

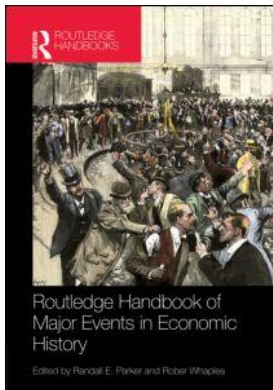
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THE MACROECONOMIC IMPACT OF THE NEW DEAL

Lee E. Ohanian

Introduction

The New Deal was a collection of policies adopted in response to the Great Depression that were designed to alleviate economic hardship and promote economic recovery. This chapter analyzes the contribution of New Deal recovery policies to macroeconomic activity. The focus is on the centerpiece of President Roosevelt's New Deal, which were the policies that were aimed at fostering industrial recovery and expanding private sector employment. This includes the National Industrial Recovery Act (NIRA) and the National Labor Relations Act (NLRA), which are among the most significant government interventions in the private economy. The chapter evaluates the impact of these policies on aggregate output, labor, consumption and investment. The evidence indicates that these policies significantly retarded economic recovery by suppressing competition in some product and labor markets which in turn raised relative prices and real wages, thereby depressing employment and output. This suggests that New Deal industrial and labor policies not only failed to promote recovery, but instead delayed recovery by several years.

The failure of the U.S. economy to recover from the Depression

Table 15.1 shows detrended per-adult real output and its components from 1929–1939, with data normalized so that trend values for each variable are equal to 100.

In what follows, 1929–33 is referred to as the downturn phase of the Depression, and 1933–39 as the recovery phase. The data are detrended by removing a 1.9 percent annual growth rate from the data, as in Cole and Ohanian (1999, 2007). Detrending time series data is standard in business cycle analysis (e.g. see Cooley 1995), but often is not used in analyses of the Depression (see for example Temin 1976, Romer 1990, or Bernanke 1995). The decade long duration of the Depression means that detrending is quantitatively important and Table 15.1 highlights the extent to which the recovery was indeed slow when compared to trend growth.

Table 15.1 shows that the economy had recovered little relative to trend six years after the 1933 trough. Per capita GNP was 26 percent below trend in 1939, compared to its trough value of 38 percent below trend in 1933. In terms of final expenditures, there was virtually

Table 15.1 Consumption, investment, and other components of GNP, 1929–39 (1929 = 100)

Year	Real GNP	Consumption			Investment Nonresidential	Government Purchases	Foreign Trade	
		Durables	Non Durables				Exports	Imports
1929	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1930	87.4	76.2	90.9	79.2	105.1	85.3	84.9	
1931	78.1	63.4	85.4	49.4	105.4	70.6	72.4	
1932	65.2	46.7	76.0	27.9	97.3	54.5	58.1	
1933	61.9	44.4	72.2	24.6	91.7	52.8	60.8	
1934	64.6	49.0	72.1	28.4	101.1	52.8	58.3	
1935	68.1	58.9	73.1	34.4	100.1	53.8	69.3	
1936	74.9	70.8	77.0	45.9	113.9	55.1	71.9	
1937	76.0	72.2	77.2	53.6	106.3	64.3	78.3	
1938	70.6	56.3	74.3	37.8	112.0	62.8	58.3	
1939	73.5	64.3	75.0	40.5	112.9	61.7	61.6	

Source: Cole and Ohanian (2007)

Note: Data from the U.S. Department of Commerce, Bureau of Economic Analysis. All data are divided by the working-age population (16 years and older). Data are also detrended by dividing each variable by its long-run trend growth rate (1.9 percent)

no recovery in consumption of nondurables and services, which was little changed between 1933 and 1939. And while investment rose from its remarkably low trough value of 1933 of 75 percent below trend, it still was 60 percent below trend in 1939.

Regarding the supply side of the economy, most of the increase in output that occurred between 1933 and 1939 was the result of higher productivity, rather than higher labor input. Specifically, output per capita (y/n) is the product of output per hour (y/h) and hours per person (h/n):

$$\frac{y}{n} = \frac{y}{h} \frac{h}{n}$$

Tables 15.2 and 15.3 show labor input and productivity during the 1930s. Table 15.2 shows three different measures of aggregate labor input and two measures of sectoral labor, all of which are divided by the adult population.

