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The Output and Stock Price Effects of Loose Antitrust: Experience under the NRA

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THE OUTPUT AND STOCK PRICE EFFECTS
OF LOOSE ANTITRUST:
EXPERIENCE UNDER THE NRA

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**The Output and Stock Price Effects of Loose Antitrust:
Experience under the NRA
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ABSTRACT

The National Industrial Recovery Act of 1933 allowed the president to suspend antitrust laws on an industry-by-industry basis. It also contained labor and modest public works provisions. Minimum wages, maximum hours and varied restrictions on output, capacity, pricing and other behavior in the industry "codes" should have depressed output. Alternatively, some aspects of the codes may have represented efforts to respond to the difficulties fixed costs raise for purely competitive outcomes. On that view, output, especially new investment in industries with high fixed costs should have increased. In fact, industrial production increased by 50 percent in mid-1933, coincident with the passage and early administration of the act by the National Recovery Administration. According to one conjecture, impending cartelization under the act led to an artificial, short-run boom. This paper reviews the data, including sector-by-sector stock price and output data, to investigate whether the boom was artificial, due to some other cause, or a reflection of longer-term expectations about the law. It also looks at stock-price reaction to the March 1933 Appalachian Coals decision, which sanctioned a joint sales agency, and the Schechter decision, which declared the NIRA unconstitutional in May 1935.

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Antitrust suffered two massive blows in the midst of the Great Depression. In March of 1933, the Supreme Court scuttled the per se rule against cartels and held that the joint sales agency at issue in Appalachian Coals was governed by a rule of reason. In June, Franklin Roosevelt signed the National Industrial Recovery Act (NIRA), which allowed the president to suspend wide stretches of antitrust law.

The NIRA was limited to two years, and it contained labor provisions and a public works program. The agency created under the act, the National Recovery Administration (NRA), granted industry-by-industry antitrust relief at the discretion of the president's appointee. After negotiations with the NRA and subject to its final OK, some industries restricted production or capacity, others limited machine or plant hours, and many more traded information on prices or costs, prohibited sales below cost, specified delivery or credit terms or otherwise regulated industry behavior.

The NRA turned out to be controversial, both in its practical operation and on constitutional grounds. A wholesale, two-year renewal seemed unlikely in 1935, and the Supreme Court removed all doubt when it declared the NIRA unconstitutional in May 1935, a month before it was to expire.

I intend to use Appalachian Coals and the NRA's rise, and brief and unstable reign to study the economic effects of antitrust, or more accurately, the economic effects of vastly trimmed antitrust. Did the antitrust provisions of Roosevelt's recovery bill actually promote recovery or retard it?

If lax antitrust allows textbook cartels to form, the consequences are well known -- they are those of a tax: higher prices and lower output for firms that restrict output; lower prices and lower output for firms that supply the cartels; increased demand for the products of firms that compete with cartelized firms or industries; and higher prices and lower output for firms that buy their inputs from cartelized sectors. In general equilibrium, aggregate output should fall. Tolerance of widespread monopoly would lower aggregate economic activity, just as extensive and arbitrary taxation would. How much is a matter of speculation, akin to the enduring and unresolved question of the welfare losses we suffer from monopoly even when the antitrust laws are enforced.

But there is another side to the story, as there must if economics is an empirical science. In practice, lax antitrust may do more than allow

economically inefficient cartels to form, and the NIRA did promote a variety of practices that have efficiency rationales, or whose consequences are unsettled. These included information exchange, basing point pricing, and the protection of designs, for example.

Other practices under the NIRA - restrictions on hours, capacity or production - raise a more delicate issue: there may be no competitive equilibrium in industries with high fixed costs, especially during a downturn. Arrangements reminiscent of classic cartels may promote efficiency.

Work by Telser (1978, 1985, 1987) based on the theory of the core offers a rigorous, modern treatment of the issues. Core theory, which has its origins with Edgeworth and Böhm-Bawerk, looks at markets as a collection of coalitions that pursue their self interest. Under certain cost and demand conditions, some coalitions will undermine the globally efficient outcome. No allocation is stable -- the "core is empty" and no competitive equilibrium exists. A combination of increasing returns, fixed costs and variable demand is especially likely to result in empty cores. However, restrictions on the formation of coalitions, that is, restraints on trade, can re-establish equilibrium. For example, Telser (1985, ch. 3) presents an instance in which sales quotas for individual firms permit an efficient supply response.

The analysis of competition and cooperation based on core theory has two virtues. First, it does not simply assume that a competitive equilibrium can exist -- if only hearts are pure or laws requiring competition are passed and enforced. Rather, it derives competition as an outcome, something that may or may not be possible depending on the circumstances. Second, it offers predictions about the circumstances that thwart unrestricted competitive outcomes and about the cooperative or non-competitive forms of organization that will emerge. Industries with fixed costs, relatively few plants, homogeneous products and variable demand are likely to have empty cores. Cartels and mergers can provide the restrictions that foster stability. Though often neglected today, the problems posed by fixed costs were once widely recognized and addressed by Alfred Marshall, Irving Fisher, John Maurice Clark and others. Fisher did not support a policy of forcing competition in all circumstances with the antitrust laws.

The common law, often viewed as more likely to promote efficiency than statutes, provides evidence on the nature of cartels. Cartels were not prohibited outright under the common law, but were subject to a rule of reason. American courts could have followed common law precedent under the Sherman Act, but rejected it, arguably for political reasons. Addyston Pipe, written in 1898 by Judge William Howard Taft is crucial.¹ Mark Grady recently looked at the common law cases Taft explicitly rejected and concluded that the facts, as well as the reasoning offered by the judges, comport with the view that the judges weighed the costs and benefits of restraints of trade and sought to maximize economic efficiency. The common law did not strike down cartels that operated in industries marked by high fixed costs or relatively elastic demand.

My own work on the industry involved in Addyston concludes that its demand and cost conditions were incompatible with a competitive equilibrium and that the cartel in question served to allocate output efficiently and ensured the recovery of "avoidable" fixed costs, that is, fixed costs that are avoided if a plant shuts down.² In fact, the effort to force competitive outcomes led, paradoxically, to the formation of U.S. Steel, the Standard Oil holding company, and many other controversial "trusts." At the turn of the century, courts held merger per se legal by virtue of E.C. Knight. Cartels, in contrast, were illegal, due to Trans-Missouri, Joint Traffic and Addyston. To firms under attack, the choice was clear. About half of U.S. industrial capacity, including the Addyston defendants, merged in the years 1898-1902.³

Studies of ocean shipping by Sjostrom and Pirrong offer efficiency rationales for freight-rate conferences, a variety of cartel. The costs of a traversing a route by ship -- even costs that are "avoidable" -- are largely independent of the quantity of goods carried by a ship. Marginal cost pricing would not cover the cost of the optimal output. Interestingly, the liner market, which caters to shippers who send relatively small loads on a given ship, has been cartelized for a century and a half, down to the present day. Bulk

¹ United States v. Addyston Pipe & Steel Co. 85 Fed. 271 (1898), 175 U.S. 211 (1899).

² Bittlingmayer (1982, 1983).

³ United States v. Trans-Missouri Freight Ass'n, 166 U.S. 290 (1897), United States v. Joint-Traffic Ass'n, 171 U.S. 505 (1898). See Bittlingmayer (1985) and Lamoreaux on the merger wave.

shipping, where shippers contract for entire ships, does not suffer from a fixed-cost problem. Freight-rate conferences do not play a role in bulk shipping and never have.

Core theory and its applications to date provide a new approach to the monopoly problem, or more accurately, important new insights and useful structure for an old approach. If we take its message seriously, the relaxation of the per se rule against cartels inherent in Appalachian Coals and the NIRA could have effects quite different from those predicted by the conventional theory of monopoly.

Fixed costs raise the problem that marginal cost pricing may not generate enough revenues to cover the costs of producing the economically efficient rate of output, even costs that are "avoidable." If the prospect of antitrust reform raised the likelihood that existing or future arrangements would allow the recovery of costs, firms would be more likely to make investments, in both tangible and intangible capital. Consequently, lax antitrust that follows on the heels of actual or threatened strict enforcement would, under these conditions, result in greater investment, especially by industries marked by high fixed costs and variable demand.

Unfortunately for empirical work, the NIRA bundled lax antitrust with other issues. It was emergency legislation and limited to two years. It ordered compulsion where some firms wanted freedom. Short-term antitrust exemptions were granted at the discretion of the president's agent, and industries sought and obtained relief that was constrained by political realities. For example, some of the restrictions bore a close resemblance to inefficient protections offered declining industries. The far-reaching labor provisions worked at cross-purposes to antitrust relief -- indeed they were the quid pro quo for it. The NRA as an agency was frenetic and disorganized, and shaken by controversy and failures of leadership. Finally, the method chosen to implement antitrust reform challenged the power of the judiciary and was, perhaps for that reason, constitutionally suspect from day one. It is hard to say what the net effect of these other aspects of the NIRA were, but I would guess that they introduced uncertainty and extra costs, and lowered output.

One other point deserves mention. In spite of the instability and controversy surrounding the NIRA and in spite of the obvious or suspected

inefficiencies of some or most of the "codes," its passage implied that one government program was trimmed back, namely antitrust. Antitrust was historically associated with attacks on business. This holds for the classic trustbusting era under Theodore Roosevelt and Taft, the post-World War I attack on war profiteers and on business practices as a cause of the "high cost of living," and Thurman Arnold's antitrust revival and the attack on the "hundred wealthy families" of the late 1930s. The NRA, for all its faults, achieved in a limited fashion some of the long-sought antitrust goals of business, and provided some measure of protection. Roosevelt's advisors and friends covered a wide spectrum, but it did include many, like Bernard Baruch, with pro-business sympathies. Passage of the NIRA may have provided information about the shape of business policy to come.

Surprisingly, the rich and bizarre history of the NIRA has gotten little attention from economists. The major development, which the few serious efforts addressed, is evident in Figure 1. Wholesale prices increased dramatically from March to July 1933, about 15 percent, and rose slowly afterwards. Production increased even more, by 50 percent from March to July, then declined and fluctuated, remaining above the 1932, early-1933 level.

J. M. Clark offered an essay on the NRA after only a few months. He regarded "monetary depreciation" as the cause of the increase in prices, and "psychological and speculative factors, including buying in anticipation of rising prices, and of demands expected as a result of increased public works" as the cause of the sharp increase in production.⁴ Clark thought that if the NIRA delivered higher profits, it would revive demand for capital equipment. But he thought profits would be held in check by the wage provisions and aspects of the codes that fostered inefficiency, leading to little or no net increase on account of the NIRA. In his view, monetary uncertainty and securities regulation would impede future recovery.

Everett Lyon, Paul Homan and their associates, wrote a very useful study for the Brookings Institution while the NRA was still in operation. They found that the NRA increased wages and prices, by roughly equal amounts. They also

⁴ Clark, p. 12.

posed the question I address here: did the NRA increase output? But their approach was curiously indirect:

"The influence of the NRA on the volume of production cannot be directly segregated statistically, it can be judged, if at all, only by an indirect process of reasoning and inference based on such effects of the program as its is possible to measure or appraise separately."⁵

Lyon et al. pointed out, quite correctly, that opponents could dismiss observed increases in output by asserting that output would have increased more, but for the NRA; and proponents could dismiss declines by asserting that it would have decreased more, but for the NRA. Based on the observed increases in prices and wages, and the uncertainties generated by the agency, they concluded that the NRA retarded recovery, though they credit the mid-1933 surge to the anticipation of higher prices under the NIRA. Despite the surge, and despite the subsequent decline that wiped out only part of the surge, they conclude that its long-run, cumulative effects were negative, largely on theoretical grounds.⁶

A lengthy postmortem written in 1937 for the Cowles Commission by Charles Frederick Roos, former director of research at the NRA and an internal opponent of its policies, avoids any analysis of the NRA's output effects, except in the notes to a series of charts.⁷ There, Roos also views the increase in production as due to price hikes anticipated under the codes (rather than price hikes due to abandonment of the gold standard), but then concludes, incongruously, that the NRA did not help employment because "most of the increase actually occurred before the codes were adopted and at best the pre-code gains have been maintained."

