# CARTELS OR FAIR COMPETITION? THE ECONOMICS OF THE NATIONAL INDUSTRIAL RECOVERY ACT

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## ABSTRACT

During the heart of the Great Depression, the National Industrial Recovery Act (NIRA) suspended U.S. antitrust laws and helped coordinate government sponsored cartels in most manufacturing industries in the American economy. The potential effect, detrimental or beneficial, of cartels is a topic of debate in the recent theoretical literature of cartels, though few historical examples of large-scale, economy-wide cartels exist. This study uses the NIRA cartel experience to test the competing hypotheses of the effects of cartels on economic variables.

## Introduction

Faced with an unprecedented unemployment problem, President Franklin Roosevelt signed the National Industrial Recovery Act (NIRA) on June 16, 1933 as the centerpiece of his "New Deal." By suspending antitrust laws for participating firms and encouraging collusive behavior between previously rival firms, the NIRA provides economic historians with a unique experiment in U.S. history—the government sanctioned, supported and enforced cartelization of industry.

Under the NIRA, firms were not only allowed to participate in drawing up industry-wide cartel "codes of fair competition," but were also given the promise of government enforcement of cartel provisions. The cartel enforcement mechanism consisted of possible fines and imprisonment for cartel violators. In addition, President Roosevelt allowed complying firms to display the Blue Eagle Emblem in their place of business and encouraged consumers to boycott firms lacking this emblem.

This paper focuses on the historical episode of the NIRA to address the current debate in the literature on the relative efficiency of cartels versus market competition. A 1996 article in this journal by Janice Kinghorn uses the turn of the century German cartel episode to offer theoretical as well as empirical evidence supporting the idea that cartels may actually be efficiency enhancing—indirectly providing theoretical justification for New Deal cartel policies.[1] The traditional economic theory of cartels suggests, on the other hand, that cartels tend to restrict output and raise prices at the expense of consumers and overall economic growth. In this paper, I explore these competing theories in the context of the NIRA's attempt to cartelize industry during the heart of the Great Depression. I finish with an empirical analysis of the NIRA's effects on output, prices, unemployment, and business failures.

## Cartels versus Competition

Competition in the classical sense was viewed as a *dynamic*, rivalrous process of entrepreneurs seeking ways to differentiate their products and/or capture profits by lowering the cost of production through a discovery of either information, technology or both. Frank Machovec notes that this definition is in almost direct contradiction to the more modern theories of *static* competition which were beginning to become widely accepted in economics circles during the 1920s and 1930s.[2] In the now familiar model of pure competition used in many economics textbooks and classrooms today, firms take the prices of their homogeneous products as given—any deviation from this state is considered monopolistic.

When the Roosevelt administration abandoned market competition in favor of government-sponsored cartel "codes of fair competition," U.S. antitrust policy did a complete reversal. Cases from *United States v. Trans-Missouri Freight Association* (1892) to *United States v. Trenton Potteries Co.* (1927) affirmed that price-fixing was a per se violation of antitrust law, even if prices were fixed at reasonable rates. Under the "fair competition" of the NIRA cartels, previously competing firms were given the tools to openly maintain many price-fixing or quasi-price-fixing arrangements.

What motivated this turnabout? Supporters of the NIRA believed that the cartel aspects of the legislation would promote industrial recovery by ending the so-called "ruinous" market competition, which many at the time believed to be the overriding cause of the depression and its associated business failures and unemployment. In essence, the NIRA would replace classical dynamic competition with the enforcement of an outcome approaching the static competition equilibrium where firms, now under cartel rule, would essentially take prices of their increasingly standardized products as given, while making a profit just large enough to prevent further business failures.

Did the NIRA cartels promote an environment of "fair" competition or simply an environment in which profit-maximizing cartels could thrive? If the answer is the latter, the important issue is whether these cartels promoted outcomes that were not just superior from a business standpoint, but superior, as some in the literature would suggest, for economic recovery as well. To illustrate the effect of the NIRA cartels on business, a brief case study of a randomly selected code—the wood-cased lead pencil industry—follows.

