.S. Civil Service Commission for the years 1930, 1933, and 1935.⁴⁴

I obtained several variables via calculation using other variables. I converted all monetary variables into 1930 dollars using consumer price indices published by the Bureau of Labor Statistics and transformed into per capita rates using available and obtained population data.⁴⁵ I obtained 1933 and 1935 population data using a linear interpolation of 1930 and 1940 population data. I calculated marginal propensity to consume of the employer by dividing the sum of all industry wages by the total economy income for the respective year. I calculated the average economy-wide wage rate by dividing the sum of all industry wages by the total number of workers across all industries. I obtained wage rates for each industry using a similar procedure. As no public employee wage data was available, the model assumes that government wages resembled a prevailing wage and are represented by industry-wide averages summed over the economy. I obtained the marginal propensity to consume of each individual industry as well as the formal sector as a whole by calculating the percentage of the total per capita spending for which each county or county agglomerate accounted. I calculated employment percentages for each industry by dividing the number of workers in each industry by the total population for each year. I obtained percentages of gainfully employed using a similar procedure. For each industry, one of the most important variables is the percentage change in the percentage of the population working in the respective industry. I calculated this by dividing the difference between 1940 and

⁴³ U.S. Bureau of the Census, "Sixteenth Census of the United States: 1940," Population vol. 3, (Washington: Government Printing Office, 1943).

⁴⁴ U.S. Civil Service Commission, "Forty-Seventh Annual Report: 1930," (Washington: Government Printing Office, 1930). U.S. Civil Service Commission, "Fiftieth Annual Report: 1933," (Washington: Government Printing Office, 1933). U.S. Civil Service Commission, "Fifty-Second Annual Report: 1935," (Washington: Government Printing Office, 1935).

⁴⁵ U.S. Bureau of Labor Statistics, "Databases, Tables, and Calculators by Subject," *U.S. Department of Labor*, <http://www.bls.gov/data/#prices> (accessed August 13, 2016).

1930 employment percentages by the 1940 employment percentage. I obtained the percentage change in per capita industry-specific spending using a similar procedure. I obtained the total wage growth rate for the economy by dividing the inflation-adjusted 1940 total wages summed over all industries by the 1930 total wages summed over all industries. I obtained the work relief expenditure growth rate by dividing the inflation-adjusted 1940 work relief expenditure data by the 1933 work relief expenditure data. This calculation must take 1933 data in lieu of 1930 data, as no work relief programs existed prior to 1933. I obtained the Agricultural Adjustment Act expenditure growth rate using a similar procedure.

As individual income tax rate data was only available for 1933 and 1935, I obtained the 1930 and 1940 data using a linear extrapolation of the 1933 and 1935 data. While the 1940 numbers are theoretically accurate, I admit the 1930 numbers are problematic because the high taxation increase in 1933 are not captured by the computation. It is likely that individual income tax rates were slightly lower in 1930 than my calculation predicts.

It should be noted that no manufacturing or agricultural data was available for 1933 or 1935, so economy-wide analysis is only possible across 1930 and 1940 data. I cannot assume a linear interpolation could produce 1933 and 1935 data for such variables because they do not meet regularity conditions necessary for such estimation.

Representative Model of the New Deal Economy

The model proposed in this paper is an adaptation of both the Harris-Todaro model of intersectorality (1970)⁴⁶ as well as the local retailing model presented by Fishback, Horrace, and

⁴⁶ John R. Harris and Michael P. Todaro, "Migration, Unemployment and Development: A Two-Sector Analysis" in *The American Economic Review* 60, no. 1 (1970): 126-142. Gary S. Fields, "A Guide to Multisector Labor Market Models" in *Social Protection Discussion Paper Series*, no. 0505 (April 2005): 34-40.

Kantor (2001).⁴⁷ The model assumes a local economy that is tri-sectoral. The “formal” sector consists of industries such as retail, wholesale, manufacturing, service, and any other industry contributing to official government employment and revenue statistics. The “informal” sector corresponds to the agricultural sector, where labor typically consisted of informal contributions by family members and seasonal laborers. This sector also includes day laborers and any employment not accounted for in the other two sectors. Finally, the government sector interacts with the formal and informal sectors via relief and subsidization expenditures. In the purview of relief expenditures, this paper considers the Civil Works Administration, Works Progress Administration, and the Agricultural Adjustment Act. The government sector also includes public employment figures such as the military, postal service, and other nominal government employment in agencies and the like.

The practical constraints plaguing a model of economic history are significant; the model’s ability to accurately exhibit monetary and employment flows within the local economy varies directly with the availability of pertinent and quality data. I address data availability and constraints in the preceding section. Given these data constraints, I do not expect a strictly formulaic approach to be effective. Instead, this model aims to summarize and represent intra-economy monetary flows and how they translate into employment. It is necessarily limited in its approach, specifically in the sense that it aims to examine only finances flowing within the county and does not account for inflows from surrounding counties. While this confounding variable remains unaccounted-for, I attempt to offset it by the method of county selection and, in some cases, combination. I also present this explanation in the preceding section. Additionally, I

⁴⁷ Price V. Fishback, William C. Horrace, and Shawn Kantor, “The Impact of New Deal Expenditures on Local Economic Activity: An Examination of Retail Sales, 1929-1939” in *NBER Working Paper Series*, no. 8108 (2001): 31-37.

assume a frictionless labor market in which all employable actors have equal access to all employment opportunities, are equally willing to accept all offers of employment regardless of sector, and only reject offers of employment at random.

With this model, I attempt to gauge the effect of New Deal relief expenditures on increasing employment in the private sector. To that end, equation (1) expresses total employment for the county:

$$\Delta E_t = \Delta E_f + \Delta E_i + \Delta E_g \quad (1)$$

where ΔE_t denotes the change in total county employment and the addends denote the change in formal, informal, and government employment, respectively. This equation claims all county employment is entirely contained within these three sectors.

Equations (2), (3), and (4) describe employment for each sector:

$$\Delta E_f = \frac{cMPC_e\Delta F}{w} \quad (2)$$

$$\Delta E_i = \frac{cMPC_e\Delta I}{w} \quad (3)$$

$$\Delta E_g = \frac{MPC_e\Delta G}{w} \quad (4)$$

where c represents the effect of government's work relief programs on the private sector, also known as "crowding out." This variable may take the form of any number $0 < c < 1$, with $c=0$ representing complete and total government crowding out of private enterprise and $c=1$ representing no effect. Agricultural Adjustment Act grants likely caused at least some form of

crowding out, as the provision of such grants required farmers to take certain tracts of land out of production.⁴⁸ MPC_e denotes the marginal propensity to consume of the employer. In other words, it shows what percentage of net income is expended on labor. The final variable, w , simply denotes the average wage rate for the industry.