Later assessments of the NRA occur in passing. Kenneth Roose claimed that "legislative action in the thirties played an important role in increasing monopoly and price rigidity" and gave special mention to the industry codes and labor provisions of the NIRA.⁸ In their Monetary History of the United

⁵ Lyon et al., pp. 754-755.

⁶ Lyon et al., ch. 35, pp. 872-873, 797-798.

⁷ Roos, pp. 125-131.

⁸ Roose, pp. 143-144.

States, Friedman and Schwartz agree with Roose and mention the NIRA as one of a string of government policies that depressed private investment during the 1930s. They also follow Lyons et al., in attributing the mid-1933 spike to higher prices expected under the act.⁹

Comparatively recent work by Weinstein shows renewed interest in the NIRA, but his approach does not improve on the method used by Lyon and co-authors. He finds, again, that wages and prices rose, but also resorts to logic rather than evidence to infer the effects on output. According to Weinstein, higher prices lowered real balances, which in turn meant less wealth and higher interest rates, and these led to less consumer spending and less investment.¹⁰

Except for J.M. Clark, who thought the NIRA had little net influence on output, all subsequent authors concluded that the NIRA lowered output, despite the 1933 increase and without directly examining the output data. My aim is to fill the obvious gap and make a frontal attack on the aggregate effects of the NIRA, partly by exploiting what we learn from stock prices.

We can view this exercise as a test of conventional monopoly theory. Sudden, widespread cartelization should raise cartel prices and lower output, though it is unclear whether the price level, rather than just relative prices, should be affected. Uncartelized sectors that serve cartelized sectors or sell their output to the final consumer should experience declines. Investment in durable equipment should decrease.

The expectation of cartelization in several months would increase output now as buyers sought to escape future price hikes, but output after the boom would be lower than otherwise. Moreover, stock-indices would have stayed constant or declined if the NIRA merely accelerated production that would have taken place in any event.

Actual experience offers little support for the standard monopoly story. Output actually increased, and it was as high or higher as other factors would have led us to predict. The growth in durable goods production was especially strong. Either something else caused the increase, though there are few appealing candidates, or the NIRA actually contained some provisions that

⁹ Friedman and Schwartz, pp. 493-495.

¹⁰ Weinstein (1980, p. 52, p. 128).

promoted recovery. Clearly some factor restored at least partly business's willingness to invest.

Important evidence comes from stock movements. Stocks moved up for all industries, but especially for manufacturing, which formed the heart of the NIRA's codes. The stock-price reactions to Appalachian Coals, which substituted a rule of reason for per se illegality, and Schechter, the case declaring the NIRA unconstitutional, suggest that the NIRA, rather than some other factor was at work in the strong growth of stock prices and output in mid-1933.

By looking at the aggregate effects of antitrust, this paper may seem too ambitious. Modern macroeconomics, at least in caricature, confines itself to the effects of monetary and fiscal policy, monetary policy and "autonomous" spending and investment or, more recently, in the real-business-cycle literature, to autonomous technological pushes.

It was not always so. Kenneth Roose's 1954 discussion of the 1930s recovery dedicates a chapter to "the political, social and economic environment." He mentions - above and beyond monetary and fiscal policy - new economic legislation, Roosevelt's confrontation with the Supreme Court, and attacks on business, for example. Friedman and Schwartz summarize his discussion approvingly and expand on it.¹¹

The willingness to look beyond the short list of modern macro is a tradition worth reviving, and antitrust belongs on an expanded list. Until the New Deal, antitrust and related legislation governing railroads constituted the chief instrument for federal regulation of the corporation and business activity in general. "Trustbusting" was also volatile and politically charged. But the effects of antitrust have received little attention, at least lately. Stigler's study of concentration is a notable exception. In contrast, earlier economists like Wesley Clair Mitchell and Irving Fisher(1930) entertained the notion that there might be a link between antitrust and general economic and financial developments. My own work finds a connection between aggressive antitrust and the financial crashes of 1903, 1907, 1911, 1920, 1929 and 1937. On the other hand, lax merger policies coincided with the Great Merger Wave of 1898-1902 and the 1920s merger wave.¹² The notion that fluctuating antitrust

¹¹ Roose, pp. 59-69; Friedman and Schwartz, p. 495-496.

¹² Bittlingmayer (1985, 1992, 1993a, 1993b).

may have also affect production, though novel to modern ears, seems worth exploring.

I. Antitrust, Recovery Policy and the NIRA

A. Background. Antitrust reform had been a goal of industry since Theodore Roosevelt's trustbusting. The movement achieved some of its aims during the Coolidge era, partly with the help of favorable Supreme Court rulings, but mainly through the administrative discretion of Coolidge's antitrust authorities. Hoover's officials reversed that policy in 1929, and a three-year struggle over antitrust ensued, with Hoover resisting all attempts at reform.

The NIRA's industry provisions centered on trade associations, and their early development deserves attention. Under the so-called open-price movement of the teens and twenties, trade associations exchanged information on prices, output and costs. The movement was founded by Arthur Jerome Eddy as an answer to the problem of cutthroat competition during the period of vigorous antitrust enforcement under Taft and Wilson. It gained encouragement during the First World War, when some of their aims were temporarily satisfied by the War Industries Board. However, plans for a peacetime Industries Board foundered, and associations suffered setbacks in the early 1920s at the hands of the Justice Department and Supreme Court.

This trend was reversed, partly by administrative actions of the Federal Trade Commission and partly by the Supreme Court. The FTC had been shorn of much of its power by Congress, which removed the meatpackers from its jurisdiction, and by the courts. Starting in 1925, it accelerated its sponsorship of trade-practice conferences, arguably playing the role of an agency looking for a mission. These conferences resulted in industry codes, which the FTC and industry regarded as officially sanctioned by virtue of the FTC's mandate to prohibit unfair practices. Critics charged that the meetings and association activities were a cover for nefarious anti-competitive practices. The Department of Justice also offered advice on the legality of association

activities, especially after "Colonel" William Donovan became antitrust chief. The Supreme Court, though orthodox in the matter of cartels, began to look more favorably on information exchanges by associations. By 1929, numerous industries, including petroleum, copper, electrical equipment, wool and rubber had adopted "codes" under the FTC's auspices. Anti-merger policy was effectively suspended by the decisions in U.S. Steel (1920) and International Harvester (1927) and a lenient Justice Department.¹³

As Secretary of Commerce, Herbert Hoover had promoted trade associations. However, as president, he pushed strict enforcement of the antitrust laws, both against mergers and trade associations. The shift in policy occurred at first behind the scenes, but his attorney general made it public in a speech on October 25, 1929 at the American Bar Association's annual meeting. A three-year struggle to revise the antitrust laws ensued, with Hoover resisting all substantive change. At the same time, the Department of Justice prosecuted associations whose activities had been approved under Coolidge, either by the FTC or by the department itself - notably in oil, wool, and bolts, nuts and rivets. The department also forced the FTC to revise its trade practice conferences, and trim back industry privileges under existing codes.¹⁴

As the 1930 recession turned into the Great Depression, the proposals for antitrust reform became more radical. Gerard Swope, chairman of General Electric, offered a plan that was a forerunner of the NIRA, especially in its linkage of antitrust and labor reform. It called for compulsory membership in industry trade groups and restrictions on output and prices. It also would have established workmen's compensation, unemployment insurance, disability and old-age insurance and employee representation. Hoover rejected the Swope Plan out of hand as fascist, but business kept up the pressure. According the Hoover's memoirs, Franklin Roosevelt struck a deal with the president of the

¹³ Himmelberg, Clark, Blaisdell, Hawley and Roos (ch. 1) cover this period. Handler mentions the Steel and International Harvester cases. Baruch covers the activities of the War Industries Board. The Federal Trade Commission conducted a lengthy study and defense of the open-price movement in 1929, and the subject is taken up in its annual reports for this period.

¹⁴ Himmelberg covers this development in detail.

Chamber of Commerce, promising antitrust reform in return for business support in the 1932 election.¹⁵

B. Appalachian Coals. The agreement at issue in Appalachian Coals was written in December of 1931 under the direction of Colonel Donovan, Coolidge's antitrust chief. Since an industry-wide association would have run afoul of the antitrust laws, the National Coal Association called for the formation of regional sales organizations. The agreement covered about 12 percent of U.S. output of bituminous coal east of the Mississippi.

Hoover's antitrust chief, John Lord O'Brian, offered sympathy for the plight of the industry, but informed the producers in January 1932 that he would test their plan in court.¹⁶ The case was filed June 29, 1932. The Department of Justice did agree to a speedy resolution, and the trial opened on August 1, 1932. The district court declared the combination illegal on October 3, and the appeal went immediately to the Supreme Court, where the hearing was held on January 9, 1932. The textile, glass and lumber industries entered amicus curie briefs. The decision established a rule of reason standard for the sales agency. It was handed down on March 13, at the end of the banking holiday from March 4 through 14.¹⁷

The trade press welcomed the court's new approach, regarding it as "the first step in scrapping previous rigid interpretations of the Sherman act and ultimate liberalization of the whole concept of anti-trust statutes."¹⁸ It also pointed out, as did the court itself, that the decision put the joint sales agency on the same footing as merger and permitted firms greater flexibility in choosing their preferred organizational form. A merger of 12 percent of U.S. capacity, even if geographically concentrated, would have gone unchallenged in the twenties or early thirties.

Stocks moved up sharply when the exchanges reopened on March 15, by about 18 percent on average from March 1. The trade press credited various factors for the increase: the market's approval of the president's policies, and

¹⁵ Himmelberg and Hawley (1989) track this debate. Bittlingmayer (1993b) provides a summary, as well as statistical tests of the proposition that shifting policy and the debate over antitrust reform affected stock prices.

¹⁶ Himmelberg, p. 152. Galambos, p. 191.

¹⁷ Appalachian Coals, Inc. v. United States, 288 U.S. 344 (1933).

¹⁸ Journal of Commerce and LaSalle Street Journal, March 14, 1933, p.1.

"the promise of rigid economy in the Federal Administration." Alternatively, renunciation by the Supreme Court of the per se rule against cartels may have moved stock prices upwards. The gain for bituminous coal was particularly strong, 27.9 percent. (Table 5 below has returns for various industries.)

C. The First One Hundred Days and the NIRA. Pressure for antitrust reform mounted before FDR's inauguration and while the coal case was with the Supreme Court. Business representatives took a draft of proposed legislation to brain truster and leading "business planning" advocate Adolph Berle on February 18, who in turn took it to FDR. Manufacturers also contacted other advisors on the issue.¹⁹ According to Galambos, the coal decision offered encouragement to reform efforts, but also complicated the situation.²⁰ Though the antitrust issue was "getting red hot" by the end of March, according to Berle, Roosevelt paid little attention to the revisionists, except in natural resource industries, where he had apparently made some pre-inauguration promises.²¹ The administration's early proposals and actions centered on labor, public works, emergency relief and banking.