## The Wood-Cased Lead Pencil Industry Code of Fair Competition

After the June approval of the NIRA, the act's enabling body, The National Recovery Administration (NRA), distributed pamphlets to businesses to guide the creation of industry-wide cartel codes. Representatives from the industry would submit a tentative code to an NRA deputy administrator. This administrator would then determine

whether or not the code fairly represented all the parties involved in the industry: small firms, large firms, labor, consumers, or others. A public hearing would follow at which all interested parties could testify. A final copy of the proposed code would be sent to the NRA's chief administrator, General Hugh S. Johnson for approval.[3]

The wood-cased lead pencil industry, whose code I randomly selected from a stack of several hundred, provides an example of the specifics of such a code.[4] On August 23, 1933 the pencil industry, represented by The Lead Pencil Institute, Inc., based in Washington, D.C., submitted a code for approval. The pencil industry was operating at only 35 percent of capacity and, according to the code, had seen sales fall eight percent during 1932. The Lead Pencil Institute writers suggested that a major cause of the deterioration of the pencil industry was that low-quality, low-priced pencil producers were dominating the market and essentially putting the high-quality pencil makers out of business. To correct this tendency, the code suggested a rigid standardization of pencils which would help consumers clearly differentiate between grades and qualities. "This correction will ultimately benefit the consumer, labor, and the whole industry and will prevent a blind struggle" between loss-taking prices and sales volume.

In the text of the code, standard specifications for pencils were set. Included in these were pencil length and diameter, the diameter of the lead, maximum sizes for the "rubber plug" erasers just to name a few. Pencils also had to meet the requirement of "standard commercial packing," that is pencils had to be packed and sold as unsharpened, or if they were pre-sharpened, 25 cents per gross had to be added to the price. Special labeling of packages was forbidden as were many other ways an entrepreneurial pencil maker may attempt to differentiate his or her product from competing pencil makers.

The "plan of allocation" of the pencil code (article one of section IV) set out quota restrictions on pencil makers much like cartels do today, and also set up heavy barriers to entry into the pencil-making industry. "Each productive unit will be allotted a maximum percentage of sales volume... No additional productive volume will be allotted to any new productive capacity entering this field subsequent to the approval of the NIRA." Later, the code states that only after the industry had maintained operation at 80 percent capacity for six months would any firms be allowed to expand their own productive capacity.

Codes containing blatant price-fixing schemes were, on the whole, looked down upon by the NRA. Matthew Krepps, however, empirically shows that the vast majority of industries with approved codes used an "open-price filing" provision to accomplish the same end of price-fixing.[5] Under open-price filing, firms were required to submit their prices to the industry's central authority in advance of any price change. In this way, if any one firm decided to lower its price, competing firms would know of this immediately and could respond with a matching price cut of their own. The purpose of the price cut, to attract customers away from competitors, would be defeated, and all firms, including the initial price-cutting firm, would be made worse off. The open-price filing system then removes the incentive to cut prices below the cartel level without

including an explicit price-fixing scheme in the code.

Article 21 of part V of the pencil industry code contained an open-price filing provision requiring each pencil manufacturer to "publish and distribute to the several classes of the trade, a full and complete price list which shall contain the manufacturer's scale of base list prices, and terms of sale." [6] When a price was to be changed, the Lead Pencil Institute was to be notified so that it could advise all members.

The following article, 22, further required all pencil manufactures to report monthly production, new orders, unfilled orders, shipments, inventory and prices received. Each manufacturer would be subject to a quarterly audit by an accountant of the Lead Pencil Institute to ensure that no cheating, price or otherwise, was taking place.

The writers of the code included several other provisions that were consistent with the actions of a profit-maximizing cartel. Articles four and eight of section five forbid tie-in sales, selling two or more non-related goods as one packaged transaction, as a way to get around price restrictions and attract more business. Article 10 forbids price discrimination, the charging of different prices to different consumers or consumer groups. Article six gives firms a degree of monopsony power over current employees by not allowing other firms within the pencil industry to bid for their service—i.e., there was no free agency of employed pencil workers. Article nine outlawed many ways of using unique customer service to attract customers by forbidding "lavish, extravagant, or unusual entertainment."[7]

Pencil manufactures also had to adhere to minimum wage and maximum hour restrictions for labor. Article four of section III set eight hours as the maximum work day and 40 hours as the maximum work week. Article eight of that section set minimum wage rates between 30 cents and 32 ½ cents per hour depending upon which geographic zone the firm was based.

The Lead Pencil Institute, then, attempted to set up a cartel that could control almost every aspect of the pencil making industry. The apparent goal of this code was to standardize the production, marketing and selling processes of depression-era pencil makers in an attempt to form a set of identical rules for all firms within the pencil industry. Dynamic process competition, in which pencil-makers attempted to make their pencils stand out from the crowd, was replaced with a system of "fair competition" which, in the end, promoted almost no competition at all.