Variables ΔF , ΔI , and ΔG denote equations (6), (7), and (8) in the relationship defined by equation (5):

$$\Delta Y = \Delta F + \Delta I + \Delta G \quad (5)$$

where ΔY represents the change in total income for the county and the addends denote the change in the amount of money being supplied to the county economy by the formal, informal, and government sectors, respectively. In other words, equation (5) shows how much of the money taken in by these sectors is being recycled back through the economy. Like equation (1), equation (5) constrains all county income to these three sectors; it assumes no incoming money from any other source foreign to a given county or county agglomerate. Equations (6), (7), and (8) represent these sector expenditures:

$$\Delta F = MPC_f[\Delta Y(1 - tT) + \Delta CW] \quad (6)$$

$$\Delta I = MPC_i[\Delta Y(1 - tT) + \Delta AA] \quad (7)$$

$$\Delta G = dtT\Delta Y$$

⁴⁸ United States. Congress. Public Law 73-10, 73d Congress, H.R. 3835, Box 54, Folder 1, William McChesney Martin, Jr., Papers, https://fraser.stlouisfed.org/scribd/?item_id=457089&filepath=/docs/historical/martin/54_01_19330512.pdf (accessed September 28, 2016).

(8)

where MPC_f and MPC_i indicate the marginal propensity to consume of entities within the formal and informal sectors, respectively. In other words, these variables capture the percentage of sector income being spent or invested in the economy. ΔY again denotes the change in total income for the county while T represents the average federal income tax percentage and t the average percentage of people paying that income tax. I cannot assume that everyone pays an income tax of some kind because the income tax bracket system affected far fewer people in this period than it does presently. ΔCW and ΔAA indicate the ways in which the government sector interacts directly with the private sectors. As ΔF , ΔI , and ΔG show the money expended by each sector, government relief expenditures are placed within the formula of the sector to which they are extended to account for their effect on the income and subsequent investment of each sector. ΔCW denotes the change in income from either the Civil Works Administration or the Works Progress Administration, depending on the year. As these agencies performed nearly identical work and were not coexistent,⁴⁹ this model assumes them both to be contributors to one variable. ΔAA denotes the change in income from the Agricultural Adjustment Act, which was active throughout the entire period of focus. In the government sector equation, d represents the extent to which the federal government could run a deficit. This variable may take the form of any real, nonzero number, with $d=1$ representing a balanced budget, $0 < d < 1$ representing a budget surplus (unlikely in this period, but theoretically possible), and $d > 1$ representing a budget deficit.

I must note that again, because of data restrictions, it is not possible to account for one hundred percent of all formal sector employment. Therefore, it may be more prudent to evaluate

⁴⁹ Forrest Anderson Walker, "The Civil Works Administration: An Experiment in Federal Work Relief, 1933-1934," (PhD diss., The University of Oklahoma, 1962).

changes in employment only within a particular industry. I have written this model in such a way that formal sector equations can be substituted for any individual sector without necessitating changes in variables or construction. Each variable would simply correspond to a particular industry as opposed to the whole sector.

I calculate equation (9) by substituting equations (2), (3), and (4) into equation (1):

$$\Delta E_t = \frac{cMPC_e\Delta F}{w} + \frac{cMPC_e\Delta I}{w} + \frac{MPC_e\Delta G}{w} \quad (9)$$

which simplifies to:

$$\Delta E_t = \frac{MPC_e(c\Delta F + c\Delta I + \Delta G)}{w} \quad (10)$$

I calculate equation (11) by substituting equations (6), (7), and (8) into equation (10):

$$\Delta E_t = \frac{MPC_e\{cMPC_f[\Delta Y(1 - tT) + \Delta CW] + cMPC_i[\Delta Y(1 - tT) + \Delta AA] + dtT\Delta Y\}}{w} \quad (11)$$

which simplifies to:

$$\Delta E_t = \frac{MPC_e\{\Delta Y[c(1 - tT)(MPC_f + MPC_i) + dtT] + \Delta CW + \Delta AA\}}{w} \quad (12)$$

Defining Π as the county income multiplier, I arrive at equation (13), which shows the change in total county employment as a function of county income (including government relief expenditures):

$$\Delta E_t = \frac{MPC_e(\Delta Y\Pi + \Delta CW + \Delta AA)}{w} \quad (13)$$

where $\Pi = c(1 - tT)(MPC_f + MPC_i) + dtT$.

Estimation Procedure

I aim to estimate the percentage change in the percent of the population working within a given industry by training a multiple linear regression of all relevant variables enumerated in the preceding section. As a matter of data constraints, I take regressions for gainfully employed, retail, wholesale, and manufacturing separately. I represent these four regressions with equations (14), (15), (16), and (17):

$$GE_{30-40} = \beta_1 MPC_{e_{40}} + \beta_2 w_{40} + \beta_3 MPC_{f_{40}} + \beta_4 MPC_{i_{40}} + \beta_5 Y_{30-40} + \beta_6 t_{30-40} + \beta_7 CW_{30-40} + \beta_8 AA_{30-40} + \varepsilon \quad (14)$$

$$RE_{30-40} = \theta_1 R_{30-40} + \theta_2 w_{R_{40}} + \theta_3 MPC_{R_{40}} + \theta_4 MPC_{f_{R_{40}}} + \theta_5 t_{30-40} + \theta_6 CW_{30-40} + \nu \quad (15)$$

$$WE_{30-40} = \lambda_1 W_{30-40} + \lambda_2 w_{W_{40}} + \lambda_3 MPC_{W_{40}} + \lambda_4 MPC_{f_{W_{40}}} + \lambda_5 t_{30-40} + \lambda_6 CW_{30-40} + \gamma \quad (16)$$

$$ME_{30-40} = \phi_1 M_{30-40} + \phi_2 w_{M_{40}} + \phi_3 MPC_{M_{40}} + \phi_4 MPC_{f_{M_{40}}} + \phi_5 t_{30-40} + \phi_6 CW_{30-40} + \xi \quad (17)$$

where all addend variables are defined congruently with those in the preceding section, GE_{30-40} denotes the percentage change from 1930-1940 in the percentage of the population who are gainfully employed, RE_{30-40} denotes the percentage change from 1930-1940 in the percentage of the population who are employed in the retail sector, WE_{30-40} denotes the percentage change from 1930-1940 in the percentage of the population who are employed in the wholesale sector, and ME_{30-40} denotes the percentage change from 1930-1940 in the percentage of the population who are employed in the manufacturing sector. Also included are independent regression coefficients

β , θ , λ , and ϕ and independent error terms ε , ν , γ , and ξ . I include coefficient and standard error value tables and residual plots in the appendices.

I represent hypotheses for this multiple linear regression analysis with equations (18), (19), (20), (21), (22), (23), (24), and (25):

$$H_{0_{GE}}: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0 \quad (18)$$

$$H_{1_{GE}}: \text{at least one } \beta \neq 0 \quad (19)$$

$$H_{0_{RE}}: \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \theta_6 = 0 \quad (20)$$

$$H_{1_{RE}}: \text{at least one } \theta \neq 0 \quad (21)$$

$$H_{0_{WE}}: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = 0 \quad (22)$$

$$H_{1_{WE}}: \text{at least one } \lambda \neq 0 \quad (23)$$

$$H_{0_{ME}}: \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = \phi_6 = 0 \quad (24)$$

$$H_{1_{ME}}: \text{at least one } \phi \neq 0 \quad (25)$$

Thus, the null hypotheses claim no significant correlation exists and the alternative hypotheses claim a significant correlation exists between the dependent variable and at least one explanatory variable. In the context of this study, the null hypotheses hold that work relief spending had no

significant impact on private sector employment while the alternative hypotheses hold that work relief spending, when modeled in conjunction with all other explanatory variables, is linearly correlated with private sector employment. At $\alpha=0.05$, I reject the null hypotheses in favor of the alternative hypotheses when $p<0.05$. The four sets of hypotheses are independent but not mutually exclusive; one or more may be rejected while one or more may fail to be rejected.