The key legislative development, which gave the administration an opening, if it did not compel action, was Senator Hugo Black's bill, reported out favorably by the Senate Judiciary Committee on March 30. It would have limited the workweek to 30 hours as a "work-sharing" measure. Roosevelt considered it too radical and economically inflexible, but an administration effort to set the limit higher, at 36 hours, was defeated on April 5. The original bill passed the Senate by 53 to 30 on April 6.

Roosevelt sought some way of channelling the political pressure for economic reform. In an interview with a leader of the trade association movement on April 11, he rejected antitrust revision as too sensitive politically.²² However, on the same day, he instructed his advisor Ray Moley to

¹⁹ Galambos, p. 187-188; Himmelberg, p. 184.

²⁰ Galambos, p. 191.

²¹ Galambos, p. 194. Himmelberg, p. 187-189.

²² "The President [said] that the matter was so controversial that he could not see his way to deal with it in the present situation," according to Walker Hines, quoted in Himmelberg, p. 189. Hines was a National Association of Manufacturer representative and former president and chairman, as well as current counsel of the Cotton Textile Institute, the first industry group to get an approved code under the NRA. Galambos, p. 194.

get in touch with advocates of "recovery plans," which typically included antitrust relief. Building on the work-sharing notion in two press conferences, April 12 and April 14, Roosevelt floated the idea of finding a constitutional means of allowing firms to curtail production.²³ Originally, he backed labor secretary Perkins' bill, which would have fixed wages and allowed the labor secretary to limit hours of operation, but dropped it because of business opposition.²⁴ Rumors of an NIRA-like plan began to circulate in the press on April 14 and 19, and Roosevelt supported Senator Robert Wagner's series of conferences in late April to draft a "start-up" plan.²⁵ Wagner's plan included a provision for industry codes, as well as a public works component. The White House also dropped hints that it would support more than wage and hour legislation in the April 30 press release of FDR's May 4 speech to the Chamber of Commerce. Senator Robinson offered encouragement in a May 1 press statement after meeting with FDR.²⁶ The Dow industrials increased 39.8 percent from April 1 to May 1, and the 351 Standard Industrials 42.5 percent, using the closest dates from Standard's weekly series of March 29 and May 3.

A meeting in the White House on May 10 sought to reconcile Wagner's proposal and one drawn up by Hugh Johnson, an aide to financier Bernard Baruch and later head of the NRA. Draft legislation was introduced in Congress on May 17. Though the constitutional hazards were widely appreciated, the bill was reported out by House Ways and Means on May 23, and accepted by the House 325 to 76 on May 26. The Dow increased another 14.5 percent in May. I shall return below to this remarkable, broad-based increase in stock prices in April and May.

As passed, the bill included Title I, which declared a national emergency and suspended the antitrust laws for two years. Industry representatives could draw up codes of conduct, which the president could approve and which would be enforceable in court. The President received extraordinary powers to approve, disapprove or force agreement. Labor was granted collective

²³ Galambos, p. 195.

²⁴ Himmelberg, p. 198-203. Roos, p. 31, claims the Perkins bill was intended to block passage of the Black bill in the House.

²⁵ Friedel, p. 423.

²⁶ Himmelberg, p. 200.

bargaining, freedom to join unions, and the requirement that employers observe maximum hours, minimum pay and other restrictions. Exempted sectors included agriculture, steam railroads, government, domestic service, the professions, non-profit institutions and others.²⁷ Section 7a, allowing collective bargaining, later formed the basis for the National Labor Relations Act. Title II concerned public works.²⁸ The original appropriation of \$3.3 billion over two years was modest under the circumstances, amounting to a per annum expenditure of 2.6 percent of GNP, equivalent as a share of GNP to \$150 billion today. The final bill also included capital-stock and excess-profits taxes in Title III to help fund the public works. After some close calls in the House and Senate, Roosevelt signed the bill and appointed Hugh Johnson administrator on June 16. The market reached its peak for 1933 on July 18, two days after FDR signed the first code, that for cotton textiles. It contained provisions fairly generous to industry. The Dow was 95 percent above the value on March 1, and the Standard industrials 124 percent.

D. Other Economic Programs. Clearly, the introduction, passage and early implementation of the NIRA represents one candidate for the mid-1933 boom in stock prices and, as we'll see, in production. What other events might explain this increase? Based on their painstaking research, Friedman and Schwartz conclude that the New Deal's "monetary policy was accorded little importance in affecting the course of economic affairs and the policy actually followed was hesitant and almost entirely passive."²⁹ But they stress the far-reaching changes in the structure of banking during the New Deal. Major actions in 1933 included the Emergency Banking Act (March), the forced sale of holdings of gold coins at face value and gold bullion at \$20.67 to the Federal Reserve Banks (April), abrogation of the gold clause (May and June) and federal deposit insurance (June). Friedman and Schwartz argue that deposit insurance contributed greatly to the monetary stability of the United States over the long term, though denying that deposit insurance was necessarily the most

²⁷ Lyon et al., p. 791. Utilities and anthracite coal never had codes, but this was "due to no lack of effort, but merely the failure to reach agreement." Lyons, p. 141. Agriculture was regulated by the Agricultural Adjustment Act and the Farm Relief Act, both signed May 12, 1933. Friedel, p. 337.

²⁸ Bellush, pp. 12-15.

²⁹ Friedman and Schwartz, p. 420.

preferable method of achieving stability.³⁰ The other measures of early and mid-1933 probably had little effect or retarded revival.

If stabilization of the banks fostered recovery, it was by very indirect means. A sounder banking system should have attracted funds. However, the ratio of deposits to bank reserves declined in 1933, indicating caution on the part of banks. The initial decline was autonomous; only later did the Fed increase reserve requirements. The ratio of deposits to currency held by the public increased slowly from the very low level it had reached after the February 1933 panic (4.44), but was still in December of that year (at 5.37) below the January 1933 level (5.86) and lower, in fact, than it had been anytime since 1908.³¹ A sharp jump in stock prices and output caused by re-establishment of confidence in the banking system should have seen a greater increase in deposits, yet these increased only 6.2 percent from their low point in March until December 1933. The twelve-month change to December was in fact negative at -11.1 percent.

Related evidence comes from the stock prices of banks. The twenty New York banks in the Standard index experienced the largest decrease, -24.9 percent, among forty-five industries over the period March 15-April 5, 1933, and the smallest increase, 52.8 percent, over the period April 5-July 12 (Table 5). Stabilization of the banking system did not benefit these banks. If bank reform caused the mid-1933 revival, the case is hard to make.

The other major New Deal program of the period March-July 1933 included the Agricultural Adjustment Act (signed May 12), which curtailed production and raised prices. It seems an unlikely candidate for the observed increase in stock prices or output.

E. The NRA and the Codes. Very little in the National Industrial Recovery Act restricted the form that industry codes could take. For example, Johnson initially rejected price fixing, then reversed himself on June 23. Proposals flowed in quickly, and after negotiations with NRA administrators, codes were signed in major industries. For selected major codes, Table 2 gives the code name, its number (sequence) and indicates whether each contained limits on capacity, production or hours. This table does not include prohibitions on

³⁰ Friedman and Schwartz, p. 441-442, including footnote 18.

³¹ Friedman and Schwartz, Table B-3.

selling below cost (352 out of 677 codes), permission granted to a code authority to reject as "unfair" (too low) prices filed by firms under an open-price system, prohibition of "loss leaders," and declarations of emergency price fixing by the NRA itself. According to critics, early code signers received these generous powers as inducements to sign up.³² The negotiated agreements had the force of law, though enforcement was uneven, especially later.³³ A total of 162 codes were signed by the end of December, covering 12 of the 20 million employees whose industries were eligible under the act. By May of 1934, the number stabilized at about 18 million.³⁴

The first code signed governed cotton textiles, an industry studied in detail by Louis Galambos. Textile manufacturers generally had a long history of using trade associations and were among the first industries to seek and obtain codes. The linkage between production and labor provisions (elimination of night work and a ban on the employment of children) had been used since 1929, often with Hoover's support. The Cotton Textile Institute was an early and important supporter of antitrust reform. In fact, FDR's fireside chat of May 7, 1933, in which he outlined the recovery bill, used cotton textiles to illustrate how antitrust laws led to competition that in turn led to "long hours, starvation wages and overproduction."³⁵ The cotton textile draft code was prepared in early June, before the final votes on the bill, and President Roosevelt approved it on July 16 while sailing on the Potomac.³⁶ The major provisions were, besides the mandatory inclusion of Section 7(a): a minimum wage and maximum hours of 40 hours per week, a two-shift limit on production, and control of entry and expansion. Similar codes soon followed in related industries under the NRA's "Textile Division."³⁷ A brief flirtation with "suggested price lists" by the

³² Lyon et al., p. 53 and p. 17.

³³ Lyon et al., p. 31.

³⁴ Lyon et al., chart on p. 309.

³⁵ Galambos, p. 198. In reviewing the chat, FDR told Ray Moley that his break with "Wilsonian concepts" was deliberate. Friedel, p. 434.

³⁶ Galambos, p. 212-213. "A swift relay carried the news to the Potomac, to Johnson's office, to New York City. Champagne corks popped and the manufacturers and association leaders celebrated their success." Galambos, p. 225.

³⁷ Lyon et al. pp. 626-627 list 44 textile industries with machine- or plant-hour limitations.

industry's Code Authority never went very far because of NRA disapproval, but terms of sale were controlled, much as they had been under the 1920s code. At the initiative of industry, an extra 25 percent decrease in hours was approved by the NRA, over the objection of the NRA's economists.³⁸ In the summer of 1935, after the Schechter decision declaring the NRA unconstitutional, 90 percent of the cotton textile firms still adhered to the NRA standards.³⁹

The bituminous coal code, governing the industry to which the Appalachian Coal defendants belonged, was signed in October. It declared illegal "selling of coal under a fair market price," with the minimum prices for various grades and sizes established by a marketing agency acting for two-thirds of the represented coal producers. The Cement code allowed the Cement Institute to allocate "available business among members," subject to a majority vote. The Paper and Pulp code required advance notice of price changes, quotation of prices on a delivered basis, and that prices be above cost and above the "lowest price scheduled for such product ... by any other member and then in effect." ⁴⁰

Other codes signed in major industries in the late summer and fall of 1933 appear more innocent. For example, the automobile code stipulated minimum wages, average maximum hours for workers, data collection and the mandatory inclusion of Section 7(a). The constraints were apparently not severe, and the industry obtained a "clarification" of Section 7(a) to permit it to keep an open shop. Negotiated in August 1933, it seems to have been a public relations ploy by both the auto industry and the NRA.⁴¹ Later controversy and new codes in this industry centered on labor issues.⁴²

One important development early on was the President's Re-employment Agreement, the "blanket code" for which the Blue Eagle was invented. It dealt only with labor issues, stipulating a maximum 35-hour week for blue-collar workers, 40-hours for white-collar, minimum wages for different labor categories (40 cents per hour for labor, \$15 per week for white collar

³⁸ Galambos, p. 247-248.

³⁹ Galambos, p. 288.

⁴⁰ Mayers, pp. 468-469, p. 491, pp. 708-709,

⁴¹ Bellush, pp.94-97, relying on Fine, *The Automobile under the Blue Eagle*.