### Are Cartels Good or Bad for Consumers?

It seems reasonably clear from the proposed pencil code that the writers of the codes viewed the mandate of "fair competition" not just as "no competition," but also an an opportunity to form elaborate cartels under which major price and output decisions would largely be determined by a central authority whose goal was to maximize profits for the industry. A full-scale analysis of the industry codes reveals that most industries' regulations, not just the pencil industry, went well beyond the NIRA's original

intent of promoting recovery.

No less than 677 industry codes were signed into law by the end of the NIRA in 1935, the majority of which were passed between August and December of 1933. The NIRA codes, with the exception of the agricultural sector, which had its own cartel mechanism—the Agricultural Adjustment Act—were essentially economy-wide as only a few industries were exempted and most of these were public utilities or non-profit organizations. Overall, the codes contained over 150 different trade practice provisions in addition to many price and wage provisions.[8] For example, 91 codes used direct production control quotas, while many others used the price mechanism—as many cartels do today—to control output. NRA studies found that at least 560 codes, in addition to the wood-cased lead pencil industry, had some sort of provision relating to price (no sales below cost, open price filing, resale price maintenance, etc.), the most common of which was the open-price filing provision, contained in 451 codes.[9] The view of the NIRA as a cartel enhancing piece of legislation is firmly established in the recent literature.[10] The current debate then is not whether the NIRA promoted either profit-maximizing cartels or benevolent, industry-driven recovery measures, but to what extent did the cartels promote or hurt recovery.

The orthodox view of cartels is that collusive agreements benefit the firms involved, but come at the expense of consumers. Michael Weinstein, in the first modern econometric study of the NIRA, found evidence suggesting that the NIRA, in fact, hurt American economic recovery from the Great Depression.[11] Weinstein concluded that the NIRA increased prices about 14 percent per year and lowered GNP between 3-6% per year. "The NIRA codes were a significant and independent contractionary influence; the economy could not have recovered in the historically expected ways as long as the NIRA wage and price regulations were effective."[12]

Weinstein's analysis of macroeconomic variables suggested that the economy under the NIRA was hit with a monopoly-induced reduction (leftward shift) in aggregate supply schedules. Such shifts would be consistent with the predictions of orthodox cartel theory: profit-maximizing cartels collude to reduce output and obtain higher prices for their products.

In recent years, however, this view of the NIRA has been challenged on two major fronts. First, the view that the NIRA cartels hurt economic recovery has been challenged by the claim that the NIRA was not actually enforced, and therefore was ineffective. Perhaps the most important contribution to this literature was made by Donald Brand with his emphasis on the 'compliance crisis' which, he claims, took place just a few months after the NIRA was enacted. "Diminishing moral enthusiasm... combined with powerful economic incentives for violating the NRA codes to produce a crisis of compliance."[13]

Brand notes that very little government enforcement actually took place. Without the government standing behind the cartel agreements, economic theory predicts that the incentive to cheat would have been too strong, and collusion could not likely have

been maintained. The implication behind the "compliance crisis" view is that the NIRA cartels, because they were neither enforced, nor followed by U.S. business, could not have had much effect on the U.S. economy.

On a second front, Weinstein's traditionally well-accepted view of the negative effect of the NIRA cartels has been challenged by a growing strand in the literature of cartels which claims that cartels may be efficiency-enhancing. Both Janice Kinghorn and Werner Troesken have analyzed the relative efficiency of German cartels between 1870 and 1913, and have found some support for the notion that cartels can lead to increases in output.[14] According to Kinghorn, "If a cartel stabilizes demand, member firms can move to a lower average total cost curve and produce at a higher output... (and) more efficient production process."[15] Figures 1 and 2 contrast Weinstein and Kinghorn's competing theories of the efficacy of cartels.[16]

George Bittlingmayer has interestingly applied a variation of Kinghorn's efficiency argument to the NIRA.[17] Bittlingmayer argues that fixed costs may prevent the exist-