All of the aggregate measures of labor input declined substantially during the downturn and remained well below normal afterwards with only modest recovery. In 1939, total employment per person was 12.5 percent below its 1929 level, total hours worked, which is conceptually the best measure of labor input, was about 21 percent below its 1929 level, and private hours worked was about 25 percent below its 1929 level. Note that agricultural labor input changed very little during the downturn, as it was not until later that farm hours declined.

Table 15.3 shows aggregate labor productivity (output per hour worked) and total factor productivity (TFP). Both productivity measures declined considerably in the downturn, but recovered very quickly afterwards.

Table 15.2 Five measures of labor input, divided by working-age population, 1930–39 (1929 = 100)

Year	Aggregate measures			Sectoral measures	
	Total employment	Total hours	Private hours	Farm hours	Manufacturing hours
1930	93.8	92.0	91.5	99.0	83.5
1931	86.7	83.6	82.8	101.6	67.2
1932	78.9	73.5	72.4	98.6	53.0
1933	78.6	72.7	70.8	98.8	56.1
1934	83.7	71.8	68.7	89.1	58.4
1935	85.4	74.8	71.4	93.1	64.8
1936	89.8	80.7	75.8	90.9	74.2
1937	90.8	83.1	79.5	98.8	79.3
1938	86.1	76.4	71.7	92.4	62.3
1939	87.5	78.8	74.4	93.2	71.2

Source: Cole and Ohanian (2007)

Note: Data from Kendrick, John W. 1961. *Productivity trends in the United States*. Princeton, NJ: Princeton University Press (for NBER)

Table 15.3 Three measures of productivity, 1930–39 (1929 = 100)

Year	GNP/hour	TFP	
		Private domestic	Private nonfarm
1930	95.3	94.8	94.8
1931	95.2	93.4	92.0
1932	89.4	87.6	85.8
1933	84.8	85.7	82.7
1934	90.3	93.1	92.7
1935	94.8	96.3	95.3
1936	93.7	99.5	99.5
1937	95.1	100.1	99.3
1938	94.6	99.9	98.1
1939	95.2	102.6	100.1

Source: Cole and Ohanian (2007)

Note: Data from Kendrick, John W. 1961. *Productivity trends in the United States*. Princeton, NJ: Princeton University Press (for NBER)

These data indicate that the recovery from the Depression was weak, despite the fact that productivity, which is considered by most economists to be the central factor driving long-run economic growth, recovered very quickly. The analysis next considers how fast the economy would normally have recovered, given observed productivity growth beginning in 1933.

Estimates of output use the standard optimal growth model as discussed in Cole and Ohanian (1999, 2004, 2007), in which consumers allocate time between market and non-market uses, allocate income between consumption and investment, and in which there are both long-run deterministic productivity growth and stochastic transitory productivity shocks. Standard parameter values (taken from Cole and Ohanian 2007) enable calculation of the path of normal output, labor input, consumption, and investment given the sequence of observed productivity and given the actual level of the capital stock in 1933. Figure 15.1 shows predicted output for 1929–1939 and compares it to actual output for these years.

Standard neoclassical growth theory predicts a recovery that was much faster than what actually occurred. In particular, the low capital stock, reflecting very low investment during the downturn, coupled with rapid productivity growth, would normally have led to much higher labor input and a much faster recovery than observed. Moreover, the prediction of a fast recovery is consistent with actual recoveries from severe recessions in the U.S. For example, Table 15.4 shows that the recovery from the 1981–82 recession, which was the most severe recession in the half century following the Great Depression, was very rapid, with employment and output very close to trend levels about a year after the recession trough.

Why didn't the economy recover?

This section uses a diagnostic framework developed by Cole and Ohanian (2002), Chari, Kehoe, and McGrattan (2007), and Mulligan (2002) to identify possible reasons for why