⁴² Roos, pp.213-215.

employees in cities of over 500,000 population, less for smaller cities), and collective bargaining.⁴³ It was a bilateral "voluntary" agreement between the president and individual firms, and had to be submitted by the end of August. Unlike the other codes, it did not involve industry associations.⁴⁴ Superficially, "these [agreements] gave employers higher labor costs, but no gains excepting whatever satisfaction was obtained from participating in what many no doubt regarded as a patriotic movement."⁴⁵ However, participating firms expected special consideration when their codes were presented to the NRA. More importantly, government contracts were contingent on the Blue Eagle and signers agreed not to deal with non-signers. About 16 million employees were soon covered.⁴⁶ The possible signal-value of the blanket code also deserves emphasis. Lyons et al., contend that the cotton textile code and the blanket code jointly established precedents and revealed the sorts of provisions that the president would approve through the NRA.⁴⁷

News stories of a blanket code first surfaced on July 6. It was controversial within the administration, with Commerce Secretary Roper and others opposing it. Details of the plan appeared on July 19, when the Industrial Recovery Board - composed of cabinet members - approved the plan.⁴⁸ Roosevelt's short letter of July 20 stated: "If it turns out that the general agreement bears unfairly on any group of employers they can have that straightened out by presenting promptly their proposed code of fair competition."⁴⁹ The Dow declined -4.7, -7.1 and -7.8 percent on the July 19, 20 and 21, for a net decline of -18.4 percent. The trade press viewed the drop as a corrective for the Spring boom. Alternatively, the "voluntary" blanket code may have revealed the president's ideal labor provisions. If so, industries with a large share of labor expense should have experienced the largest declines. A corresponding test appears below.

43 Lyon et al., pp.306-307; and Bellush, pp.48-52.

44 Dearing et al., p. 63.

45 Lyon et al., p. 53.

46 Lyon et al., p.30.

47 Lyon et al., pp.304-308.

48 Journal of Commerce, July 29, 1933, p.1.

49 New York Times, July 21, 1933, p.1.

F. Schechter. The NIRA experienced major ups and downs over the next eighteen months. Historians Hawley and Bellush have chronicled its tribulations. The NRA's energetic head, Hugh Johnson, was arguably mentally unstable and ultimately forced to resign. Congress and an independent commission reviewed the NRA's operations amid heated charges. Conflict between small and large firms erupted, and between those vertically integrated and those not. The labor provisions also generated friction. By early 1935, the NIRA's future was in doubt. The Brookings study by Lyons et al. released early that year was critical of the law and apparently influential in strengthening opposition to it, and a Senate investigation provided at best mixed support. In mid-May of 1935, the Senate Finance Committee favored only a ten-month extension with new limits placed on the NRA, while the House seemed likely to support a two-year extension with the law's old provisions largely intact.⁵⁰ But other dangers loomed.

Schechter involved charges filed against the largest supplier of kosher poultry in Brooklyn, New York. The government accused the defendants of violating the wage and hours provisions (2 counts) and trade practice provisions requiring those buying from a slaughterhouse - Schechter's customers in this instance - to "accept the run of any half coop, coop, or coops, as purchased by the slaughterhouse operators" (10 counts). Defendants were also charged with filing false reports, violating city inspection ordinances and otherwise violating the code of fair competition for "Live Poultry in and about Metropolitan New York." They lost in district court in October 1934, and again in circuit court in April 1935, though they prevailed there on the claim that the wage and hours provisions were not within the powers of Congress. The Supreme Court heard arguments on May 2 and 3, and handed down its decision on the afternoon of May 27, declaring Title I of the NIRA, including Section 7a, an invalid delegation of legislative power and an unconstitutional regulation of intrastate trade.⁵¹

The Dow industrials dropped -2.6 percent the following day and -1.6 percent the day after. Volume on May 28 was 2.3 million shares, higher than on

⁵⁰ Bellush, pp. 165-167.

⁵¹ Hawley, p. 128. Bellush, pp.168-170. *Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935).

any day in the first half of 1935. As will be seen below, the reaction varied greatly by industry. While the Dow railroads also declined on May 28, the utilities gained 1.2 percent.

The chicken case was a blow to industry, but not completely unexpected and not fatal to the cause of "industrial self-government." As we saw earlier in the case of cotton textiles, some codes were still observed, though they were no longer enforceable. Industry representatives also put forth new plans for a "business commonwealth."⁵² Moreover, the NIRA had been temporary legislation, and a renewal, clearly a risky bet in May 1935, would also have spanned at most an extra two years. And the Appalachian Coals decision still stood. Schechter also invalidated the labor provisions of the NIRA, arguably of benefit to business. Later experience showed, however, that substitute labor measures, at least under a court made more pliable, would pass constitutional muster. The major bad news in Schechter, from the point of view of business, was that it closed a particular path to antitrust reform.

2. The Economic Effects

A. Aggregate Movements. Figures 1 through 5 show monthly economic data for January 1930 through December 1935, the period that covers the descent into the Great Depression and the partial and erratic revival thereafter. This period has been the focus of a spirited debate on the role of money, and the broad developments here, as they do at other times, reveal that movements in money, prices and output are correlated, over the long-term. Monetary explanations for the decline of both the price level and output from early 1930 through 1932 emphasize the decline in the stock of money and the failure of the Federal Reserve to function as a lender of last resort. However, some of the short-term movements in prices and output seem largely unrelated to monetary developments. These issues arise again in mid-1933.

Consider Figure 1, which shows industrial production, wholesale prices and money. While M2 (currency plus demand and savings accounts) declined -3.1 percent through March of 1931, that decline was modest compared to the observed declines in prices and output, -15.8 and -15.7 percent over the same

⁵² Hawley, pp.149-151.

period. At least arithmetically, most of the price decline was due to an increase in real balances, M2 divided by the price level. Real balances often increase during periods of uncertainty. Note that industrial production actually increased in the first quarter of 1931, as did stock prices, though there were no monetary movements in the same direction. Money, prices and output were erratic through late 1932 and declined markedly.

The year 1933 shows a remarkable divergence. M2 declines by roughly 12 percent in the first quarter of 1933, and then increases slowly over the next two years.⁵³ Prices and production, in contrast, both move up sharply in the second quarter of 1933. Various causes have been advanced for the price increase, among them the declining value of the dollar abroad, forcing wholesale prices up; the Agricultural Adjustment Act, which increased farm prices; and anticipation of the NIRA. A fear of "reflationist" measures may also have influenced the price level.

These varying explanations were all advanced at the mid-1930's. Lyon et al., computed a cost of living index without "payments to farmers (plus processing taxes) and payments for imported commodities." This series, otherwise flat, shows an advance of about 9 percent from June through September 1933. They play down the influence of monetary experimentation because that policy was active before the surge in prices, that is, before April 1933, as well as after, especially with the the gold- and silver-buying programs of late 1933 and early 1934.⁵⁴ Lyon et al. conclude that the NIRA was responsible for the bulk of the mid-1933 price increase, and Friedman and Schwartz.⁵⁵ What is clear is that the increase in prices cannot be explained by increases in monetary aggregates.

⁵³ Friedman and Schwartz (pp. 428-434) point out that part of the observed drop in money occurs because restricted and unrestricted deposits in unlicensed banks are excluded from the money stock measure after the March 1933 bank holiday. They construct an alternative series that includes restricted deposits to obtain a consistent estimate. This measure declines more slowly, only 7 percent from January to June 1933, but the decline extends farther, through the end of 1933. Friedman and Schwartz argue that the the economically relevant measure of money would fall somewhere in between the two series.

⁵⁴ Lyon et al., p.786-789, fn. 11.

⁵⁵ Friedman and Schwartz, p. 496, p. 498, credit anticipation of the NIRA codes and depreciation of the dollar for the 1933 spurt in prices. In fact, they attribute the price increases of the 1933-37 period as a whole to the NIRA, the

Production increased by 53 percent from March to July, and prices by 14 percent. Lyon et al. attributed the surge in production to the anticipation of price hikes under the NRA, as do Friedman and Schwartz.⁵⁶ While money and prices trend upward at roughly the same 10 percent annual rate, industrial production suffers two downturns and revivals during the NRA's reign.

The evidence seems to force the following conclusion. The decline in M2 and the decline in the price level over 1930-33 may explain some of the decline in real output -- with declining prices caused by shrinking M2, as well as some other factor, reflected in larger real balances. But some unusual short-term movements in output and prices, both for 1930-32 and in 1933-35, seem to have non-monetary origins, taking monetary changes as exogenous. Clearly, the NIRA is a candidate for the surge of production, but it is not clear from the data that output after that surge was lower than it would otherwise have been to justify the conclusion of a net negative effect.

If the NRA did force an inefficient reshuffling of production and an overall lower level during its term than would have taken place in any case, broad stock indexes, especially those for firms and industries not governed by the NRA, should have declined, or at least stayed constant. The actual record shows something else. The stock prices in Figure 2 largely mirror the production series for the entire period 1930-35. Their first major rebound occurs in July and August of 1932, after the party conventions, when it became clear that Roosevelt would win the election and when Appalachian Coals started its fast-track progress to the Supreme Court. A good fraction of those gains are erased by March of 1933. However, all three Dow averages, industrials, railroads and utilities, increase in excess of 60 percent from April through July 1933, at the time the NRA was discussed and passed. These gains exceed the 15 percent

Guffey Coal Act, farm price-supports, and the National Labor Relations Act. "This is the only period in the near-century we cover for which [a wage-price or price-wage spiral] ... seems clearly justified." However, they stress the need for a rising money supply, which occurred after 1933. Lyon et al, p. 790 attribute the mid-1933 increase in prices of roughly 15 percent "very largely" to the NRA. Weinstein (1980, ch.2) reaches the same conclusion by using a two-equation Phillips curve system and dummies for the period of the NIRA.

⁵⁶ "Whatever may have been the long-run effects of the NRA program, there can be no doubt that it evoked a temporary burst of industrial activity." Lyon et al., p. 797. Also see Friedman and Schwartz, pp. 493-495.

increase in the price level, and pose a serious obstacle to the view that the NRA merely caused an inefficient acceleration of production.

Figures 3-5 confirm the general picture of a broad-based revival. Figure 3 breaks down total industrial production into durable and non-durable goods. The data show a clear upward shift, which despite further fluctuations, stayed above the level prevailing in 1931 and 1932. Individual components, shown in Figure 4 -- pig iron, passenger cars and crude oil -- also move up. Iron and petroleum were among the industries with largest doses of "industrial self-government" under the NRA. Finally, three other broad measures - freight loadings, kilowatt hours and factory employment - show varying degrees of revival. Railroads and utilities were not codified under the NRA; their level of activity presumably reflects the general business climate. Manufacturing came under the codes for the most part, and the recorded increase in factory employment reflects the joint effects of the the work-sharing provisions of the code and increased production.

Tables 3 and 4 explore these issues with regressions based on quarterly data for 1930-1939. By going to 1939, I include the recession of 1937-38, as well as the Great Depression itself. Estimates confined to 1930-35 yield largely similar results. Table 3 regresses the natural logs of durable and non-durable output on the natural logs of stock prices, wholesale prices, "M2" money and trend. It also contains a dummy variable, labeled "NRA," for 1933.III through 1935.II, the period of the NRA. Note that I thereby exclude the pre-NIRA surge in the second quarter of 1933.

Holding other things constant, was output lower during the NRA? Since both stock prices and wholesale prices increased sharply in mid-1933, plausibly as a result of the NRA, regressions that include those two variables will attribute a good deal of the higher output levels after the middle of 1933 to other factors and not to the NRA. The test is stacked against finding a positive effect.