Empirical Findings

In addition to model and regression evaluation, my conclusions utilize intuitive findings that arise from pivot and correlation calculations. While the model attempts to account for all explanatory variables leading to sector employment changes, I argue for the efficacy of simply looking at the outcome variable itself – the percent change in the percent of the population working within a given sector – and evaluating it across sectors.

Surveying the macroeconomy more broadly, at least to the extent the data allows, the changes in gainful employment are immediately evident; I find that, from 1930 to 1940, gainful employment had a negative growth rate in every county or county agglomerate used in the analysis. The mean change was a 13.75 percent decrease in gainful employment across all counties. The relatively small standard deviation of 0.00033 indicates that this downward trend was consistent across the board and was not drastically magnified by outliers. As I gleaned gainful employment data directly from sources consistent across all years, I consider it one of the most reliable variables in the data set. I do qualify this number by admitting it is possible that the definition and thus the calculation method of “gainful employment” was altered in 1937 when Secretary of Labor Frances Perkins instituted the first-ever nationwide unemployment survey. Historical records are unclear, however, on whether this statistic was calculated any differently after 1937 than it was before.

I find retail sector data far more varied, but it is also a different statistic entirely. While I evaluated gainful employment using the percentage change in gainful employment from 1930 to 1940, individual sector statistics represent the percentage change in the percent of the population working in each individual sector from 1930 to 1940. While many counties saw growth in their retail industries far outpacing the growth in total gainfully employed, many also saw drastic contraction of the industry. The mean across all counties was a growth rate of 9.61 percent with a standard deviation of 0.131. The relatively high variance reflects the volatility and apparent unpredictability of industry expansion from county to county; some experienced enormous gains while some saw drastic depletion of retail opportunity. I find no variable clearly correlated with such a disparity. The percent change in retail per capita spending is the most closely correlated variable at 0.687, but this relationship is associative, not causal. I posit the possible relationship between retail opportunities and the extent to which each urban area is geographically concentrated or fragmented; greater distances between residential and commercial areas would presumably decrease consumers' access to retail markets, especially in an age of less efficient transportation. The correlation could be related to urban planning, not strictly monetary flows, but I do not account for this type of relationship in this model.

I find the wholesale industry even more varied. Again, this statistic represents the percentage change in the percent of the population working in this industry. Wholesaling saw a mean decrease in share of total employment of 4.43 percent – a modest decline encapsulating some offsetting of positive and negative growth rates, but a decline in the aggregate nonetheless. Again, the volatility and unpredictability of this industry manifests in the large standard deviation of .263, more than twice as large as that of the retail industry. I do expect, however, that these two industries would both be highly volatile, as they are closely intertwined and

vulnerable to recessions. I find reasonable the assumption that in economic downturn, retail is often the first industry to see tangible effects of decreased consumer demand, followed by the retail-dependent wholesale industry. Given the protracted supply chains of the early- to mid-twentieth century, I also expect wholesale numbers to be slightly lagged. To that point, this negative growth rate may be disproportionately affected by the recession of 1938 if the industry had not yet fully caught up to the demand shown in post-recession retail figures.

Perhaps unsurprisingly, I find the manufacturing sector by far the most drastically affected by the Great Depression. At a mean decrease of 21.38 percent, the manufacturing industry lost more labor as a percentage of total economy employment than any other industry. This conclusion holds for nearly every individual county or county agglomerate. A small fraction of counties did see a modest increase in manufacturing employment, but there are no discernible congruencies among these counties that would enable me to determine a common trend. These data are also somewhat varied, with a standard deviation of .162. I find reasonable the assumption that manufacturing may, at least in part, be lagged behind wholesale just as wholesale is lagged behind retail. Theoretically, I would expect an increase in consumer demand to be felt first by retailers, who would then stimulate demand in the wholesale market followed by increased demand for manufacturing resources.

I submit another important qualification: in a sense, these statistics show the vitality of one industry in comparison to all others; the evolution of industry-specific labor does not occur in a vacuum. The element of exclusionary basis is salient primarily in model and regression evaluation, but it is also pertinent here. As I cannot account for the macroeconomy entirely with these three industries, drastic growth or contraction in peripheral industries – while not witnessed

in the available data – may alter the shares of total employment claimed by the three sectors enumerated above.

To perform a robustness check in light of this qualification, I operationalize the outcome variable's correlation to the percentage change in per capita spending in each sector over the same time period. In all three cases, I find a positive, highly statistically significant correlation between the two variables, with all p-values less than 0.001. None of them are particularly strong correlations, however; the retail-specific variables have a correlation coefficient of 0.687, wholesale of 0.521, and manufacturing of 0.446. This could be due to either unreliable data or simply a lack of strong association.

As for the per capita spending itself, I find negative average growth rates for all industries from 1930-1940. Those of the retail sector posted the smallest decrease: 0.63 percent with a standard deviation of 0.11. With a negative growth rate of 2.97 percent, the wholesale sector was hit slightly harder. It was also the most uniform, however, with a standard deviation of 0.042. Finally, manufacturing was by far the most volatile industry, with the greatest average decline in per capita spending – 10.29 percent – and a relatively high standard deviation of 0.272. My previous supposition of subsequent supply chain-induced lag times may also apply to these statistics, as I presume per capita spending is a close indicator of demand and cause of employment.

Turning now to work relief spending, I do not find total per capita work relief program spending from 1933-1940 correlated with the percent change in gainful employment nor the percentage change in the percent of the population employed in retail or wholesale. Total per capita work relief spending has a positive, statistically significant correlation to the percentage

change in the percent of the population employed in manufacturing, but this correlation is extremely weak – 0.192 – and the p-value is barely significant at 0.046.

These findings generally hold steady in multiple linear regression evaluation of the model presented in this paper. I find total work relief spending per capita significant at the $p=0.05$ level for none of the four estimations and at the $p=0.1$ level only for the retail estimation. However, when I remove the error term from the calculation, the variable becomes significant at the $p=0.05$ level in the retail estimation and at the $p=0.01$ level in the gainful employment estimation. Wholesale and manufacturing see no change in significance. Removal of the constant term also decreases residual quality, however, so these alterations should not be taken at face value.

I move now to multiple linear regression coefficients. According to the model, I would expect ex ante the coefficient of wage to be negative. This reflects the intuition that the first derivative of the outcome variable should be positive when the explanatory denominator – wage, in this case – is negative. I observe this negative coefficient in all estimations save for that of the retail industry, which may reflect data inconsistencies or exclusionary bias for which I have not accounted in that one estimation. I include full coefficient and standard error tables for all estimations in the appendices.

Perhaps the greatest contributor to exclusionary bias in this model is my failure to include a variable scaling labor force participation by willingness to enter the labor force. Because of the model's necessarily theoretical nature, I was obligated to assume a frictionless labor market in which all employment opportunities are viewed equally by all employable actors. Given the dire economic conditions of the 1930s, I do not believe this assumption to be entirely irrational. However, willingness to work may be a significant confounding variable in the analysis and incorporating it into the model may produce a more accurate estimation.