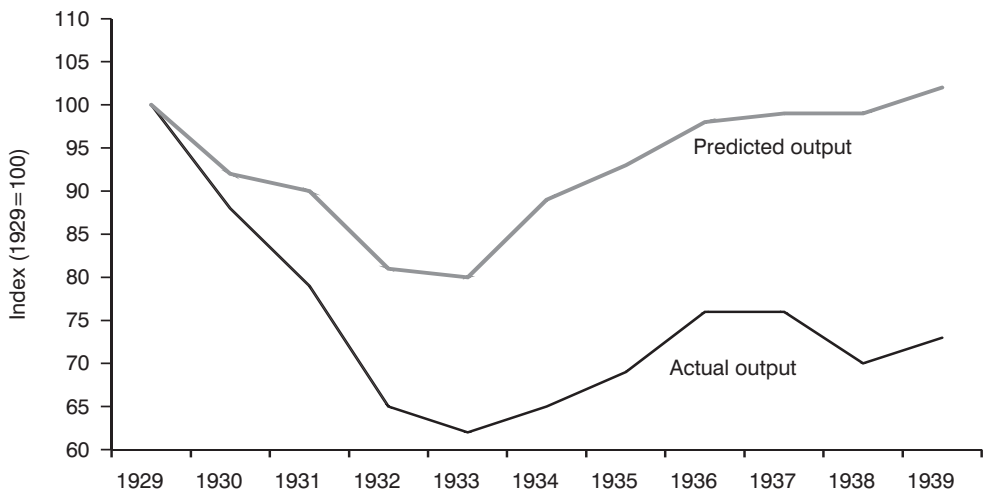


Figure 15.1 Actual output and predicted model output with only productivity change: 1929–1939

Source: Cole and Ohanian (2007)

Note: The series on actual output is divided by the working-age population (16 years and older) and is also detrended by dividing by its long-run trend growth rate (1.9 percent)

Table 15.4 Detrended levels of output and its components in 1981-III to 1982-IV recession. Measured quarterly from trough, peak=100

Quarters From Trough	Output	Consumption	Investment	Government		Compensation to Employees
				Purchases	Employment	
0	93.5	98.8	74.4	99.8	95.1	100.6
1	94.0	99.0	76.5	99.8	95.0	101.3
2	95.4	100.2	83.2	99.9	95.7	100.6
3	96.5	101.2	88.1	100.8	96.6	100.0
4	97.7	102.0	96.7	98.3	98.0	99.4
5	98.7	102.0	105.8	98.4	99.1	99.2
6	99.7	102.6	108.6	99.8	100.1	98.8

Source: Output and components, Bureau of Economic Analysis. Employment, Bureau of Labor Statistics

labor didn't recover, despite rapid productivity growth. This procedure uses time series data together with the equations characterizing the solution to the growth model described above to assess whether these equations are approximately satisfied or whether they are distorted. Note that any difference in output, labor, consumption, or investment from trend is necessarily associated with a deviation in at least one first order condition in the growth model.

The only equation that is substantially distorted is the household first order condition that equates the marginal rate of substitution between consumption and leisure to the real wage rate. The analysis uses real per-adult consumption of nondurables and services relative to trend, hours worked per adult, and the manufacturing wage from Beney (1936) deflated by the GNP deflator, and measured relative to trend.

There is a historically large distortion in this equation, reflecting the fact that both consumption and hours worked were well below normal levels, and that the real wage was well above normal, which means that the opportunity cost of working was much less than the benefit of working. Between 1934 and 1939, this distortion is about 50 percent above its level in 1933. In comparison, Ohanian and Raffo (2012) document that this distortion at the trough of postwar U.S. recessions was only 4.5 percent above its level at the previous business cycle peak.

This diagnostic statistic raises the central question about the failure of labor to recover: why didn't the real wage fall to increase labor and output? The high level of unemployment should have resulted in enormous competitive pressure to reduce wages and expand employment. The fact that wages were well above trend and in fact continued to rise during the New Deal suggests that labor market policies prevented the real wage from falling and clearing the labor market.

New Deal labor and industrial policies

This diagnostic evidence is consistent with a number of New Deal recovery policies that were aimed at suppressing competition and raising wages and relative prices in a number of sectors. This included the National Industrial Recovery Act (NIRA), which was the centerpiece of Roosevelt's recovery programs. The NIRA was purposely designed to limit competition and raise prices and wages in most of the non-farm private economy.¹ The NIRA accomplished

this by permitting industry to cartelize provided that industry immediately raised wages and agreed to collective bargaining with workers.

The Act covered over 500 industries, representing about 80 percent of non-farm private employment. Each industry formed a “code of fair competition” that was approved by the National Recovery Administration and that became the operating rules for each industry. The code was enforced by a code authority, which typically was comprised of members from the industry.