The results show, first of all, that stock prices were positively related to output, a well-established result. More surprising is the finding that the relationship between wholesale prices and output is stronger than that between money and output, suggesting a that shifts in demand traced out an aggregate supply curve. This is consistent with the view that the NRA and

other factors in this period shifted aggregate demand. Finally, the NRA's effects vary under different econometric specifications, as we might expect, since the dummy kicks in precisely with the sharp upsurge of stock prices and wholesale prices in mid-1933.

The first column of results deserve special attention. If the surge in production was due to some other factor and the NRA increased monopoly rents and caused a partially offsetting decline in production, output adjusted for the historical relationship with stock prices should have been lower during the NRA's reign. However, durable goods output was 3.6 percent higher and non-durable goods output was 0.2 percent lower. Note that the NRA dummy has large positive values when wholesale prices are not included and an especially large value when both stock prices and the WPI index are absent. Estimated increases in durable goods output range as high as 32.8 percent in the first three columns, that is, without wholesale prices, but zero or 2.2 percent otherwise.

The results for non-durable output are roughly similar: output is higher by 6.9 percent when only the money supply is used as a control, but lower by -2.0 or -0.8 when wholesale prices are added. In examining Table 3, recall that though the estimated standard errors may be biased because of auto-correlated errors, the coefficient estimates are not.

Table 4 uses semi-differences of the original variables. For a series X_t , the semi-differences are calculated as $DX_t = X_t - 0.5(X_{t-1})$. I use 0.5 because it falls in the middle of the auto-correlation coefficients implied by the Durbin-Watson statistics in Table 3. Again, durable output is higher when only money is included, or only money and stock prices -- by 13.2 and 9.6 percent. If wholesale prices are included the estimated effect is small, negative and insignificant, between -2.0 and -0.2 percent. Non-durable output was no higher or lower during the NRA than implied by other factors. Estimated coefficients range from -3.4 to 2.2 percent. These semi-difference regressions confirm the earlier result that stock prices and wholesale prices provide most of the explanatory power.⁵⁷

⁵⁷ These estimates were not materially affected by the problems in measuring the money stock during 1933 reported by Friedman and Schwartz (pp. 428-434). I substituted their alternative measure of M2 and obtained coefficient estimates for NRA (and for the money stock) that were in all cases nearly identical or more positive.

B. Industry-by-Industry Stock Prices. An increase in broad stock indices is consistent with simple monopoly explanations of the effects of the NIRA, provided potential monopolies are not too numerous but over-represented among publicly traded firms. Still, its passage should have affected some industries more than others. In fact, some should have been clear losers if the expected effects of the NIRA were simply to force higher costs on some and bestow monopoly gains on others. Railroads and utilities came under a different regulatory regime. (Electric utilities proposed codes, but Roosevelt never approved them.) Banks and insurance companies were not subject to antitrust.

Table 5 has stock returns for the Dow industrial, the Standard industrials, and 45 industry groups. These returns are shown for four periods in 1933:

March 1-March 15, which covers the bank holiday, March 4-14, when exchanges were closed, and the Appalachian Coals, decided March 13.

March 15-April 5, which covers the period the Black Labor Bill was introduced and won favorable votes.

April 5-July 12, which begins a week before Roosevelt first floated the idea of antitrust relief linked with labor law reform and ends with the signing of the first NIRA code.

July 19-26, which covers the week details of the blanket code were revealed and approved by Roosevelt.⁵⁸

It also includes returns for one week of 1935, May 22-29, which covers the Schechter decision of May 27. The last column shows the number of weeks, out of a total of 14, that the index in question moved up from April 5 to July 12, 1933.

The broad indices - Dow industrials and the three Standard series for industrials, railroads and utilities - show a consistent picture. The period covering the bank holiday and Appalachian Coals shows a strong increase of 18%, the period covered by the Black bill a substantial decrease of 7% to 19%, the 14 weeks covered by passage of NIRA a strong, but varied increase of 68 to 141 percent, and the week covering approval of the blanket agreement a major decrease. Finally, Schechter was marked by a decline. Figure 6 shows the three major indices and some of the major dates for 1933.

⁵⁸ The Dow dropped sharply on July 19, 20 and 21, so that the weekly data from Standard Statistics excludes the first decline, when the Dow dropped -4.7 percent.

The NIRA not only witnessed a rough doubling of stock prices, but a very consistent upward movement. Each and every week for all four major indices (Dow industrials, Standard industrials, railroads and utilities) was marked by an advance, with the exception of two weeks for the utility stocks. All stocks show increases in excess of the price level increase. (The 523 percent increase in the value of paper and paper product stocks is not an error.) U.S. commodity prices increased only 14 percent, and the British pound only 30 percent. The latter figure is almost surely an overestimate. Still, using that number leaves a 70 percent increase in real terms in the 351-firm Standard industrial average.

Needless to say, some stocks did worse than average, and some stocks showed weekly increases in only 8 or 9 out of 14 weeks. A good deal of the poor performance was concentrated in the industry indices composed of few stocks and has statistical origins. With fewer stocks, an index exhibits greater variance. For all periods, the standard deviation of industries with 4 to 9 stocks was larger than for those with 10 or more firms; variance ratio tests yield values of 2.5 or higher. Similarly, those indices with 4 to 9 firms had on average 11.2 weeks with positive returns out of 14 weeks, while those with ten or more had 12.7 weeks of positive returns. The difference is significant.

These five episodes covered abrupt changes in two types of policies: antitrust and labor. Appalachian Coals and Schechter both concerned antitrust. The Black Bill and the Blanket Code concerned labor. The passage of the NIRA concerned both antitrust and labor. How well do variables that capture an industry's benefits or costs from these changes explain the cross-section of returns over those four periods?

Table 6 regresses those returns on two proxies. The top panel uses payroll as a fraction of total value-added to capture the importance of labor costs. The bottom panel uses a manufacturing and mining dummy in an attempt to capture the importance of the antitrust exemption. Trade associations and their most restrictive practices - restrictions on output, capacity, price and allocations, for example - were common in mining and manufacturing, but not in other sectors. Moreover, railroads, utilities, banks and insurance companies came under federal or state regulation and were rarely subject to lawsuits under federal antitrust law, at least in the twenties and thirties. Retailing was susceptible to state legislation of chain stores.

Some technical issues deserve attention. Since the payroll and value-added data come from manufacturing industries only, I cannot run payrolls+VA and the manufacturing and mining dummy in the same regression. Each pair of results is based on ordinary and weighted least squares, with the weights equal to the square root of the number of firms in the index. (Using the number of firms yields similar results.) The weighting addresses two issues when an index is composed of few firms: the high variance of returns and the low information content of those observations.

The top panel shows that industries with a high ratio of payroll to value-added gained disproportionately during the NIRA's passage. An increase in that ratio from one standard deviation below the mean to one standard deviation above (from .30 to .64) implied an extra stock return of 79 to 88 percent. This is consistent with the view that the prospects of labor legislation like that of Senator Black dimmed as the NIRA's prospects brightened. It is also consistent with the view that restrictive labor legislation became less likely as the economy picked up for some other reason. However, stocks with high payroll-to-value-added dropped disproportionately over the brief two periods associated with labor initiatives, and they showed little movement in response to the two court decisions.

Manufacturing and mining industries, in contrast, experienced larger positive returns over the period covered by Appalachian Coals, and somewhat surprisingly, the period for the Black bill, though only the weighted estimate is significant. The gains to manufacturing and mining are also greater over the period covered by the NIRA, between 32 and 44 percent, though only the weighted least squares coefficient is again statistically significant. The period covered by promulgation of the blanket code, in contrast, had no antitrust developments, and manufacturing and mining stocks were unaffected.⁵⁹

⁵⁹ Was the strong relative performance of manufacturing and mining stocks due to low cyclical sensitivity of other stocks? The mean coefficient from a regression of returns of the ten non-manufacturing and mining industries on industrial returns is .92 (median of .93), with a range from .53 (casualty insurance) to 1.44 (theatres). The value for the index of 33 railroads was 1.17, and for 37 utilities, 0.70. These results indicate that mining and manufacturing industries should have had returns greater by only 7.5 percent rather than 32 to 44 percent as indicated in Table 6.

During the week Schechter was announced, in contrast, manufacturing and mining stocks dropped significantly more.

Table 7 provides cross-section correlations of returns across the five periods. Two involved Supreme Court decisions: Appalachian Coals suspended the per se rule, and Schechter declared a particular method of suspending antitrust illegal. Two involved initiatives that implied higher labor costs, the Black bill and the Blanket Code. NIRA passage was a mixed bag, indicating that stringent labor legislation had lost in favor of concessions to labor in return for concessions to industry. My prediction is that the correlation between Appalachian Coals and Schechter will be negative, and between the Black bill and the Blanket Code positive. NIRA passage should be positively correlated with Appalachian Coals, negatively with Schechter, and negatively with the two labor initiatives.

The correlations are calculated with and without weights equal to the square root of the number of firms in the index. The main result is that the returns over Appalachian Coals were negatively related to returns over Schechter. The Black bill and the Blanket code are significantly positively related only with weighted least squares. NIRA passage shows no correlation with Appalachian Coals, but a strong negative correlation with Schechter, and a strong negative correlation with the two labor initiatives.

The evidence seems to speak especially strongly on the connection between the two court decisions. The sharp rise in stock prices over the bank holiday of early March 1933 is most strongly related to the movement over the week of stock prices that occurred when the Supreme Court declared the NIRA unconstitutional.

C. Industry-by-Industry Output. Table 8 shows industry-by-industry output for each quarter of 1933, relative to the average for that year. Several series were higher for the first part of the year: new bond issues, the number of business failures, the dollar value of business failures, and the average size of business failures. All other series reach their peak in the second, third or fourth quarters: after the passage of the NRA. Department store sales (seasonally adjusted) are higher in the third and fourth quarters than in the first and second. Stocks of raw materials, which should have increased if hoarding in advance of future price increases took place, actually declined in

the second and third quarters. If hoarding took place, it was done by ultimate consumers. The number of life insurance policies sold also increases in the last half of the year, to 10 percent above the level of the first quarter. Newspaper and magazine advertising (line counts not seasonally adjusted) are influenced by seasonal factors; however, comparisons of the first and second half of the year are least likely to be tainted and show no decline for magazines and a sharp increase for newspapers. Seasonally adjusted output in the last quarter falls below the first quarter for only two industries: passenger cars and cotton. Despite cartelization, manufacturing output was up. More surprisingly, measures of activity in sectors not covered by the NRA were also up.

3. Conclusion

The NIRA promoted restrictions of output and prices, and it forced firms to pay minimum wages and agree to collective bargaining. By familiar arguments, it should have lowered output overall. Cartelized and labor-intensive industries should have produced less, and suppliers and distributors for those industries should have produced less. Only non-cartelized producers of substitutes, especially those using little labor, should have produced more.

However, the passage of the NRA was marked by a remarkable boom, especially in durable goods production. At a disaggregated level, the upturn was broad-based and extended beyond the cartelized sectors to retailing and financial services. Some other factor could have caused the boom, but there are few plausible candidates. Monetary aggregates were flat, public holdings of currency remained high, and banks held large amounts of reserves. The banking sector recovered only slowly. Other New Deal policies - modest public works programs or agricultural policies - are unlikely causes of a broad revival. Alternatively, the trade associations fostered by the NIRA may have addressed problems posed by fixed costs. If so, then the passage and administration of the NIRA may have provided incentives for investment.