I submit one final qualification relating to the model's application to the underlying population – in this case, the United States' urban labor market from 1933-1940. As with so many other aspects of this paper, data availability constrains the sampling method. I chose the counties and county agglomerates used in the analysis because data sufficient for statistical evaluation could be obtained from those counties. Because data collection in the time period in question was much more accurate and robust in urban areas, the resulting data set is comprised of counties or county agglomerates with a mean 1930 population of 467,866.443. Thus, this data set is not a representative sample of the entire United States labor force. It is, at best, a representative sample of American metropolitan commercial networks. I do not believe this distinction to be a crippling factor, as New Deal work relief spending was primarily oriented toward the revival of urban areas.⁵⁰ Nevertheless, this paper does not make a statement or posit a claim related to the United States broadly. I consider it not only possible but, indeed, likely that New Deal work relief spending exacted entirely different effects on mid-size towns and rural areas than it did on metropolitan urban areas.

Conclusions

Empirical Application

Given the quantitative findings and qualifications presented in the previous section, I am reasonably confident in the following contentions: Gainful employment declined throughout the period of evaluation. Retail employment was unpredictable but most likely grew in the aggregate even though the industry saw a minor dip in per capita spending. Wholesale employment was also unpredictable but most likely declined slightly in the aggregate while per capita spending saw a relatively significant decrease. Manufacturing employment contracted drastically and per

⁵⁰ Harold L. Ickes, *Back to Work: The Story of PWA* (New York: Macmillan Co., 1935), vii.

capita spending witnessed a dramatic decrease. Work relief spending was not correlated to employment nor was it a statistically significant contributor to the empirical model.

I am unable to reject the null hypothesis that New Deal work relief spending did not have a causal relationship with private sector employment expansion. I lack sufficient evidence to conclude that the Civil Works Administration triggered a macroeconomic employment stimulus or that the money spent on the program found its way into the pockets of anyone other than those directly enrolled. A sizable portion of this evidentiary deficiency may be due to the various constraints and areas of possible bias outlined in the preceding sections. Therefore, I am also unable to definitively conclude that the program had no overall effect; I am only able to comment upon the information that the available data presents. It is within these constraints that I present my concluding thesis.

I contend that New Deal work relief spending was enacted with the intention of being a measure of stimulus but in reality did not extend beyond the level of welfare transfers. The sudden expansion of the money supply within the socioeconomic groups to whom it was addressed was drastic given their paltry financial standing prior to the program's implementation. This short-term influx of specie was successful in essentially propping up the retail industry throughout the later years of the Great Depression; while I do not conclude that it triggered expansion of the industry, I do believe it prevented further decline. This alone may be sufficient for some commentators to declare the program a success.

However, I simultaneously argue that the revenue flow from program beneficiaries to the retail markets in large part ended there; whatever level of stimulus may have taken place did not extend to wholesale or manufacturing industries. These industries may have been aided by other

fiscal or monetary policies, but my findings do not indicate they felt a reprieve from the Great Depression due to work relief.

Taking my analysis in totality, I posit that New Deal work relief programs were valuable for what they delivered at face value; that is, an extra couple dollars in the pockets of destitute Americans caught in the grip of endemic unemployment. Affording over four million Americans the ability to buy food and household goods for their families most likely had a positive effect on the retail industry in which these beneficiaries spent their work relief payouts and may have even stimulated modest retail employment growth compared to the industry trend in the absence of the program. However, I cannot say the same for wholesale, manufacturing, or the macroeconomy generally. While the program mildly increased the quality of life for those directly benefiting, the extensive effect claimed by the Roosevelt administration did not materialize.

Legacy and Government Perception

I do not intend to imply that the programs examined herein were misguided in their approach or useless in light of their outcome, nor do I make any statement on the efficacy of the New Deal in its entirety. While both such statements may be dissertated upon in their own right, my present analysis does not qualify me to make such claims. Given the significant change in government perception brought about by this period, however, I find it necessary to evaluate the extent to which the decades-old lauding of government economic intervention – largely a result of work relief-type programs in the New Deal era – is justified by the relative success of such programs.

The political consequences of the New Deal era were undeniably vast; Gordon Lloyd and David Davenport claim that Roosevelt's bold agenda not only spawned the modern conservative movement but also inspired an aggressive model of economic progressivism that continues to be

advanced in the present political milieu.⁵¹ Nevertheless, this near-century of praise for the New Deal as a pinnacle of fiscal policy may not be entirely justified. While the New Deal was a wide-ranging, multifaceted approach to economic stimulus, strategies such as work relief spending generally characterize the era in the eyes of the public. To be valid, however, this premise must be based on historical success. Considering the implications of my analysis, I find that the success propounded not only by Roosevelt but also by commentators through to the present day most likely did not materialize outside the immediate impact of assisting in subsistence-level retail spending. Therefore, I conclude that the public endorsement of economic progressivism solely on the basis of New Deal work relief programs is largely unfounded. Again, I do not intend to posit that economic progressivism is inherently indefensible, nor that it cannot be endorsed on the basis of other New Deal aspects. My claim extends only as far as does popular reasoning on the historical basis of work relief programs. Aside from the sustenance of the retail industry, I find that work relief programs themselves gave Americans little reason to believe in their effects in the areas of wholesale or manufacturing.

Just as World War II is widely credited with pulling the United States out of the doldrums of depression, Roosevelt could have also used the war effort to finish the job of the New Deal by jump-starting the manufacturing industry. It is empirically evident that such growth did not result from work relief programs in the short run, but American involvement in the war beginning in 1941 – purposefully outside the temporal constraints of my analysis – likely gave the manufacturing and wholesale industries the boost they needed to recover from the depression and catch up to the retail industry. If this evaluation is correct, then public perception should laud

⁵¹ Gordon Lloyd and David Davenport, *The New Deal and Modern American Conservatism: A Defining Rivalry* (Stanford, CA: Hoover Institution Press, Stanford University, 2013), 38.

the military-industrial complex, not work relief spending, as the ticket to holistic macroeconomic growth.

In evaluating the historical and economic effects of New Deal work relief and attempting, insofar as is possible, to apply it to the present day, I consider it important to be honest about the resultant nature of such programs. The Civil Works Administration was not responsible for the greatest economic stimulus in American history; the CWA and programs like it provided an administrative backbone for the issuance of what amounted to little more than welfare transfers. The popular celebration of work relief that has largely survived the test of time is likely not rooted in empirical fact, but rather in the deft rhetoric of wishful thinking.

In historical perspective, however, this distinction simply may not matter. For the four million Americans who benefited from the work of the CWA in perhaps the darkest period in American history, whether the CWA issued welfare payments or provided robust economic stimulus is perhaps irrelevant. Even if the programs were nothing more than “leaf-raking enterprises,”⁵² they enabled those who raked the leaves to buy bread for their children without standing in line at the neighborhood soup kitchen, to dispel for one week the haunting specter of starvation, and to perhaps allow – if they dared – to creep over the horizon a glimmer of hope. The Civil Works Administration did not end the Great Depression; it may not have even made a significant difference in the aggregate, but history will continue to applaud Roosevelt and his New Deal – and perhaps it should. A null hypothesis cannot disqualify a point of pride for a nation that has long fancied itself one of the greatest to ever grace the Earth – a belief largely motivated by its triumph over this period of darkness.