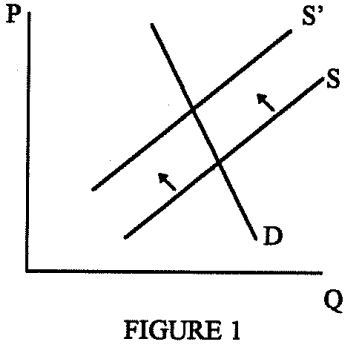


FIGURE 1

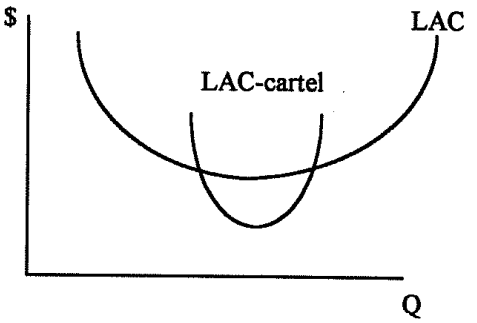


FIGURE 2

**Notes: Figure 1 shows the traditional view of the effects of cartels—cartels restrict output to obtain higher prices for their goods. Weinstein presents empirical evidence suggesting that Figure 1 is representative of the manufacturing sector of the U.S. economy under the NIRA. Figure 2 is based on a figure printed in Kinghorn's article arguing that a cartel may allow a firm to structure its productive process with more certainty as to how much output it will produce each period. The firm can then give up flexibility of output in order to produce goods at lower average cost.**

ence of a competitive equilibrium, and that "arrangements reminiscent of classic cartels may actually promote efficiency by allowing firms to recover fixed costs."[18] The NIRA, according to Bittlingmayer, provides a remarkable natural testing ground for the cartel efficiency theory. Bittlingmayer regresses quarterly data (1930-1939) of U.S. output on stock prices, wholesale prices, the money supply and a time trend output variable, and includes a dummy variable for the NIRA during the appropriate quarters. Unlike Weinstein, Bittlingmayer finds that the NIRA had no significant effect on real output, and offers this as evidence against the textbook view of cartels which claims that that cartel output effects must be negative.

With the conflicting studies of Weinstein and Bittlingmayer, two important questions remain. First, did the NIRA cartels, enforced or not, play any significant role in the

U.S. recovery from the Great Depression? Second, if the NIRA did have significant effects on economic performance, were these effects positive or negative? In the next section I develop a new model to empirically test the cartels' effects on output, prices, unemployment and business failures.

## Empirical Testing

The first order of business is to address the question, 'did the NIRA promote cartel outcomes?' Orthodox cartel theory suggests that the best way to test this hypothesis is to look at price and output data. Cartels, according to orthodox economic theory, behave, as seen in figure 1, like monopolists by restricting output and raising prices to reap higher profits. If the empirical results show that the NIRA cartels were accompanied by higher prices and lower output in the manufacturing sector of the economy, a very strong case could be made for the traditionally-accepted Weinstein view of the NIRA—the cartel enhancing legislation reduced output and only hurt economic recovery.

On the other hand, if the empirical results show that output increased under the NIRA cartels, this would provide evidence for the efficiency-enhancing cartel hypothesis promoted by Bittlingmayer for the NIRA, and by Kinghorn, Troesken, and others in the theoretical and applied literature of cartels. Finally, an empirical finding that the NIRA had no significant effects on price or output could show weak support for Bittlingmayer's efficient-cartel view, but would more strongly show support for Brand's compliance crisis view. Brand notes that the NIRA was neither enforced by the U.S. government nor adhered to by U.S. businesses and therefore the legislation could have had very few appreciable effects.

If one is to give Brand's thesis of a lack of enforcement and compliance any weight, it is apparent that little can be *conclusively* said about the NIRA's aggregate effects over the 23 months of its existence by simply looking at price and output data. For this reason I finish by testing the NIRA's effects on unemployment and business failures, as these two variables may also shed some light on the debate concerning the overall efficacy of cartels and their effects on economic recovery, even in the absence of universal compliance.

### The NIRA cartels' effects on prices and output

It must be noted that the NIRA legislation had three major initiatives. While Title One of the NIRA allowed firms to form cartels, it also required that they raise nominal wage rates in order to have codes approved by the NRA. Title One then contained two separate provisions, the creation of cartels and higher wage rates paid by participating firms. After all, a profit-maximizing cartel would not voluntarily raise wage rates. In fact, given no legal restrictions, one would expect a set of industry cartels to collusively

behave more as monopsonists by lowering wage rates, particularly given clauses like the "no free agency" one contained in the aforementioned pencil code. If the goal of the empirical testing is to examine the competing hypotheses of whether or not cartels themselves are good or bad for the economy, the raising of wage rates must be viewed independently from the cartel provisions. Title Two of the NIRA contained the third major initiative—a massive increase in government relief spending. Again, the government spending initiative is entirely separate from the cartel enabling provisions of the NIRA.