According to one conjecture, the boom was artificial, induced by the prospect of price increases. If true, total output over the period covered by the NIRA should have been lower, as should stock prices for the period of the NIRA's passage, at least for sectors that supplied cartels or supplied products whose prices were increased by cartels. Regressions of output on a variety of

explanatory factors for 1930-39 indicate that holding plausibly and even implausibly exogenous factors constant (where those factors moved as they ordinarily do in a boom), output was not lower during the period of the NRA. Durable goods output was perhaps greater. Since the NRA dummy in these regressions includes only the period July 1933-June 1935, it excludes the boom that occurred during the NIRA's passage. We also have to remember the NRA as it turned out was in all likelihood not the NRA business expected in July of 1933.

Stock prices offer related evidence. They increased broadly with the NIRA's passage, not only in manufacturing, which would gain from cartelization, but also in railroads, utilities, retailing and other sectors that were either exempt from the NRA, where codes were never signed, or where codes were relatively mild.

Other evidence comes from the cross-section of stock price changes that accompanied major changes in antitrust and labor regulation. Industries with a high ratio of payroll-to-value-added suffered stock price declines with the Black labor bill and the Blanket Code, but an increase with passage of the NIRA. On the other hand, manufacturing and mining firms experienced stock price increases when Appalachian Coals suspended the per se rule against cartels, and stock price declines when Schechter declared the NIRA illegal. In fact, the correlation of stock returns across industries for the weeks covering the two Supreme Court decisions is -.66.

We are left with a quandary. If we regard the NIRA as uniformly contractionary -- the recovery act promoted the exact opposite of recovery -- the 1933 boom remains a mystery. Alternatively, if we regard the NIRA as having some expansionary components, we have to reassess familiar economic arguments about the policies it pursued, in particular the consequences of antitrust relief.

Table 1

Selected Dates in the Passage and Demise of the NRA

<u>1933</u>	
Mar. 30	Black bill reported out favorably by Senate Judiciary Committee.
Apr. 5	Administration's amendment of Black bill rejected 48 to 41. Would have set maximum hours at 36 per week instead of 30.
Apr. 6	Senate adopts original bill 53-30.
Apr. 12	First FDR press conference.
Apr. 14	Second FDR press conference.
May 7	Fireside chat on new draft bill.
May 10	Meeting convenes at White House.
May 17	NIRA emerges on floor of Congress. FDR's message to Congress.
May 23	House Ways & Means reports NIRA bill favorably.
May 26	House votes 325-76 for NIRA.
Jun. 7	Two days of Senate debate.
Jun. 9	Senate votes 57-25 for bill, 58-24 in second vote.
Jun. 10	House approves conference bill.
Jun. 13	Senate votes 46-39 to accept conference bill.
Jun. 16	FDR signs NIRA, Johnson named head of NRA.
Jun. 23	Johnson reverses himself, permits price fixing.
Jul. 9	FDR signs textile code.
Jul. 15	FDR delegates broad powers to administrator.
Jul. 19	FDR signs blanket code.
Aug. 19	Iron and Steel code signed
Aug. 29	Lumber & Timber code signed.
Sep. 2	Petroleum code.
Sep. 5	Automobile code.
Sept. 11	Cast iron soil pipe.
Sept. 18	Bituminous code.
Oct. 13	Glass container code.
Oct. 25	Memo on what NRA would allow.
Nov. 6	Beet sugar code.
Nov. 17	National Emergency Council created.
Nov. 27	Paper and Pulp code.
Dec. 7	Cement code.
<u>1935</u>	
April	Circuit Court sustains Schechter conviction.
May	Senate Finance Committee limits NRA to interstate business, forbids price fixing except in mineral-resource industries.
May 14	Senate ok's resolution on NRA by voice vote.
May 27	Supreme Court Schechter decision, voids Title I, including Section 7a.
Jun. 14	Remnants of Title I renewed by joint resolution until April 1, 1936.

Table 2

Provisions of Selected Codes Approved in 1933

No.	Name and Date	Limits on:		Production
		Plant or Mach. Hrs.	Productive Capacity	
1	Cotton Textile 7/17	X	X	
3	Wool Textile 8/14	X		
9	Lumber and Timber 8/29			X
10	Petroleum 9/2		X	X
11	Iron and Steel 8/19		X	X
17	Automobile 9/5			
18	Cast iron soil pipe 9/11	X		
24	Bituminous Coal 10/9			
28	Transit 10/2		X	
36	Glass Container 10/13		X	X
	Sugar Beet 11/6			
44	Boot and Shoe 10/13			
109	Crushed Stone, Sand 11/20		X	
119	Newsprint 11/27	X		
120	Paper and Pulp 11/27			
128	Cement 11/7		X	
151	Can Manufacture 12/30			

Source: Lyon et al. pp. 626-628, 630-631, and 634-635, and Roos, Appendix IV.

Table 3
 Regressions of Durable and Nondurable Output
 on Stock Prices, Wholesale Prices, Money and NRA Dummy
 First Quarter 1930 - Last Quarter 1939

<u>Dependent Variable: Ln Durable Output</u>					
Constant	.50 (1.59)	-19.84 (6.33)	-5.27 (1.59)	-12.49 (4.74)	-6.79 (2.16)
Ln Dow	.76 (11.69)	-. (.)	.61 (6.01)	-. (.)	.38 (2.82)
Ln WPI	-. (.)	-. (.)	-. (.)	2.52 (5.79)	1.41 (2.53)
Ln Money	-. (.)	2.27 (7.51)	.61 (1.75)	.55 (1.49)	.28 (.82)
NRA	.036 (0.58)	.328 (3.18)	.129 (1.61)	-.00 (0.00)	.022 (0.25)
Trend	.011 (5.04)	.002 (0.70)	.008 (3.21)	.005 (1.88)	.007 (2.98)
R ²	.84	.71	.86	.85	.88
D-W	1.62	.64	1.45	1.09	1.46
<u>Dependent Variable: Ln Non-Durable Output</u>					
Constant	3.26 (30.33)	-1.91 (1.69)	3.15 (2.64)	.08 (0.08)	3.03 (2.46)
Ln Dow	.22 (9.69)	-. (.)	.21 (5.80)	-. (.)	.19 (3.72)
Ln WPI	-. (.)	-. (.)	-. (.)	.69 (3.77)	.11 (0.52)
Ln Money	-. (.)	.59 (5.50)	.01 (.09)	.12 (0.78)	-.01 (0.10)
NRA	-.002 (0.07)	.069 (1.90)	.000 (0.01)	-.020 (0.51)	-.008 (0.25)
Trend	.009 (11.9)	.007 (5.73)	.009 (9.53)	.007 (7.21)	.009 (9.21)
R ²	.89	.78	.89	.85	.89
D-W	1.20	.70	1.20	.78	1.15

NOTES TO TABLE 3

Note: "NRA" is a dummy variable for 1933:III through 1932:II. Absolute value of t-statistics appear in parentheses.

Sources: Durable and nondurable output, Federal Reserve Board, averages for quarter: U.S. Bureau of the Census (1949), Appendices 7-8, p. 331. Dow, daily value from end of quarter: Ph. Pearce (1982). Wholesale price index, BLS end of quarter values: U.S. Bureau of the Census (1949), Appendix 23, p. 344. Money (currency, demand and time deposits): Friedman and Schwartz, Appendix A, Table A-1, Column 8.

Table 4

Semi-Difference Regressions of Durable and Nondurable Output
on Stock Prices, Wholesale Prices, Money and NRA Dummy
Second Quarter 1930 - Last Quarter 1939

<u>Dependent Variable: D(Ln Durable Output)</u>					
Constant	.69 (2.52)	-8.07 (3.56)	-4.94 (2.11)	-6.40 (3.18)	-5.26 (2.39)
D(Ln Dow)	.56 (4.78)	-. (.)	.38 (2.88)	-. (.)	.19 (1.22)
D(Ln WPI)	-. (.)	-. (.)	-. (.)	2.46 (3.58)	1.89 (2.29)
D(Ln Money)	-. (.)	1.91 (4.42)	1.15 (2.43)	.60 (1.15)	.54 (1.03)
NRA	.016 (0.26)	.132 (1.83)	.096 (1.44)	-.020 (0.26)	-.002 (0.03)
Trend	.007 (2.90)	.003 (1.04)	.003 (1.32)	.002 (0.97)	.003 (1.12)
R ²	.57	.54	.63	.67	.68
D-W	2.07	1.28	1.89	1.80	1.99
<u>Dependent Variable: D(Ln Non-Durable Output)</u>					
Constant	1.66 (19.18)	-0.67 (0.81)	.76 (0.96)	-.06 (0.08)	.67 (0.87)
D(Ln Dow)	.20 (5.43)	-. (.)	.18 (3.88)	-. (.)	.12 (2.27)
D(Ln WPI)	-. (.)	-. (.)	-. (.)	.90 (3.58)	.53 (1.85)
D(Ln Money)	-. (.)	.54 (3.38)	.18 (1.14)	.05 (.29)	.01 (.06)
NRA	-.007 (0.36)	0.022 (0.84)	.006 (0.24)	-.034 (1.22)	-.022 (.83)
Trend	.004 (5.96)	.004 (3.56)	.004 (4.46)	.004 (3.89)	.004 (4.36)
R ²	.74	.64	.75	.74	.78
D-W	2.02	1.26	1.83	1.31	1.65

Note: Semi-differences of the variable X_t are calculated as $D(X_t) = X_t - 0.5(X_{t-1})$. Absolute value of t-statistics appear in parentheses.

Table 5

Returns by Industry Group for Dates Associated with:

Appalachian Coals and Bank Holiday; March 1-March 15, 1933

Black Labor Bill; March 15-April 5, 1933

National Industrial Recovery Act; April 5-July 12, 1933

Blanket Code (President's Re-employment Agreement); July 19-July 26, 1933

Schechter; May 22-May 29, 1935

Index	No. of Stocks	Returns over:					Weeks
		Appalachian Coals	Black Bill	NIRA Passage	Blanket Code Schechter	NIRA Passage	Positive:
Dow industrials	30	18.2	-7.4	81.8	-8.2	-3.9	14
Industrials	351	18.3	-7.6	104.7	-8.9	-4.7	14
Railroads	33	18.0	-19.0	141.2	-11.7	-.6	14
Utilities	37	10.6	-18.8	68.3	-8.4	4.4	12
Advertising	7	17.2	-0.7	138.5	-15.8	-5.2	10
Ag. implements	4	54.4	-4.6	113.1	-13.5	-10.5	13
Airplane mfg.	9	20.4	-11.3	110.1	-15.7	-8.6	10
Air transport	4	17.1	4.6	77.3	-15.1	-4.5	11
Apparel	8	27.6	-22.1	142.2	-19.2	-7.2	11
Autos	13	27.0	-13.8	178.6	-6.7	-4.7	13
Auto Parts	16	19.4	-11.7	168.4	-15.1	-4.5	13
Auto Tires	7	34.4	-18.7	216.2	-9.4	-4.7	11
Building Equip.	12	19.1	-1.6	183.7	-10.9	-3.7	13
Chemicals	11	20.3	-9.6	94.1	-8.4	-4.3	14
Coal, anthracite	4	16.9	-18.8	178.6	-15.8	-1.2	11
Coal, bituminous	5	27.9	4.5	127.0	-13.6	-10.5	11
Copper	8	42.3	-14.4	148.7	-9.0	-16.5	10
Cotton	10	7.5	1.1	120.1	-12.2	-4.3	12
Drugs, medicine	7	14.3	-10.1	55.8	4.7	-1.2	11
Electrical equip.	4	22.9	-12.0	123.7	-11.6	-6.4	12
Fertilizer	4	27.4	24.1	121.4	-14.6	-13.6	10
Food, no meat	22	9.6	0.9	64.7	-5.5	-3.3	14
Household prdcts.	14	18.8	-6.9	95.3	-8.4	-1.9	14