⁵² Walker, “The Civil Works Administration,” 40

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Appendices

Appendix A – Pivot Tables

Table A1 – Variable Means and Standard Deviations

	mean	std. dev.		mean	std. dev.
1930 Pop.	467,866.443	240,916.23	1930 M workers	51,403.689	16,309.418
1933 Pop.	477,714	245,533	1930 M emp. %	0.107	0.014
1935 Pop.	484,279	248,611	1930 M	446,072,725.132	132,590,566.933
1940 Pop.	501,540.066	256,305.702	1930 M per cap.	869.453	23.39
Pop. Growth per year	3,367.362	1,538.947	1930 Total M per cap.	108,123.012	0
1933 Inflation	1.31	0	1930 M wages	73,963,724.887	18,896,457.87
1935 Inflation	1.28	0	1930 Mw	1,315.702	83.961
1940 Inflation	1.22	0	1930 MPCm	0.169	0.036
1930 Gainfully Employed	210,481.594	98,825.244	1930 MPCfm index	0.008	0.00022
1930 Gainful Emp. %	0.432	0.025	1940 M workers	44,878.066	16,385.785
1940 Gainfully Employed	192,535.67	86,653.815	1940 M emp. %	0.085	0.003
1940 Gainful Emp. %	0.373	0.02	M emp. % change	-0.214	0.162
Gainful Emp. % change	-0.138	0.	1940 M	357,778,863.941	153,614,897.198
1930 MPCe	0.171	0.034	1940 M (adjust.)	428,096,171.431	187,410,174.582
1940 MPCe	0.149	0.026	1940 M per cap.	748.15	132.518
1930 w	797.115	105.505	M per cap. % change	-0.103	0.272
1940 w	745.019	42.33	1940 Total M per cap.	93,954.548	0
1930 F per cap.	870.727	23.375	1940 M wages	58,670,463.971	18,777,442.606
1930 Total F per cap.	92,297.114	0	1940 M wages (adjust.)	69,532,881.3	22,908,479.979
1930 MPCf index	0.009	0.00025	1940 Mw	1,401.721	5.739
1940 F per cap.	749.331	132.463	1940 MPCm	0.159	0.028
1940 Total F per cap.	79,429.064	0	1940 MPCfm index	0.008	0.001
1940 MPCf index	0.009	0.002	1930 I	3,955,142.509	614,860.459
1930 R workers	21,656.594	8,858.634	1930 I per cap.	16.791	4.975
1930 R emp. %	0.044	0.002	1930 Total I per cap.	1,889.307	0
1930 R	257,108.113	85,596.69	1930 I wages	1,027,112.5	235,157.552
1930 R per cap.	0.501	0.016	1930 MPCi index	0.009	0.003
1930 Total R per cap.	61.278	0	1940 I	3,290,969.349	358,300.198
1930 R wages	31,197.821	10,612.966	1940 I (adjust.)	4,014,982.606	437,126.242
1930 Rw	1.352	0.063	1940 I per cap.	15.998	2.91
1930 MPCr	0.117	0.005	1940 Total I per cap.	1,905.89	0
1930 MPCfr index	0.008	0.00026	1940 I wages (adjust.)	979,291.721	269,269.695
1933 R	131,359.915	34,545.702	1940 MPCi index	0.008	0.002
1933 R (adjust.)	172,081.489	45,254.869	Total wage growth rate	0.911	0.244
1933 R per cap.	0.329	0.062	w avg. (Gw)	451.756	14.769
1933 Total R per cap.	40.568	0	MPC avg. (MPCg)	0.111	0.005
1933 MPCfr index	0.008	0.002	1930 Y	450,815,817.809	133,438,739.148
1935 R (1000s)	171.65	43.06	1930 Y per cap.	887.519	28.35
1935 R	171,647.358	43,055.732	1930 Y (1940 comp.)	450,027,867.642	133,205,427.392
1935 R (adjust.)	219,708.619	55,111.337	1933 Y	491,382.075	88,774.76
1935 R per cap.	0.421	0.071	1933 Y per cap.	0.789	0.263
1935 Total R per cap.	51.76	0	1935 Y	633,157.313	137,828.122
1935 MPCfr index	0.008	0.001	1935 Y per cap.	1.009	0.133
1940 R workers	24,620.689	8,937.83	1940 Y	424,807,381	188,055,097
1940 R emp. %	0.047	0.003	1940 Y per cap.	765.328	129.553
R emp. % change	0.096	0.131	Y per cap. % change	-0.105	0.271
1940 R	214,142.755	64,524.201	1940 Y (1930 comp.)	424,033,868	187,847,301
1940 R (adjust.)	261,254.161	78,719.525	1933 CW	577,489.528	349,576.622
1940 R per cap.	0.494	0.057	1933 CW (adjust.)	756,511.282	457,945.375
R per cap. % change	-0.006	0.11	1933 CW per cap.	1.863	0.131
1940 Total R per cap.	60.486	0	1935 CW	1,351,982.34	1,057,124.638
1940 R wages	26,729.981	7,089.453	1935 CW (adjust.)	1,730,537.395	1,353,119.536
1940 R wages (adjust.)	32,610.577	8,649.132	1935 CW per cap.	2.632	1.246
1940 Rw	1.223	0.092	1940 CW	4,901,597.453	2,266,084.901
1940 MPCr	0.117	0.00043	1940 CW (adjust.)	5,979,948.892	2,764,623.579
1940 MPCfr index	0.008	0.001	1940 CW per cap.	11.48	2.57
1930 W workers	11,286.774	3,637.357	CW growth rate	6.323	1.786

	mean	std. dev.		mean	std. dev.
1930 W emp. %	0.019	0.001	1933 AA	435,577.736	64,581.477
1930 W	530,842.055	147,715.066	1933 AA (adjust.)	570,606.834	84,601.734
1930 W per cap.	0.774	0.031	1933 AA per cap.	3.243	0.529
1930 Total W per cap.	101.201	0	1935 AA	121,787.689	5,656.854
1930 W wages	23,237.529	6,296.029	1935 AA (adjust.)	155,888.242	7,240.773
1930 Ww	1.785	0.123	1935 AA per cap.	0.863	0.098
1930 MPCw	0.052	0.011	1940 AA (adjust.)	875,086.556	12,979.646
1930 MPCfw index	0.008	0.0003	1940 AA per cap.	4.885	0.454
1933 W	243,740.906	33,221.291	1930 t	1.862	1.131
1933 W (adjust.)	319,300.586	43,519.891	1933 t	1.869	1.131
1933 W per cap.	0.459	0.2	1935 t	4.9	0.6
1933 Total W per cap.	59.525	0	1940 t	12.333	4.807
1933 MPCfw index	0.008	0.003	t Growth per year	1.495	0.848
1935 W (1000s)	323.007	64.622	Gainful Emp. % change residuals	-0.0011	0.0084
1935 W	323,006.792	64,622.489	R emp. % change residuals	0.00084	0.037
1935 W (adjust.)	413,448.694	82,716.786	W emp. % change residuals	0.0012	0.072
1935 W per cap.	0.588	0.061	M emp. % change residuals	-0.0016	0.083
1935 Total W per cap.	76.247	0			
1935 MPCfw index	0.008	0.001			
1940 W workers	10,693.571	4,109.705			
1940 W emp. %	0.017	0.005			
W emp. % change	-0.044	0.263			
1940 W	419,884.472	105,800.145			
1940 W (adjust.)	512,259.055	129,076.177			
1940 W per cap.	0.687	0.002			
W per cap. % change	-0.03	0.042			
1940 Total W per cap.	90.918	0			
1940 W wages	20,101.038				
1940 W wages (adjust.)	24,523.266				
1940 Ww	1.996				
1940 MPCw	0.056				
1940 MPCfw index	0.008				