For the empirical analysis then, the NIRA is broken into three parts, provisions increasing wage rates, provisions increasing government spending, and provisions enabling cartels to form in the U.S. economy. To test only for the *cartel* effects of the NIRA, wage rates and government spending are treated as exogenous and are included as independent variables on the right hand side of an OLS regression. Without controlling for these variables, something that neither Weinstein nor Bittlingmayer do, any finding of the effects of the NIRA would not necessarily be attributable to the cartel aspects of the legislation.

The regression in Table 1 tests the cartels' effect on durable output using, as do all the other regressions in this paper, 10 years of monthly data between April of 1927 and April of 1937. Using a reduced form supply and demand model, the natural log of durable output is regressed on the natural logs of lagged durable output, the money supply, lagged price level, business failures, wage rates, government spending and the non-log level of the real interest rate. The regression contains a dummy variable for the 24 months, June 1933 through May 1935, in which the NIRA was enacted.

Table 1 shows that the NIRA cartels, other factors held constant, had no significant effect on output during the two years in which the NIRA was in place. Table 2, in which the price variable is used as the dependent variable in an almost identical regres-

TABLE 1—THE NIRA'S EFFECT ON DURABLE OUTPUT

Dependent variable: Log Durable Output

| Variable | Coefficient | Std. Error | t-Statistic |
|---|---|---|---|
| Constant | -4.896329 | 1.729953 | -2.830325* |
| LOGDOut(-1) | 1.183066 | 0.096621 | 12.24435* |
| ..... | | | |
| LOG(Price(-1)) | 1.470382 | 0.634858 | 2.316082* |
| LOG(Money) | -0.351806 | 0.434882 | -0.808969 |
| LOG(Gov) | 0.037560 | 0.025912 | 1.449503 |
| Real Interest | -6.915399 | 5.388192 | -1.283436 |
| LOG(BFail) | -0.144773 | 0.052858 | -2.738904* |
| LOG(Wage) | -0.937919 | 0.393502 | -2.383519* |
| NIRAdummy | -0.021521 | 0.045499 | -0.472996 |

R-squared 0.97 F-Statistic 183.4

* significant at 95% level

*Notes:* The dependent variable was lagged 12 times to control for serial correlation. Only the first lag is reported to conserve space. This table shows that durable output was not significantly affected by the NIRA cartels.

*Sources:* Please see data appendix for this and all other tables.

sion, shows that the cartels had no significant effect on prices. These results do not support the traditional view of cartels, nor do they support the cartel-efficiency hypothesis, but instead appear to coincide most closely with Brand's compliance crisis view. It appears from this analysis that the codes were not abided by and therefore had no appreciable effects on the U.S. economy.

The finding that the NIRA cartels did not affect prices and output in the way traditionally predicted is consistent with Bittlingmayer's empirical analysis. Bittlingmayer, however, ignores the possibility that this conclusion reflects a lack of compliance, and

TABLE 2—THE NIRA'S EFFECT ON PRICES

Dependent variable: Prices

| Variable | Coefficient | Std. Error | t-Statistic |
|---|---|---|---|
| Constant | 0.360270 | 0.189650 | 1.899655 |
| LOG(Price(-1)) | 0.848177 | 0.062505 | 13.56965* |
| LOGDOut(-1) | 0.029481 | 0.009339 | 3.156619* |
| ..... | | | |
| LOG(Money) | 0.078929 | 0.039516 | 1.997417* |
| LOG(Gov) | 0.001391 | 0.002741 | 0.507679 |
| Interest rate | 0.005904 | 0.003392 | 1.740532 |
| LOG(BFail) | -0.009951 | 0.005224 | -1.904791 |
| LOG(Wage) | -0.048320 | 0.035295 | -1.369038 |
| NIRAdummy | 0.006874 | 0.004525 | 1.519037 |

R-squared 0.99 F-Statistic 2010.17

* significant at 95% level

*Notes:* Because prices are usually treated in the literature as related to output from the past quarter, if not longer, the durable output variable is lagged three times. Only the first lag is reported to conserve space. This table shows that prices were not significantly affected by the NIRA cartels.

*Sources:* Please see data appendix.

instead offers this as evidence against the traditional view that cartels are economically damaging. In this section I test the NIRA cartels' effects on two other important economic variables—unemployment and business failures—to see if stronger support can be found for either the efficient cartel hypothesis or the traditional hypothesis of negative cartel effects.