(continued on next page)

Table 5 (continued)

Index	Returns over:					Weeks Positive:	
	No. of Stocks	Appalachian Coals	Black Bill	NIRA Passage	Blanket Code Schechter	NIRA Passage	
Lead and zinc	5	22.6	-6.7	112.1	-4.8	-4.3	12
Leather	4	34.1	-6.2	272.5	-15.4	-15.8	12
Machinery	10	13.6	-6.6	104.2	-10.6	-3.4	13
Meat Packing	5	33.9	0.3	98.0	-11.7	-2.4	8
Mining & smelt.	10	20.6	-6.5	123.7	-7.6	-8.0	11
Misc. mfg.	10	18.9	-12.3	103.1	-9.5	-2.7	13
Misc. service	4	18.0	-12.7	122.5	-13.2	-2.5	12
Business supply	5	24.7	0.2	98.8	-13.5	-2.9	12
Paper	7	-1.3	-22.2	522.7	-15.6	-8.6	13
Petroleum	15	11.3	-5.8	92.4	-9.3	-9.6	12
Radio	10	43.5	-19.3	208.7	-13.8	-10.7	11
Railroad equip.	9	13.6	10.4	130.7	-15.2	-1.2	11
Rayon	5	1.9	-13.0	168.2	-6.1	8.6	13
Retail trade	26	19.3	-6.5	90.5	-7.1	-0.7	14
Shipping	8	-1.0	9.3	166.5	-11.9	0.3	11
Silk	6	7.0	-4.4	252.7	-12.4	-0.9	13
Steel and iron	11	30.9	-10.7	163.7	-15.1	-7.1	14
Sugar	8	29.2	10.7	77.5	-6.7	-6.7	11
Textiles	28	12.4	-5.9	155.6	-13.9	-4.4	12
Theatres	7	1.9	-18.2	242.2	-17.4	-2.2	8
Tobacco	11	12.9	-1.8	53.6	-4.3	-1.2	14
NY Banks	20	8.1	-24.9	52.8	-4.9	1.7	9
Fire insurance	20	10.0	21.0	87.0	-6.9	.0	13
Casualty ins.	13	9.8	-14.9	83.5	-8.4	2.2	11
Commodity Prices			0.3	14.1			
British pound			4.3	29.9			
			<u>Means:</u>				
SD 4 to 9 firms		13.8	11.9	95.6	5.1		11.2
SD 10 or more		8.6	7.4	45.5	3.2		12.7
F(24,21)*		2.6	2.6	4.4	2.5		t=2.45

* F-statistic based on ratio of variances.

Source: Standard Statistics, Standard Trade and Securities, Statistical Bulletin, December 1934.

Table 6

Cross-Section Regressions of Industry Returns
on Industry Characteristics for Four Periods,
OLS and Weighted by Square Root of Number of Firms in Stock Index

Appalachian Coals and Bank Holiday; March 1-March 15, 1933

Black Labor Bill; March 15-April 5, 1933

NIRA Passage; April 5-July 12, 1933

Blanket Code; July 19-July 26, 33

Schechter; May 22 - May 29, 1935

	Dependent Variable: Return over:									
	Appalachian Coals		Black Labor Bill		NIRA Passage		Blanket Code		Schechter	
	OLS	WLS	OLS	WLS	OLS	WLS	OLS	WLS	OLS	WLS
Constant	.14 (1.52)	.09 (1.08)	.10 (1.47)	.06 (0.98)	.48 (0.76)	.23 (0.40)	-.05 (-1.36)	-.02 (0.66)	-.04 (1.14)	-.03 (0.80)
Payroll+V A	.16 (0.84)	.24 (1.39)	-.34 (2.49)	-.27 (2.15)	2.07 (1.61)	2.60 (2.23)	-.13 (1.88)	-.19 (3.01)	-.03 (0.37)	-.06 (0.92)
R ² /Weighted R ²	.02	.03	.17	.19	.08	.27	.11	.47	.00	.11
Constant	.12 (3.54)	.12 (5.43)	-.11 (3.66)	-.15 (7.12)	1.15 (4.85)	1.02 (6.09)	-.11 (8.02)	-.09 (9.25)	-.01 (0.48)	.01 (0.65)
Manufacturing & Mining Dummy	.10 (2.63)	.08 (2.72)	.05 (1.31)	.08 (3.07)	.32 (1.17)	.44 (2.11)	-.00 (0.06)	-.02 (1.29)	-.05 (3.21)	-.06 (4.37)
R ² /Weighted R ²	.14	.14	.04	.39	.03	.15	.00	.25	.19	.31

Note: The upper panel is based on 32 industries, all in manufacturing. The lower panel is based on 45 industries. Absolute value of t-statistics in parentheses. Payroll+Value-added has a mean of .48 and S.D. of .17, the manufacturing & mining dummy has a mean of .76.

Source: Payroll and value-added data at the two-digit level are 1933 values from U.S. Historical Statistics (1975, Series P61 and P65). Coverage for Fabricated Metal Products, non-electrical machinery and transportation equipment start in 1947, so I used the observed 1933-1947 increase of payroll per value-added of .445 to .534 for all manufactures to adjust the 1947 data (Series P7 and P10). Three industries (Textile Mill Products, Apparel, and Instruments and Related Products) had no values for 1933, so I used those for 1929. Stock prices from Standard Statistics, Standard Trade and Securities, Statistical Bulletin, December 1934.

Table 7
Correlations of Returns,
Ordinary and Weighted by Square Root of Number of Firms in Stock Index

Appalachian Coals and Bank Holiday; March 1-March 15, 1933
 Black Labor Bill; March 15-April 5, 1933
 National Industrial Recovery Act: April 5-July 12, 1933
 Blanket Code; July 19-July 26, 33
 Schechter: May 22 - May 29, 1935

	<u>Black Labor Bill</u>		<u>NIRA Passage</u>		<u>Blanket Code</u>		<u>Schechter</u>	
	O*	W*	O	W	O	W	O	W
<u>Manufacturing (n=32)</u>								
Appalachian	-.05	-.27	-.15	.06	-.18	-.26	-.61	-.64
Black Bill			-.41	-.49	.02	.23	.04	.25
NIRA Passage					-.41	-.57	-.28	-.41
Blanket Code							.39	.45
<u>All industries (n=45)</u>								
Appalachian	.07	-.20	-.10	.11	-.15	-.26	-.66	-.52
Black Bill			-.26	-.34	-.06	.30	-.17	-.23
NIRA Passage					-.45	-.60	-.31	-.31
Blanket Code							.36	.21

*Ordinary (O) and weighted (W) estimates.

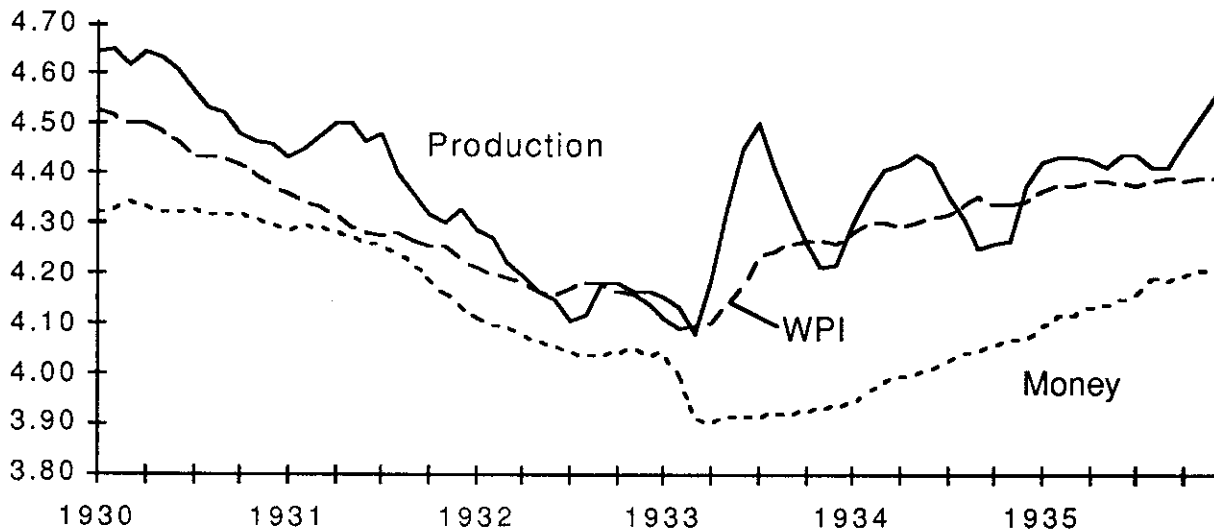
Table 8
Economic Indicators by Quarter Relative to 1933 Average

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
New Stock Issues*	23	34	277	66
New Bond Issues*	173	172	54	1
Failures-Number*	143	108	79	70
Failures-Dollars*	154	107	73	66
Failures-Dollars/Failure*	110	101	94	96
Stocks of mfg. goods*	95	95	104	106
Stocks of raw materials*	98	88	96	118
Department store sales	88	100	108	104
Life insurance policies*	93	100	103	104
Magazine advertising*	93	107	82	118
Newspaper advertising*	93	78	105	124
Composite index	83	102	117	98
Steel ingot	52	97	148	103
Pig iron	52	79	155	114
Zinc	77	69	124	130
Lead	87	86	88	139
Tin	73	104	136	88
Railroad equipment	36	82	96	185
Electric power	94	99	105	102
Gasoline	97	100	104	99
Automobile tires	58	104	134	104
Passenger cars	83	96	148	73
Trucks	62	98	131	110
Lumber	72	93	135	100
Cotton	87	115	114	84
Wool mill	75	106	120	100
Boots and shoes	90	108	104	98
Wood Pulp	79	90	120	110
Paper	83	102	116	98
Chemicals	84	92	118	106
Cigarettes	93	109	101	97
Sugar meltings	93	112	101	94
Slaughtering & meat packing	91	103	104	101
Cement	85	104	120	90
Building contracts	78	107	108	107

All series are seasonally adjusted, except those marked with an asterisk (*).