The NIRA codes included several textbook characteristics of cartels: minimum prices within industry, restrictions on expanding capacity and production limits, resale price maintenance, basing point pricing, in which pricing consists of a base price plus transportation costs, which thereby facilitates collusion, and open price systems, which required that any firm planning to reduce price must preannounce the price cut to the code authority, who in turn would notify all other firms. Following this notification, the announcing firm was required to wait a specific period before changing its price. The purpose of this waiting period was for the code authority and other industry members to persuade the announcing firm to cancel its price cut.

In some industries, the code authority determined minimum price directly, either as the authority’s assessment of a fair market price or as its assessment of the minimum cost of production. In other codes, such as the iron and steel industry and the pulp and paper industry, the authority indirectly set the minimum price by rejecting any price that was so low it would promote “unfair” competition. Codes of fair competition also included explicit provisions for profits. Some minimum prices explicitly included depreciation, rent, royalties, directors’ fees, research and development expenses, amortization, patents, maintenance and repairs, and bad debts and profit margins as a percentage of cost.

The NIRA ended in May 1935, when the Supreme Court ruled in *Schechter Poultry Corp. vs. United States* that the NIRA was an unconstitutional delegation of legislative power. Roosevelt strongly opposed the court’s decision: “The fundamental purposes and principles of the NIRA are sound. To abandon them is unthinkable. It would spell the return to industrial and labor chaos” (quoted in Hawley 1966: 124). But policymakers found ways to continue anticompetitive policies during the New Deal through new labor legislation and by ignoring the antitrust rules. In fact, anticompetitive policies, particularly labor policies, became even more pronounced after the *Schechter* decision, and as will be shown below, real wages and relative prices were even higher after the NIRA. This contradicts the widely-accepted view that distortions to competition ended after the *Schechter* decision.

The main New Deal labor policy after the NIRA was the NLRA, also known as the Wagner Act, which was passed on July 27, 1935. This gave considerably more bargaining power to workers to raise wages than under the NIRA. The NLRA gave workers the right to organize and bargain collectively. It prohibited management from refusing to engage in collective bargaining with government-recognized unions, discriminating among employees for union affiliation, or forcing employees to join a company union. The act also established the National Labor Relations Board (NLRB) to enforce wage agreements and the rules of the NLRA.

Union membership and strikes rose rapidly under the NLRA. Union membership rose from about 13 percent of employment in 1935 to about 29 percent of employment in 1939, and strike activity similarly increased from 14 million strike days in 1936 to about 28 million in 1937. Moreover, strikes were much more effective in raising worker bargaining power during the New Deal than during other times because the NLRA was initially interpreted as to permit workers to take unprecedented actions against firms that destroyed profits.

The most important of these was the “sit-down strike,” in which strikers forcibly occupied factories to halt production. The sit-down strike was the key factor in unionizing the auto and steel industries (see Kennedy 1999: 310–17). Sit-down strikes in GM auto body plants in late 1936 and early 1937 brought GM production to a virtual halt. There was no federal intervention to aid GM, despite support of GM’s position by Vice President John Nance Garner. Consequently, GM was forced to recognize the United Auto Workers to end the strike. Shortly after the GM sit-down strikes, U.S. Steel recognized the Steel Worker’s Organizing Committee to avoid a sit-down strike. This period, in which workers were implicitly permitted to forcibly occupy factories, stands in sharp contrast with pre-New Deal government policy on strikes. Bernstein (1963) documents that police action was frequently used to break strikes before the New Deal, and firms were often allowed to use violence against workers during strikes and even during union organizing drives.

Regarding the continuation of cartelization, there is considerable evidence that the government largely ignored antitrust prosecution after the NIRA. Hawley (1966) notes that the government tacitly permitted collusion, particularly in industries that paid high wages. He cites a number of Federal Trade Commission (FTC) studies documenting price fixing and production limits in a number of industries following the *Schechter* decision. Post-NIRA collusion was facilitated by trade practices formed under the NIRA, including basing point pricing. Cole and Ohanian (2004) document that Interior Secretary Harold Ickes complained to Roosevelt that he received identical bids from steel firms on 257 different occasions (Hawley 1966) between June 1935 and May 1936. The bids were not only identical but 50 percent higher than foreign steel prices (Ickes 1953–54).