Table A2 – 1933 Work Relief

Region	State	mean(1933 CW (adjust.))	stdev(1933 CW (adjust.))	mean(1933 AA (adjust.))	stdev(1933 AA (adjust.))
		1,015,442.061	1,264,790.878	897,997.722	993,857.745
Midwest	IA	530,658.075	264,429.051	1,704,160.66	1,868,044.679
	IL	3,286,015.79	4,229,714.337	985,256.895	619,126.074
	IN	511,338.588	308,391.419	1,555,899.838	1,537,157.309
	KS	337,449.45	108,782.127	1,864,562.3	1,320,465.854
	MI	1,096,687.984	1,649,833.275	622,709.024	429,047.39
	MN	750,243.113	318,085.606	224,113.927	186,410.947
	MO	1,009,533.815	271,830.267	687,808.295	484,953.792
	NE	314,533.62		876,511.83	
	OH	1,240,617.451	1,052,329.629	545,062.326	532,763.885
	OK	515,359.24		418,271.21	
	WI	985,571.95	1,032,335.955	1,019,652.91	1,592,012.172
		634,075.409	1,556,250.292	256,483.86	588,982.833
Northeast	CT	407,934.437	340,708.109	1,220,217.403	1,949,185.935
	DE	53,286.87		588,842.38	
	MA	349,764.947	220,315.114	188,547.551	234,186.239
	ME	190,622.03		42,116.5	
	NJ	651,897.92	506,859.63	112,188.837	101,725.588
	NY	1,658,922.594	3,097,782.089	174,017.78	115,353.117
	PA	194,279.681	102,890.842	135,771.806	112,453.024
	RI	472,625.73		22,580.47	
		394,213.996	373,432.925	458,115.609	625,028.495
Southeast	AL	526,102.55	447,428.052	202,381.9	52,544.002
	FL	472,180.985	211,973.975	38,509.415	47,626.223
	GA	895,257.93		734,514.38	
	KY	224,198.64		312,717.96	
	LA	949,342.59	955,912.895	1,158,669.455	1,638,606.058
	MD	740,693.65		444,277.33	
	NC	149,612.153	31,146.3	578,331.268	371,516.653
	SC	280,095.03		78,956.32	
	TN	343,637.89	162,762.553	852,575.51	986,236.757
	VA	139,594.91	91,428.239	86,632.483	48,868.055
	WV	194,849.4		119,891.2	
		587,747.657	103,643.07	1,001,332.342	798,586.42
Southwest	CO	584,646.45		0	
	TX	588,367.898	115,864.024	1,201,598.81	704,539.14
		1,141,193.109	1,256,669.255	423,059.26	501,948.279
West	CA	1,517,179.12	1,640,186.944	612,214.09	600,641.535
	OR	543,949.99		50,803.11	
	UT	534,626.72		543,225.56	
	WA	803,132.835	461,377.353	76,217.11	4,929.821

Table A3 – 1935 Work Relief

Region	State	mean(1935 CW (adjust.))	stdev(1935 CW (adjust.))	mean(1935 AA (adjust.))	stdev(1935 AA (adjust.))
		1,329,671.111	1,403,462.18	274,008.711	341,043.793
Midwest	IA	387,200	228,989.46	817,280	178,304.046
	IL	3,486,720	4,746,326.989	683,520	803,725.852
	IN	1,227,264	746,665.484	157,310.72	93,862.986
	KS	236,160	55,210.897	579,200	346,652.028
	MI	1,075,968	1,351,389.241	117,760	107,995.141
	MN	1,442,560	300,652.9	37,120	45,812.557
	MO	1,661,440	553,919.168	263,040	241,660.814
	NE	565,760		331,520	
	OH	1,712,782.222	1,254,685.754	199,537.778	238,713.518
	OK	403,200		121,600	
	WI	1,024,320	1,471,714.801	360,640	604,260.67
Northeast		3,326,235.407	13,670,932.374	72,244.706	238,586.455
	CT	744,960	151,781.232	459,520	778,185.261
	DE	252,160		88,320	
	MA	492,434.286	614,371.872	87,222.857	148,361.2
	ME	162,560		5,120	
	NJ	1,483,093.333	883,176.193	37,973.333	57,133.518
	NY	10,828,800	28,182,354.365	16,000	12,334.389
	PA	1,452,048.384	995,196.198	12,544	16,936.033
	RI	1,395,200		6,400	
		442,270.476	558,147.61	98,803.81	152,793.949
Southeast	AL	1,307,520	1,284,332.189	28,160	1,810.193
	FL	254,720	181,019.336	0	0
	GA	984,320		133,120	
	KY	307,200		35,840	
	LA	849,920	1,095,166.983	235,520	333,075.578
	MD	904,960		80,640	
	NC	85,120	6,813.32	126,720	77,458.51
	SC	85,760		19,200	
	TN	321,706.667	110,201.483	229,546.667	300,105.638
	VA	191,146.667	65,346.894	21,333.333	14,386.957
	WV	302,080		19,200	
Southwest		350,933.333	173,237.333	205,226.667	181,815.278
	CO	481,280		0	
	TX	324,864	180,046.913	246,272	169,368.234
		1,231,502.222	1,497,732.021	99,697.778	120,465.35
West	CA	1,729,024	1,934,187.031	136,704	147,306.813
	OR	975,360		8,960	
	UT	547,840		154,880	
	WA	457,600	113,137.085	24,960	905.097