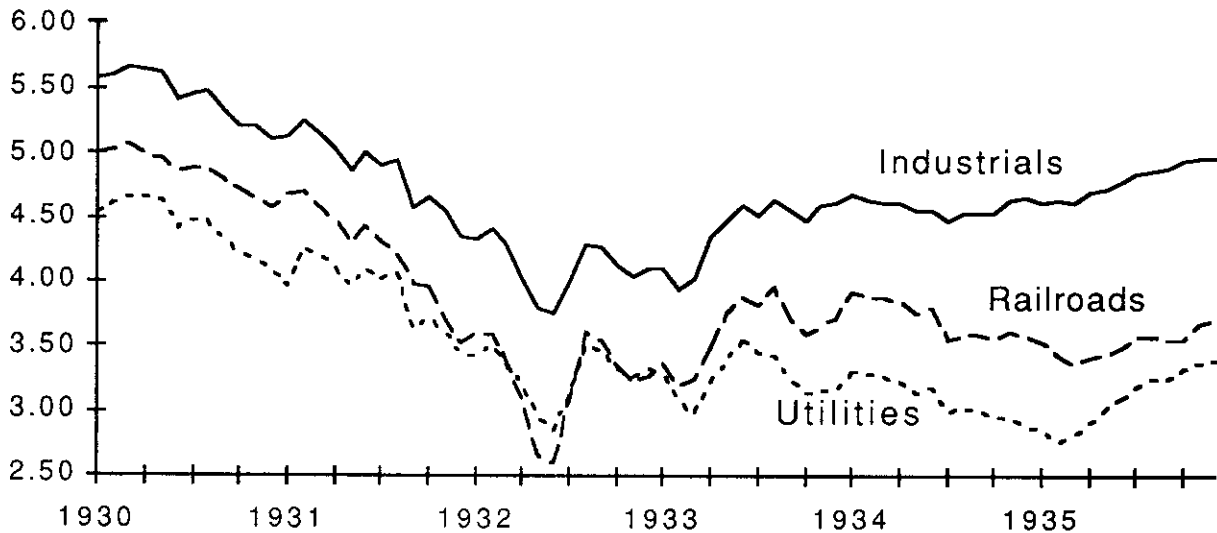
Source: Standard Statistics, Standard Trade and Securities, Statistical Bulletin, December 1934.

Figure 1
Industrial Production, Wholesale Prices (WPI) and Money, 1930-1935



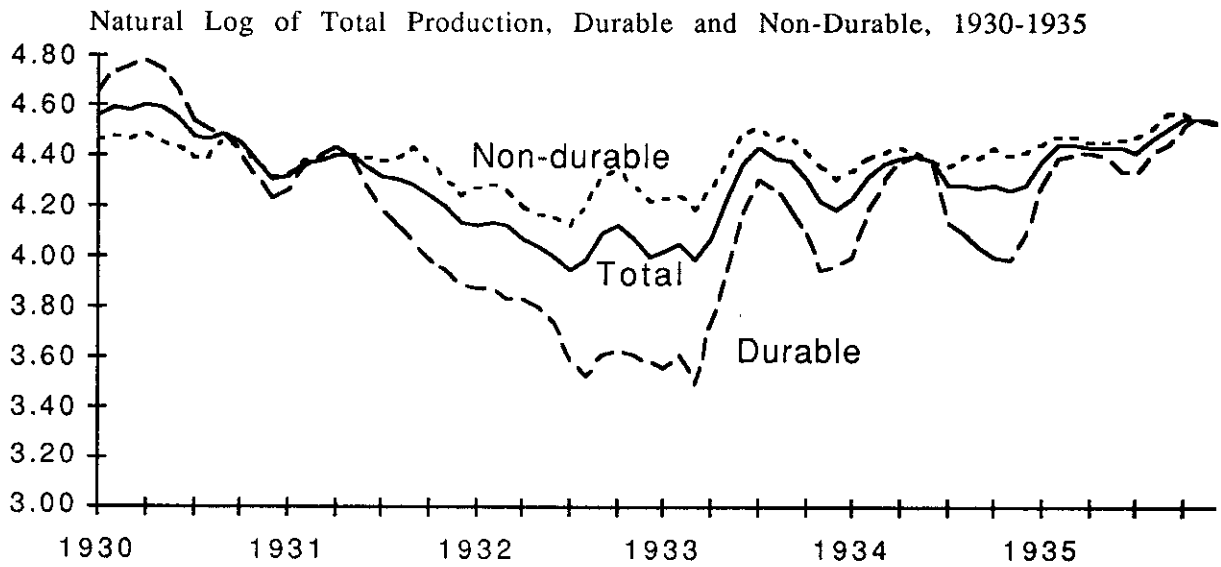
Sources: Moore (1961), Friedman and Schwartz (1963, Appendix A, Table A-1), and U.S. Bureau of the Census (1949).

Figure 2
Natural Log of Dow Industrials, Railroads and Utilities, 1930-1935



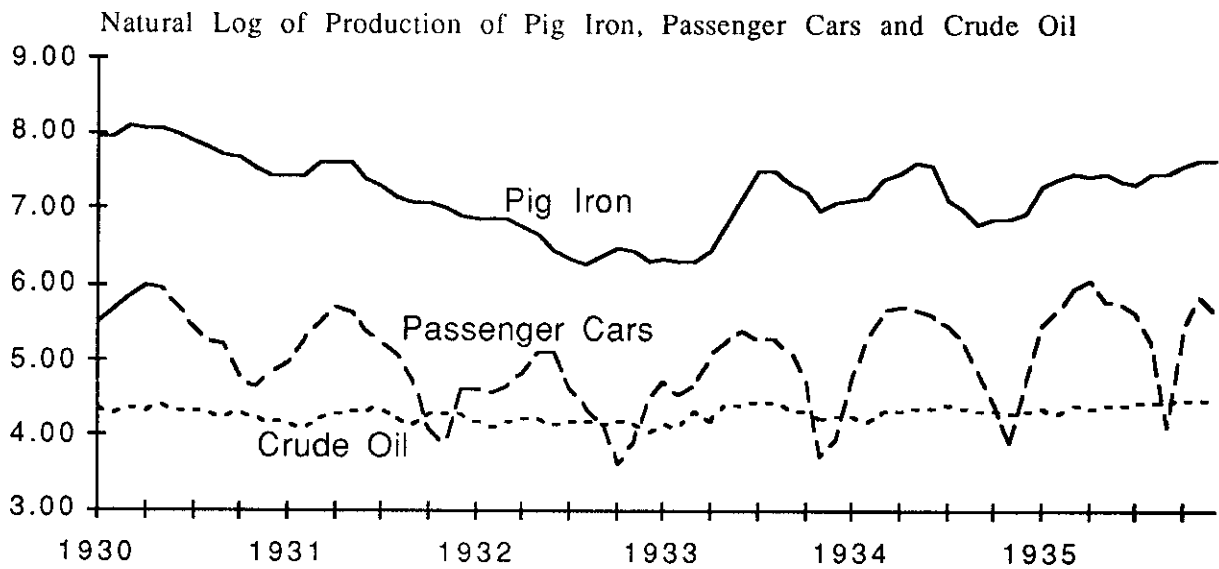
Source: Pearce (1982).

Figure 3



Source: Federal Reserve Board, not seasonally adjusted, U.S. Bureau of the Census (1949).

Figure 4



Source: Standard Statistics, various issues.

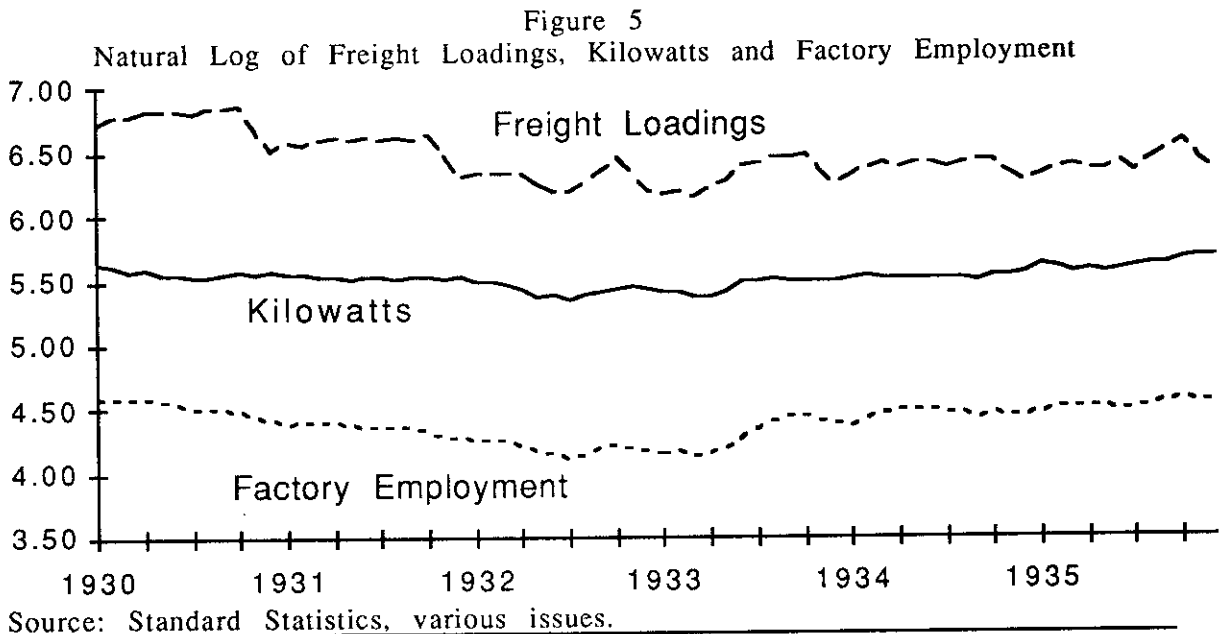
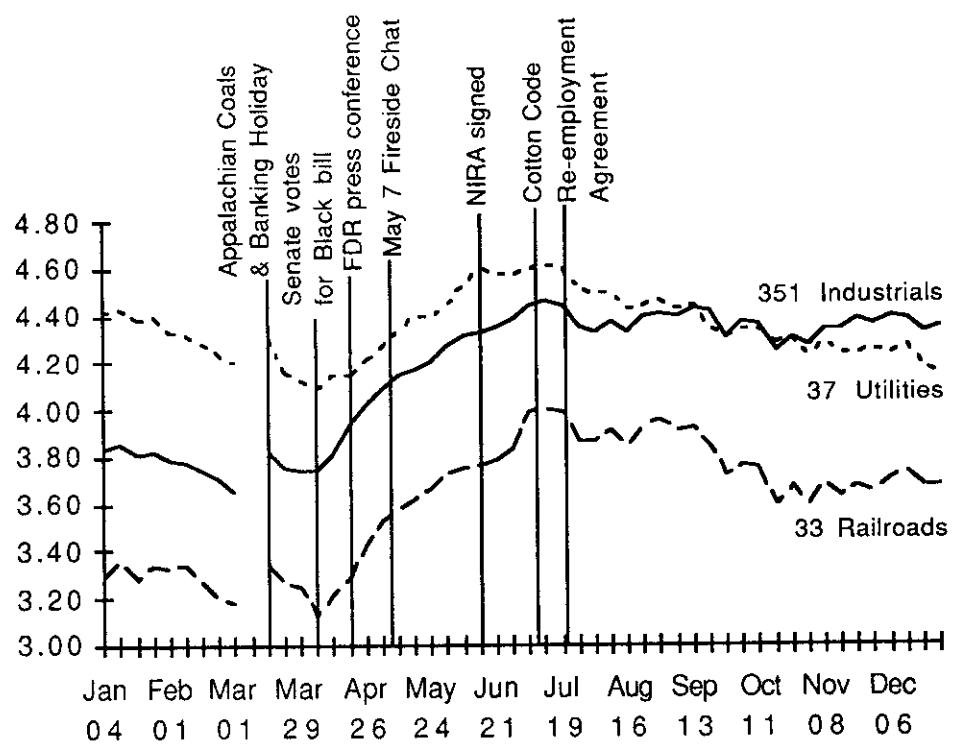


Figure 6
Natural Log of Standard Industrials, Railroads and Utilities, 1933



Source: Standard Statistics, Standard Trade and Securities, Statistical Bulletin, December 1934.

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