This price difference was sufficiently large that Ickes was allowed to order the steel from German suppliers. Roosevelt canceled the German contract, however, after pressure from both the steel trade association and the steel labor union. And despite wide scale collusion, the Attorney General announced that steel producers would not be prosecuted. Hawley documents that the steel case was just one example of the failure of the government to enforce the antitrust laws. The number of antitrust cases initiated fell from an average of 12.5 new cases per year during the 1920s, which was in itself a period of limited enforcement, to an average of 6.5 cases per year between 1935 and 1938. Moreover, several of these new cases were initiated in order to prosecute racketeering, rather than pure restraint of trade.

It is striking that policies that so grossly suppressed competition would be adopted. Economists today broadly agree that reducing competition reduces employment and output, and that maximizing competition leads to superior economic outcomes. But Roosevelt and his advisors believed that competition was damaging and that the Depression was the result of “excessive competition” that reduced prices and wages, which they believed reduced employment and output. Moreover, note that this 1930s view regarding the impact of changes in nominal prices and wages on employment and output tends to mistake general price movements for relative price movements. Roosevelt expressed his views about competition as follows:

A mere builder of more industrial plants, a creator of more railroad systems, an organizer of more corporations, is as likely to be a danger as a help. Our task is not necessarily producing more goods. It is the soberer, less dramatic business of administering resources and plants already in hand.

(Quoted in Kennedy 1999: 373)

Many of Roosevelt’s advisors worked as economic planners during World War I, and argued that wartime economic planning would bring recovery. Hugh Johnson, who was one

of Roosevelt's main economic advisors and the main administrator of the NIRA, argued that the economy grew during World War I because the government ignored antitrust laws. Johnson (1935) argued that competition wasted resources, and that wartime planning facilitated cooperation between firms, which in turn, according to Johnson, raised wages and output. World War I economic planning, with its focus on firm cooperation taking the place of competition between firms, was the foundation for New Deal policies.

And it was not just FDR and his advisors who believed that suppressing competition to raise prices and wages would increase employment and output. Ohanian (2009) describes how Herbert Hoover had very similar views. As Commerce Secretary under Harding and Coolidge, Hoover significantly fostered cartelization by helping industries develop trade associations which were designed to help firms share information on costs and prices and to coordinate on product quality and standardization. In November 1929, President Hoover promised industry that he would protect them from unionization and permit collusion as long as firms increased nominal wages, or at least maintained prevailing nominal wage levels. Industry complied, but maintaining nominal wages led to large increases in real wages as deflation accelerated.

The largest manufacturing firms did not cut nominal wages until Fall 1931, after it became clear that Hoover was unwilling to support policies that would provide guaranteed minimum profit levels. Ohanian (2009) develops a model of Hoover's policy and finds that Hoover's nominal wage setting in conjunction with deflation accounts for about 60 percent of the decline of output and labor input in the early stages of the Great Depression.

The impact of New Deal policies on wages and prices

Cole and Ohanian (2004) present evidence that New Deal labor and industrial policies had a significant impact on relative prices and real wages. Tables 15.5 and 15.6 compare wage and price statistics between industries cartelized by New Deal policies and non-cartelized industries. Table 15.5 shows annual industry-level data for wages in three sectors covered by New Deal policies – manufacturing, bituminous coal, and petroleum products – and two sectors not covered – anthracite coal and all farm products.

The farm sector was not covered by these industrial and labor policies, while anthracite coal was a de facto uncovered sector. It was to have been under the umbrella of the NIRA, but the industry and its coal miners failed to reach an agreement.

Real wages in the three covered sectors rose after the NIRA was adopted and remained high through the rest of the decade. Manufacturing, bituminous coal, and petroleum wages were between 24 and 33 percent above trend in 1939. In contrast, the farm wage was 31 percent below trend, and anthracite coal was 6 percent below trend. It is striking that the bituminous coal miners – who successfully negotiated under the NIRA – increased their wages significantly, while anthracite coal miners – who did not successfully negotiate under the NIRA – were unable to raise their wages.

Monthly Conference Board data in Table 15.6 (Beney 1936, Hanes 1996) report real wages in 11 manufacturing industries for which there are also price data. It shows significant increases in all 11 industries, occurring after the NIRA was passed.