Table A4 - 1940 Work Relief

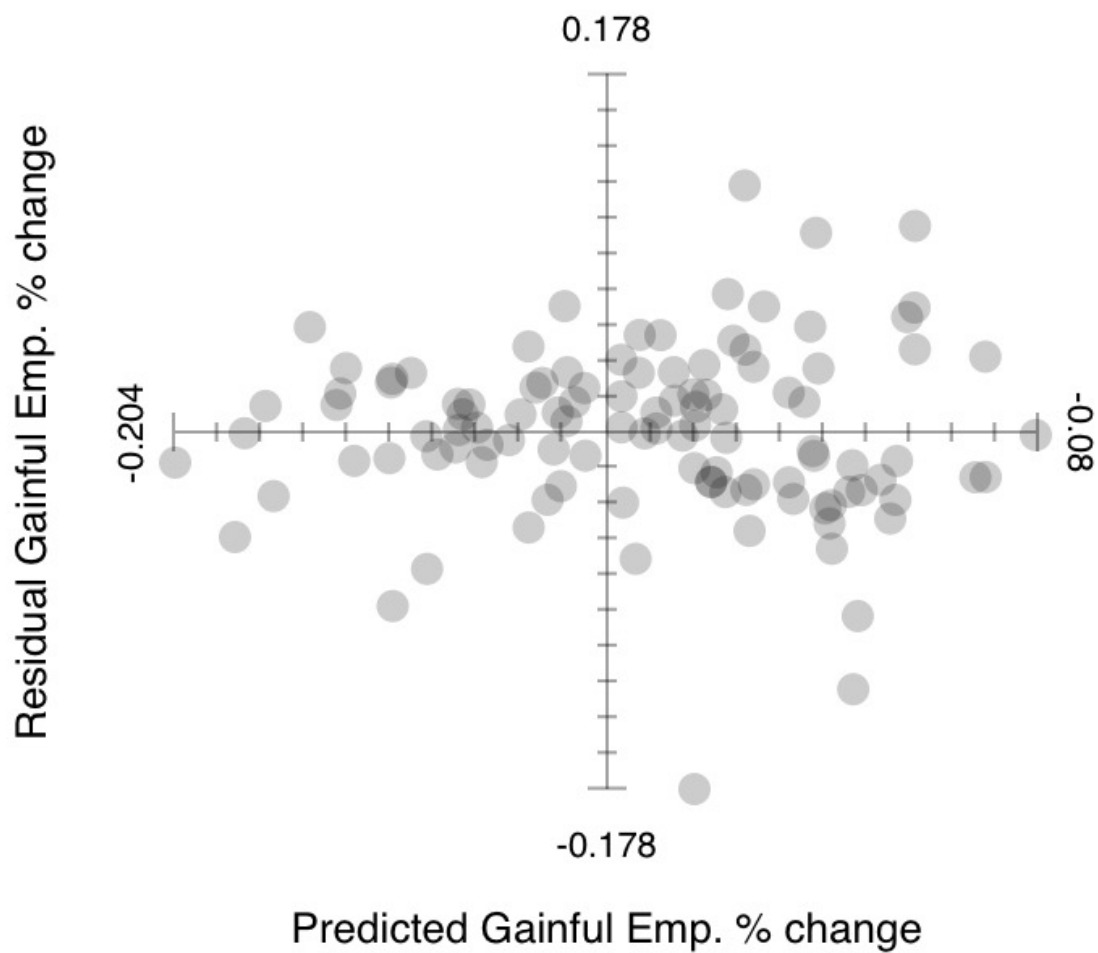
Region	State	mean(1940 CW (adjust.))	stdev(1940 CW (adjust.))	mean(1940 AA (adjust.))	stdev(1940 AA (adjust.))
		6,875,611.747	10,501,324.326	1,533,763.38	3,256,350.787
Midwest	IA	2,916,112.32	2,281,654.176	4,600,962.658	2,090,596.042
	IL	29,657,718.1	38,465,442.623	9,582,138.052	12,493,637.641
	IN	2,809,141.988	1,585,163.462	301,419.537	201,093.672
	KS	1,295,163.59	3,235.876	2,374,020.516	936,446.017
	MI	7,243,356.916	11,151,677.254	721,535.292	949,504.078
	MN	5,979,895.473	2,521,882.221	144,774.787	205,584.814
	MO	11,461,827.41	2,694,763.677	1,510,060.418	1,472,603.258
	NE	4,871,857.72		2,230,294.028	
	OH	7,220,816.033	7,223,504.086	516,108.902	568,601.036
	OK	1,243,750.96		293,046.481	
	WI	4,388,811.53	6,026,700.613	1,590,924.818	2,790,962.239
		7,267,787.158	18,531,540.259	290,225.938	803,262.375
Northeast	CT	1,736,112.46	369,121.598	1,178,871.717	2,015,694.736
	DE	1,662,352.48		454,879.129	
	MA	5,227,201.369	6,099,070.523	727,673.722	1,143,836.106
	ME	858,498.14		21,124.462	
	NJ	3,158,684.92	2,827,708.309	31,418.186	36,169.795
	NY	15,138,345.6	37,629,281.532	28,106.436	29,934.501
	PA	6,890,498.146	6,869,771.516	43,042.423	81,832.276
	RI	3,297,364.76		11,816.818	
		2,609,470.897	2,365,978.433	584,288.859	811,676.025
Southeast	AL	3,555,098.91	2,623,936.723	72,770.531	23,485.115
	FL	2,333,236.58	1,734,248.479	0	0
	GA	6,089,941.1		643,443.062	
	KY	2,876,630.68		262,192.901	
	LA	5,365,158.62	7,211,355.846	647,995.763	916,404.396
	MD	4,104,544.82		285,743.374	
	NC	1,170,158.12	249,884.434	1,246,690.397	682,839.439
	SC	2,250,985.4		393,712.465	
	TN	2,459,306.093	516,663.946	1,296,942.906	1,616,828.355
	VA	1,136,837.887	886,766.434	97,110.433	75,533.853
	WV	1,500,734.2		74,520.038	
		3,076,221.867	1,032,625.408	1,869,887.061	2,487,911.851
Southwest	CO	4,164,129.62		0	
	TX	2,858,640.316	988,853.406	2,243,864.473	2,586,153.212
		7,332,397.369	7,245,762.027	465,180.334	512,496.97
West	CA	10,010,771.976	9,159,788.553	630,857.704	629,091.926
	OR	4,477,319.48		32,132.993	
	UT	2,898,688.28		640,225.763	
	WA	4,280,854.34	1,449,173.912	179,987.864	10,639.353