Monthly unemployment data were not kept during this time, and further, because the NIRA often unwillingly forced workers to work fewer hours, a traditional unemployment rate would not be the best indicator of involuntary worker idleness. To correct for both of these problems a more appropriate proxy for unemployment was developed by taking the maximum level of the index of production man-hours worked in manufacturing for the time period prior to the depression, May 1929, and subtracting monthly production man-hours indexes from this level to create a monthly measure of the under-utilization of labor resources.

Table 3, in which the unemployment proxy is regressed on lagged unemployment, worker productivity, wage rates, prices, the money supply government spending, and an NIRA dummy variable, shows that the NIRA had no significant effect on unemployment. This result may seem somewhat surprising as historians traditionally have sug-

gested that the NIRA did offer some relief to unemployed workers. In fact this finding is not necessarily inconsistent with this view. The unemployment proxy used in this analysis utilizes man-hours worked, so Table 3 merely suggests that the NIRA did not affect man-hours, but leaves open the possibility that some workers benefited from the "share the work" aspects of the NIRA. That is, more workers may have held 30-35 hour per week jobs than otherwise, even though they would have preferred to work several more hours at the increased wage rates if the opportunity presented itself. In this sense unemployment, measured traditionally as those without work, may have fallen as a result of the NIRA. Still, the results of Table 3 show that the NIRA cartels clearly did not create a boom in hours worked to the economy as a whole. On the contrary, the coefficient suggests a negative, though not significant, relationship between the NIRA and hours worked.

Because the regression in Table 3 treats the wage rate as an independent variable, one could argue that this regression is biased against the finding that the NIRA cartels caused more unemployment. After all, the wage rate coefficient is, not surprisingly,

TABLE 3—THE NIRA'S EFFECT ON UNEMPLOYMENT

Dependent variable: Unemployment

| Variable | Coefficient | Std. Error | t-Statistic |
|---|---|---|---|
| Constant | 26.15824 | 5.922252 | 4.416941* |
| LOG(Un(-1)) | 0.576825 | 0.072579 | 7.947557* |
| LOG(Prod) | -1.541461 | 0.662217 | -2.327729* |
| LOG(Price) | -6.413671 | 1.964821 | -3.264252* |
| LOG(Wage) | 3.180170 | 1.308956 | 2.429546* |
| LOG(Money) | 0.894636 | 1.504890 | 0.594486 |
| LOG(Gov) | -0.169592 | 0.124861 | -1.358251 |
| NIRAdummy | -0.198724 | 0.206729 | -0.961276 |

R-squared 0.83 F-Statistic 79.6

* = significant at 95% level

*Notes:* This table shows that the NIRA had no significant effect on the unemployment proxy used here—labor hours worked.

*Sources:* See data appendix

strongly positive. The higher the wage rate, the more unemployment. Again, however, the goal of this study is to examine only the effects of the NIRA cartels, not the NIRA as a whole. Because industry cartels would not voluntarily raise wage rates, we must control for this aspect if we are to limit the scope of this study to cartel generated effects. When the regression is run without including the wage rate variable (allowing the NIRA dummy to pick up the effect of the wage increase), the sign of the coefficient, not reported here, flips to positive, suggesting that the NIRA cartel and wage provisions together may have caused more unemployment, however this result is still not significant at the desired level.

So the NIRA, it would appear, did not create new employment opportunities in the depression-era economy. Another primary goal of the NIRA was that it would end the so-called "ruinous competition" that was supposedly causing many businesses fail-

ures. Preventing business failures was, in fact, one of the primary justifications for taking the unprecedented step of promoting industry-wide cartels. Fortunately, business failure data, for both large and small manufacturing firms, was kept by R.J. Dun and Company.[19] Many at the time feared that large firms, which could more easily dominate the code-writing process, would gain at the expense of small firms. Using this data, one can test both this hypothesis and the competing hypotheses of the positive or negative effects the NIRA cartels had on the economy.

The natural log of business failures is regressed on lagged business failures, the interest rate, government spending, wage rates, the money supply, productivity and a dummy variable for NIRA months. Table 4 shows that the NIRA did significantly prevent many large firms from failing. This is the first evidence that favors the view that the NIRA cartels may have been beneficial for recovery. That said, however, this finding will probably not be surprising to followers of the traditional view that the cartels restrict output and hurt the economy. The finding that fewer businesses failed is not necessarily inconsistent with the view that these firms individually restricted output and raised prices to gain monopoly profits. In fact, some economists would contend that the NIRA cartels' prevention of business failures could have been counterproductive, as the cartels may have been protecting firms that, from an efficiency standpoint, "should" have failed. Business failures, it is argued, can be good for the economy, in the long run, if the failing firm is inefficient. Still the significant business failure result is interesting, particularly in light of the insignificance of the price, output and unemployment variables and their suggestion that Brand's compliance crisis view is the one most strongly supported by the data.