Real wages are indexed to 100 in February 1933 (a few months prior to the passage of the NIRA) to focus on the effect of the adoption of the policies on real wages. All of these wages were significantly higher at the end of 1933, six months after the act was passed. The smallest increase was 7 percent (farm implements), and the largest increase was 46 percent (boots and shoes). These wages remained high through the end of the NIRA (May 1935) and also after

Table 15.5 Indexed real wages relative to trend

Sector	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Manufacturing	101.7	106.3	105.1	102.9	110.8	112.0	111.6	118.9	122.9	123.6
Bituminous coal	101.2	104.8	91.4	90.4	110.1	119.1	125.3	127.8	130.9	132.7
Anthracite coal	–	–	100.0	100.0	92.7	90.3	89.9	89.1	94.1	94.4
Petroleum	–	–	100.0	103.6	108.9	113.6	115.4	124.8	129.1	128.8
Farm	94.6	78.8	63.0	60.9	60.8	64.1	67.7	72.9	68.5	68.6

Source: Cole and Ohanian (2004)

Note: Wages are deflated by the GNP deflator and a 1.4 percent trend, which is the growth rate of manufacturing compensation in the postwar period. They are indexed to be 100 in 1929, except for the wages in anthracite coal and petroleum, which are indexed to 1932=100 because of data availability

Table 15.6 Monthly wages relative to GNP deflator (February 1933=100)

	April 1933	December 1933	June 1934	May 1935	December 1935	June 1936
Leather tanning	96.6	124	122.2	121.9	123	124.9
Boots and shoes	104.7	145.9	138.1	139	139.7	137
Cotton	96.7	142	133.2	135.2	133.4	134.3
Iron/steel	100.2	123.1	122.7	124.6	125	127
Foundries and machine shops	99.4	112.6	111.9	113.4	113.6	115.9
Autos	98.9	115.5	121.3	121	123.1	125.8
Chemicals	102.8	117.6	118.2	121.5	123.1	124.1
Pulp/paper	100.7	117.5	111.4	115.3	116.4	117.9
Rubber manufacturing	100.7	121.3	125.9	134.1	137	128.6
Furniture	102.3	118.9	125.9	129.2	129	130.3
Farm implements	96.5	107.1	105.6	115.3	116.9	113.7

Source: Cole and Ohanian (2004)

the Act was ruled unconstitutional. The average real wage increase across these 11 categories in June 1936 relative to February 1933 was 25.4 percent.

These wage premia in the cartelized sectors are considerably higher than most estimates of union wage premia, which some authors have used to gauge labor market distortions. There are two key reasons why estimates of union/nonunion wage premia are not the right statistics for evaluating New Deal wage increases. One is that the NIRA raised wages of both union and nonunion workers. Very few workers were in unions in 1933, and the NIRA took this into account by forcing firms to raise wages of all workers to get cartelization benefits. Another reason why union wage premia are poor estimates of the impact of New Deal wage increases is that most estimates of union wage premia come from post-World War II data. These data are not good estimates because postwar union bargaining power was lower than worker bargaining power during the New Deal.

By fostering cartels and collusion, New Deal policies also increased relative prices in several industries for which data are available from the Bureau of Labor Statistics. Where possible, industries in which both wage and price data are available are matched. Table 15.7 shows relative price data from several industries covered before the NIRA was passed and continuing through the 1930s after the *Schechter* decision.

Prices for nearly all industries that were effectively covered by these policies rose shortly after the NIRA was passed, and remained high throughout the decade. As in the case of real wages, the contrast between the two coal industries is revealing. Note that the relative price of bituminous coal (covered by the NIRA) rose after the NIRA was passed and remained high through 1939. In contrast, the relative price of anthracite coal (not covered by the NIRA) was unchanged after the NIRA passed and then declined moderately over the rest of the decade.

These wage and price data provide substantial evidence that New Deal policies significantly raised relative prices and real wages in the industries covered by these policies, while prices and wages did not rise in industries that either were not covered by these policies or, as in the case of anthracite coal, in which the industry was unable to negotiate and collude. There is additional evidence, including studies by the National Recovery Review Board (NRRB), which was an independent agency charged with assessing whether the NIRA was creating monopoly. The NRRB produced three studies that assessed industries covering about 50 percent of NIRA employment, and concluded that there was substantial evidence of monopoly in most industries. The FTC studied a number of manufacturing industries following the *Schechter* decision and concluded that there was very little competition in many concentrated industries after the NIRA.