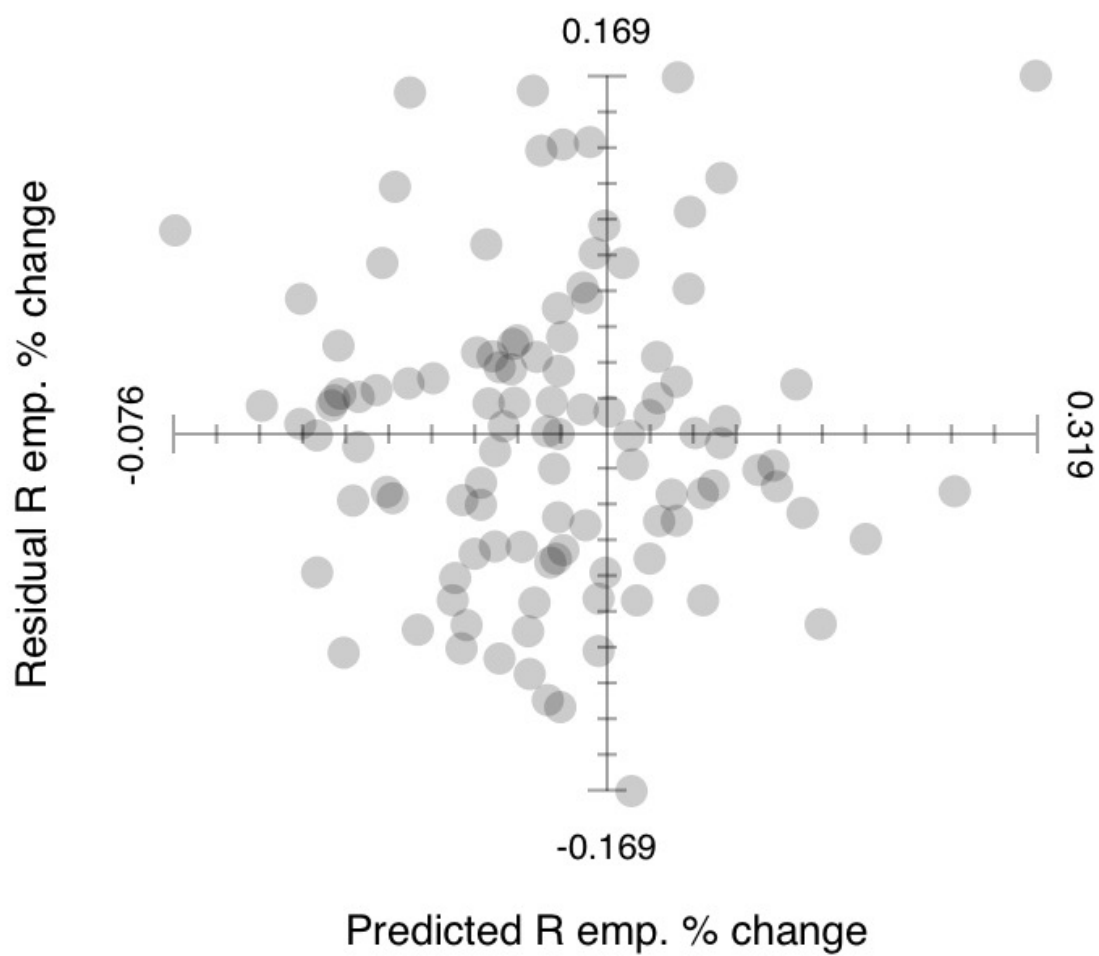
Appendix B – Model Statistics

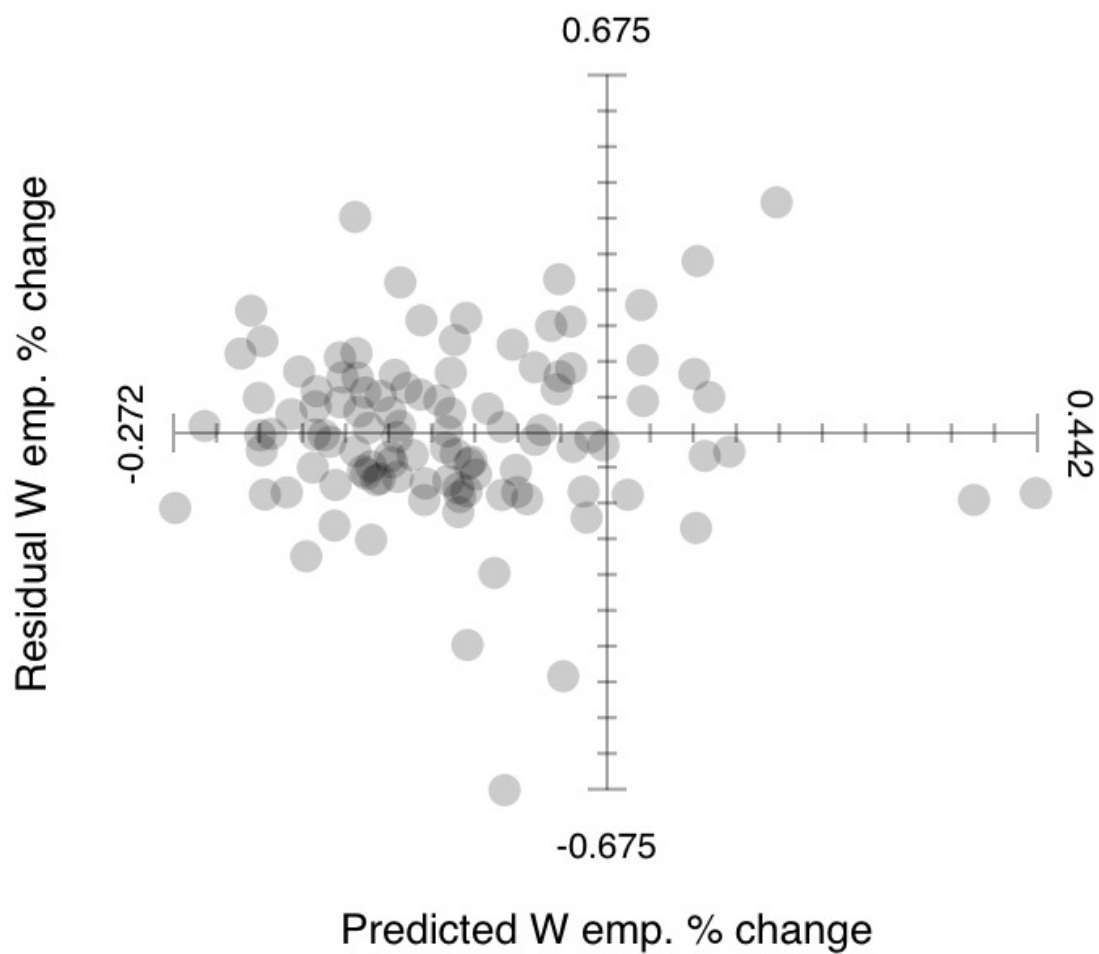
Table B1 – Model Coefficients

	variable	coefficient	std. error	t-statistic	p-value
GE	1940 MPCe	0.078	0.121	0.647	0.519
	1940 w	0.	0.	0.08	0.936
	1940 MPCf index	0.644	0.762	0.845	0.400
	1940 MPCi index	1.004	0.692	1.451	0.150
	Y per cap. % change	-0.01	0.019	-0.543	0.588
	1940 CW per cap.	-0.005	0.001	-5.749	0.000
	1940 AA per cap.	0.	0.	0.713	0.478
	t Growth per year	-0.002	0.005	-0.443	0.659
	<i>constant</i>	-0.11	0.019	-5.745	0.000
RE	R per cap. % change	0.835	0.09	9.296	0.000
	1940 Rw	-0.037	0.059	-0.618	0.538
	1940 MPCr	0.126	0.686	0.184	0.854
	1940 MPCfr index	-0.055	2.757	-0.02	0.984
	1940 CW per cap.	-0.001	0.001	-0.577	0.565
	t Growth per year	0.009	0.008	1.141	0.256
	<i>constant</i>	0.127	0.058	2.196	0.030
WE	W per cap. % change	0.471	0.071	6.591	0.000
	1940 Ww	-0.201	0.061	-3.274	0.001
	1940 MPCw	0.114	1.76	0.065	0.949
	1940 MPCfw index	2.711	3.467	0.782	0.436
	1940 CW per cap.	-0.005	0.003	-1.575	0.118
	t Growth per year	0.007	0.017	0.412	0.682
	<i>constant</i>	0.384	0.13	2.958	0.004
ME	M per cap. % change	0.421	0.064	6.565	0.000
	1940 Mw	0.	0.	-3.178	0.002
	1940 MPCm	1.148	0.267	4.308	0.000
	1940 MPCfm index	4.204	2.223	1.891	0.062
	1940 CW per cap.	-0.002	0.002	-0.795	0.428
	t Growth per year	0.018	0.013	1.368	0.174
	<i>constant</i>	-0.158	0.072	-2.201	0.030

Appendix C – Residual Plots

*Figure C1 – Gainful Employment Residual Plot**Model residuals*

*Figure C2 – Retail Employment Residual Plot**Model residuals*

*Figure C3 – Wholesale Employment Residual Plot**Model residuals*

*Figure C4 – Manufacturing Employment Residual Plot**Model residuals*