So the NIRA caused significantly fewer large firms to fail, but what about smaller firms? Table 5 shows that the NIRA was not successful at slowing down the wave of small business failures in the 1930s. One might interpret these results as evidence that

TABLE 4—THE NIRA'S EFFECTS ON LARGE BUSINESS FAILURES

Dependent variable: Business Failures, Large Firms

| Variable | Coefficient | Std. Error | t-Statistic |
|---|---|---|---|
| Constant | -1.170166 | 2.948297 | -0.396895 |
| LOG(BFO(-1)) | 0.191413 | 0.088648 | 2.159247* |
| ..... | | | |
| Interest rate | 0.074581 | 0.060579 | 1.231147 |
| LOG(Gov) | 0.044191 | 0.083069 | 0.531986 |
| LOG(Wage) | 0.923282 | 0.965320 | 0.956451 |
| LOG(Money) | -1.461279 | 0.647559 | -2.256597* |
| LOG(Prod) | -1.628623 | 0.467389 | -3.484514* |
| NIRAdummy | -0.346331 | 0.134174 | -2.581218* |
| R-squared | 0.82 | F-Statistic | 57.06 |

*= significant at 95% level

*Notes:* The dependent variable, business failures, was lagged 3 times to control for serial correlation of the data. Only the first lag is reported to save space. This table shows that the NIRA did cause significantly fewer large firms to fail.

*Sources:* See data appendix.

the large firms rigged the codes and other rules to protect their positions, while not providing equal protection to their smaller competitors. While this hypothesis is not explored further here, it would appear that the worries of inequities between small and large firms may have been justified as large firms do appear to have benefited, in terms of business failures anyway, more than small firms under the NIRA cartels.

## Conclusions

TABLE 5—THE NIRA'S EFFECT ON SMALL BUSINESS FAILURES

Dependent variable: Business Failures, Small Firms

| Variable | Coefficient | Std. Error | t-Statistic |
|---|---|---|---|
| Constant | -2.475227 | 1.296597 | -1.909017 |
| LOG(BFU(-1)) | 0.364343 | 0.091108 | 3.999025 |
| ..... | | | |
| Interest rate | 0.032348 | 0.030034 | 1.077056 |
| LOG(Gov) | 0.077414 | 0.036751 | 2.106428 |
| LOG(Wage) | -0.083816 | 0.430553 | -0.194670 |
| LOG(Money) | 0.015889 | 0.283442 | 0.056057 |
| LOG(Prod) | -0.596106 | 0.213919 | -2.786603 |
| NIRAdummy | -0.062934 | 0.059219 | -1.062726 |
| R-squared | 0.92 | F-Statistic | 162.2 |

*= significant at 95% level

*Notes:* The dependent variable, business failures, was lagged 3 times to control for serial correlation of the data. Only the first lag is reported to conserve space. This table shows that the NIRA did not significantly alter the pattern of small business failures.

*Sources:* See data appendix.

This paper has examined the issue of the efficacy of cartels by using the National Industrial Recovery Act as a testing ground. During the NIRA, the government gave firms the ability to form legally binding, industry-wide cartel "codes of fair competition." As illustrated with the case study of the pencil industry, these cartel codes were detailed attempts to standardize products and prices in ways strikingly similar to pre-Sherman Act gentlemen's agreements and trusts.

Of the three competing views of the NIRA cartel effects, positive, negative, or not enforced and hence not applicable, the empirical evidence presented here shows the most support for Donald Brand's view that the NIRA was neither enforced nor followed by U.S. businesses. The NIRA appears to have had no significant effect on output, prices or unemployment during the 23 months before the *Schechter v. U.S.* ("Sick Chicken Case") decision declared the act unconstitutional. The NIRA does appear to have caused fewer large businesses to fail, but appears to have been insignificant in slowing the wave of small business failures during the Great Depression.

Given that the NIRA was not able to promote cartel outcomes between June 1933-May 1935, little can be definitively said about the efficacy of cartels looking at the entire NIRA time period. The NIRA seems to have failed in its mission to replace the dynamic competitive market mechanism with a system of cartels. Whether this failure was good or bad for U.S. recovery remains an issue for further theoretical and empirical study.