The impact of New Deal policies on economic activity

Standard theory indicates that New Deal cartelization policies distorted resource allocation and reduced employment and output. Cole and Ohanian (2004) quantify the effect of the New Deal on the slow recovery by developing a general equilibrium model tailored to capture key aspects of these policies. The model's foundation is a multisector neoclassical growth model that allows for the fact that not all of the economy was impacted by these policies. In the model, sectoral intermediate outputs, which are produced using capital and labor, are combined to produce a single final output good which is divided between consumption and investment. The model includes a dynamic bargaining model between labor and capital that is similar to the actual bargaining process that occurred during the 1930s. The model is an insider–outsider model, as in Blanchard and Summers (1986) and Lindbeck and Snower (1988), in which the workers in the industries covered by cartel policies receive higher wages than those in industries that are not covered. But in contrast to other insider–outsider models, the number of workers within the cartelized industries is endogenously determined by the current group of insiders. Thus, the model can quantitatively address the impact of these policies on employment within an optimizing framework.

The model develops a representative family construct, in which family members work in different industries. Even though the cartel and noncartel sectors pay different wages, household members pool incomes so that each member has the same consumption level. There are four possible time allocations for household members: (1) work in a high-wage cartel industry, if already employed in that industry, (2) work in a competitive sector, (3) search for a high-wage cartel job, and (4) nonmarket time allocation.

In the model of New Deal policies, workers and firms within an industry bargain each period over the wage and the number of workers that will be hired. The bargaining is conducted

Table 15.7 Wholesale prices relative to the personal consumption services deflator (February 1933=100)

Industry	April 1933	December 1933	June 1934	May 1935	December 1935	June 1936	June 1937	June 1938	June 1939
Leather/hides	102.1	131.2	126.1	127.5	137.8	126.7	128.5	143	121.1
Textiles	131.8	149.2	143.8	133.1	140.4	131.9	142.3	116.9	120.1
Furniture	99.4	110.3	108.1	105.3	105.3	103.9	112.2	106.2	103
All home furnishings	98.9	112	111.6	109.5	109.5	107.9	115.3	110.1	108.2
Anthracite coal	91.8	91.9	85.3	80.8	91.8	84.1	78.2	76.8	77.8
Bituminous coal	98.4	114.1	117.8	117	119.3	117.8	115.6	112.2	110.1
Petroleum products	94.8	150.4	145.2	145.2	142.6	162.4	167	150	139.9
Chemicals	100.6	100.3	97.9	108.8	108.8	107.8	104.6	99.7	97.4
Drugs/pharmaceuticals	99.6	107.7	131.3	133	133	138.6	144.8	127.4	129.1
Iron/steel	97.9	108.2	97	114.6	108.7	108.2	120.2	119.3	112.6
Nonferrous metals	106.5	144.2	145.9	147.1	147.1	146.8	185.3	133	144.2
Structural steels	100	106.2	113.8	110.6	110.6	109.7	131	126.4	120
All metal products	99.4	107.9	111.5	109.9	110.1	107.9	115.4	113.5	110.1
Autos	99.4	100	102.9	102	102	-	-	96.5	93.5
Pulp/paper	98.1	114.4	114	108.5	108.5	107.1	122.8	108.4	101.3
Auto tires	87.8	101.4	103	103.7	103.7	102.3	123.3	123.2	129.8
Rubber	121.3	295.1	446.9	400.8	400.8	413	626.2	394.1	515.5
Farm equipment	100	102.4	107.9	110.6	118.8	109.8	105.5	105.7	102.7
All building materials	100.6	122.6	123.8	119.3	119.3	119.1	129.3	117.5	117.2
Average	103.2	117.1	120	122.6	123.7	116.8	124.6	117.9	113.8

Source: Cole and Ohanian (2004)

Note: The average does not include rubber

within a dynamic game in which workers make a take-it-or-leave-it offer. If the firms accept, then the government permits the industry to collude and act as a monopolist. If the firms do not accept the workers' offer, then with probability ω they collude and pay the wage that prevails in the non-cartel sector, and with probability $(1 - \omega)$ the government discovers that a wage agreement was not reached, and forces the industry to operate competitively. This latter feature captures the fact that New Deal cartelization was sanctioned only if industry reached an agreement with their workers.

Thus, workers must make an offer that industry weakly prefers to rejecting. Worker bargaining power in the model thus depends on the value of ω . Specifically, firms will accept an offer only if profits by accepting the offer (Π^A) are higher than expected profits $E(\Pi^R)$ from rejecting. Formally, this is given by:

$$\Pi^A \geq E(\Pi^R) = (1 - \omega)\Pi^R$$

This expression shows that worker bargaining power is high for ω close to one, as in this case workers capture most of the monopoly rents from cartelization. Alternatively, if ω is zero then industry captures most of the monopoly rents, as in this case industry can collude without paying premium wages. The model reduces to a multi-sector growth model with monopoly in one sector in this latter case.

The key parameters in this model are the fraction of industries that are effectively cartelized and the bargaining parameter ω . Cole and Ohanian assume that about one-third of the economy is cartelized, which represents the share of the economy at that time devoted to manufacturing, petroleum, and mining. They choose a value of about 0.85 for ω so that the cartel wage in the steady state of the model equals the observed real manufacturing wage in 1939 of about 17 percent above trend.

Cartel policies impact employment and output substantially. Cole and Ohanian (2004) find that steady-state output, consumption, and hours are all about 16 percent below trend. This accounts for about two-thirds of the extent that these actual variables remained below trend. Investment represents a larger deviation between the model and data, as actual investment remained about 50 percent below trend, compared to model investment, which is about 16 percent below trend. Table 15.8 shows the model simulations for the impact of the New Deal on the economy.

The end of New Deal industrial and labor policies

By the late 1930s, Roosevelt acknowledged the impact of cartelization on the economy in a speech: "the American economy has become a concealed cartel system. The disappearance of price competition is one of the primary causes of present difficulties" (quoted in Hawley 1966: 412).

New Deal labor and industrial policies began to change around this time, and continued to evolve in the 1940s and World War II. Trust-buster Thurman Arnold was appointed as Assistant Attorney General and ran the antitrust division at the Department of Justice. Arnold doubled the antitrust workforce in the Department of Justice and initiated a number of antitrust cases.

Labor policies changed considerably beginning in the late 1930s. The Supreme Court ruled against sit-down strikes in 1939. Labor policy continued to change during World War II, when the National War Labor Board (NWLB) refused to approve a large wage increase for Bethlehem Steel's workers. From that point on, the NWLB's "Little Steel" decision severely impacted bargaining power, as only cost-of-living wage increases were approved. Union strikes in

Table 15.8 Predicted path of US economy in cartel model (1933=1)

	<i>Output</i>	<i>Consumption</i>	<i>Investment</i>	<i>Employment</i>
1934	0.77	0.85	0.40	0.82
1935	0.81	0.85	0.62	0.84
1936	0.86	0.85	0.87	0.89
1937	0.87	0.86	0.90	0.90
1938	0.86	0.86	0.86	0.89
1939	0.87	0.86	0.88	0.89

Source: Cole and Ohanian (2004)

response to the Little Steel decision pushed public opinion against unions, and the Taft–Hartley Act, which revised the National Labor Relations Act by reducing worker bargaining power, was passed in 1947. Postwar wage premia never again approached the levels of the late 1930s.

Conclusion

The economy remained far below trend throughout the New Deal, in part reflecting New Deal industrial and labor policies that substantially distorted the normal competitive forces of supply and demand. These policies depressed employment and output by raising prices and wages well above normal, competitive levels in many sectors.

Research by Cole and Ohanian (2004) suggests that the economy would have recovered much more quickly in the absence of these policies. Moreover, this new research provides a very different interpretation of the Depression compared with that of Keynes (1936), who argued that low investment, reflecting pessimistic investor expectations, prevented employment from recovering, and that significant government intervention was required for the economy to recover. In contrast, the view presented here indicates that investment was low because of significant government interventions that depressed employment.

It is important to note that this chapter does not analyze the negative impact of other government interventions on the economy, and in particular, the impact of interventions on investment, including increased uncertainty regarding property rights (see Higgs 1997), or the large increase in capital taxation that occurred under the New Deal (see McGrattan 2012). Future research should focus on integrating these various factors into a single model framework to study how these three factors – cartelization, uncertainty, and higher taxes – interacted with each other to prolong the Depression.

Note

- 1 Exempt industries included steam railroads, nonprofits, domestic services, and professional services.

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