## Appendix: Data Sources

Note: All monthly data sets

**Output**—Index of Production of Durable Goods, Seasonally Adjusted

NBER Series—01057A

Source: Journal of American Statistical Association and Dr. G.W. Harvey Consumers Counsel Division

**Business Failures**—Number of Business Failures, Manufacturing Companies, Duns

NBER Series—09030

Source: R.J. Dun and Co.

**Hourly Wage Rates**—Average Hourly Earnings for Twenty-Five Manufacturing Industries, National Industrial Conference Board

NBER Series—0812

Source: National Industrial Conference Board.

**Money Supply**—Money Stock, Commercial Banks Plus Currency Held By Public

NBER Series—14144

Source: See Friedman and Schwartz Monetary Statistics of the United States (NBER 1970)

**Government Expenditures**—National Government Finance Receipts and Expenditures By Months Obtained from the yearly Statistical Abstracts of the United States.

**Interest Rates**—Bank Rates on Customer Loans, Leading Cities

NBER Series—13031

Source: Federal Reserve Board

**Prices**—Index of the General Price Level

NBER Series—04051

Source: Federal Reserve Bank of New York City (1923-1933) and Monthly Review of Credit and Business Conditions (1934-39)

**Production Index used in Unemployment Proxy**—Index of Production Worker Manhours in Manufacturing Total, NICB

NBER Series—08265

Source: National Industrial Conference Board

## Notes

1. Janice Rye Kinghorn, "Kartells and Cartel Theory: Evidence from Early Twentieth Century German Coal, Iron, and Steel Industries." *Essays in Economic and Business History* 14. (1996): 339-363.

2. Frank Machovec, *Perfect Competition and the Transformation of Economics*. (New York: Routledge, 1995).

3. Bernard Bellush, *The Failure of the NRA*. (New York: Norton, 1975), especially pages 36-40.

4. U.S. National Recovery Administration. "Code of Fair Competition for the Wood-Cased Lead Pencil Industry." Registry No. 1647-01 (Washington: U.S. Government Printing Office, 1933).

5. Matthew B. Krepps, "Another Look at the Impact of the National Industrial Recovery Act on Cartel Formation and Maintenance Costs." *Review of Economics and Statistics* 79, no. 1 (1997): 151-154.

6. U.S. National Recovery Administration. "Code of Fair Competition," 8.

7. Ibid., 7.

8. House Document No. 158, 75th Congress, 1st Session.

9. Krepps, "Another Look," 151.

10. See also Barbara Alexander, "Failed Cooperation in Heterogeneous Industries Under the National Recovery Administration," *The Journal of Economic History*, 57 no. 2 (1997): 322-44, and for not so recent conclusions of this sort see Ellis Hawley, *The New Deal and the Problem of Monopoly* (Princeton, NJ: Princeton

University Press, 1966).

11. Michael M. Weinstein, *Recovery and Redistribution Under the NIRA* (Amsterdam: North-Holland Publishing Company, 1980).

12. Ibid., 146.

13. Donald Brand, *Coporatism and the Rule of Law: A Study of the National Recovery Administration* (Ithaca, NY: Cornell University Press, 1988), 103.

14. Kinghorn, "Kartells," and Werner Troesken, "A Note on the Efficacy of the German Steel and Coal Syndicates." *Explorations in Economic History* 18 (1989): 595-600.

15. Kinghorn, "Kartells," 354.

16. I thank an anonymous referee for noting that while Kinghorn and Trosken explore cartels in a rapidly industrializing economy, turn of the century Germany, the NIRA cartel experiment took place during the economic calamity of the Great Depression. Empirical comparisons of these two events may not be entirely practical. The intent of this study is neither to support nor question the empirical findings of Kinghorn and Trosken, but rather to independently test a similar theoretical hypothesis for the NIRA.

17. George Bittlingmayer, "Output and Stock Prices When Antitrust is Suspended: The Effects of the NIRA." In *The Causes and Consequences of Antitrust: A Public Choice Perspective*, eds. Fred S. McChesney and William F. Shughart II, (Chicago: The University of Chicago Press, 1995), 287-318.

18. Ibid., 288.

19. R.J. Dun kept business failure data for firms with liabilities both under and over $100,000. Liabilities then, rather than assets or sales, are used here to proxy firm size.