Inflation Expectations and Recovery from the Depression in 1933:
Evidence from the Narrative Record

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Abstract

This paper uses the historical narrative record to identify whether inflation expectations shifted during the second quarter of 1933, precisely as the recovery from the Great Depression took hold. We examine a variety of evidence: historical news accounts, forecasts of contemporary business analysts, a newly constructed data series reporting the number of news articles containing the term inflation, and an event study analysis. We find that (1) inflation expectations changed dramatically during the second quarter of 1933; (2) Roosevelt’s communications strategy, primarily his public commitment to raise prices to pre-depression levels, along with key events such as the abandonment of the gold standard and the passage of the Thomas Inflation Amendment, caused the shift in inflation expectations; and (3) inflationary news shocks had a significant impact on financial and exchange-rate markets. In addition, we find support for the notion that the second quarter of 1933 represents an inflationary regime shift and estimate that the regime shift increased monthly output growth by 4 to 7 percentage points.

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1. Introduction

Why did the recovery from the depression begin in April 1933, one month after Roosevelt took office? The leading explanation, developed by Temin and Wigmore (1990), involves a sudden turnaround in inflation expectations. Temin and Wigmore (1990) argue that President Roosevelt established a new macroeconomic policy regime—one that generated inflationary expectations and sparked a rapid recovery. More recently, Eggertsson (2008) develops a theoretical framework to model how a shift in expectations can explain the recovery from the depression, effectively bolstering the work of Temin and Wigmore.

Both studies have dramatically strengthened our understanding of the recovery from the depression. However, while there now exists a strong theoretical basis and compelling historical argument for how a shift in expectations could explain the turnaround recovery from the depression, neither of the two studies provides much direct evidence—statistical or narrative—that inflation expectations did indeed change during the second quarter of 1933.

This paper rectifies this omission in the existing literature by examining four types of evidence that we extract from the historical narrative record: (1) the reports of contemporary observers contained in the historic news accounts, (2) the forecasts of contemporary business analysts, (3) a newly constructed data series reporting the number of news articles containing the term inflation, and (4) an event study analysis of the impact of inflationary news shocks on financial markets. We find that (1) inflation expectations changed dramatically during the second quarter of 1933—specifically, in April, (2) Roosevelt's communications strategy, primarily his public commitment to raise prices to pre-depression levels, along with key events such as the abandonment of the gold standard and the passage of the Thomas Inflation Amendment, caused the shift in inflation expectations, and (3) inflationary news shocks had a significant impact on financial and exchange-rate markets.

Given that inflation expectations shifted abruptly in the spring of 1933, we then ask a related question: Does the historical narrative record support the notion—put forth by Temin and Wigmore (1990)—that Roosevelt implemented a new inflationary macroeconomic policy regime?

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1 The NBER dates the trough of the depression in March of 1933.
2 Our study is similar in spirit to Nelson (1991) and Romer and Romer (2013), who use the narrative record to provide evidence on deflationary expectations in 1929 and 1930. A main difference between our study and these earlier ones, however, is that we focus on the recovery from the depression, rather than the onset.
We find strong evidence that the events of the second quarter of 1933 do indeed constitute a regime shift—one that sharply altered market expectations. Moreover, we develop an empirical framework to identify the aggregate output effects of the regime shift. According to our model, during the months that coincided with the Roosevelt regime shift, output growth was higher by 4 to 7 percentage points than what would have been predicted, given the normal behavior of money and financial crisis indicators from 1919 to 1941. This suggests that the Roosevelt regime shift raised output growth substantially, effectively strengthening the work of Temin and Wigmore (1990) and Eggertsson (2008).

We also investigate whether other forces, beyond a pro-inflation regime shift, might have driven the recovery. For a variety of reasons, we ultimately conclude that the regime shift, as opposed to other forces or policies, accounts for the rapid recovery. Most notably, our reading of the narrative record indicates a causal link between the Roosevelt regime shift and the sudden surge in output growth during the second quarter of 1933, suggesting that the transmission mechanism was rapidly revised expectations.

Lastly, we conclude our study by putting forward two potential explanations for why the recovery faltered during the second half of 1933. We examine the narrative record and find two potential explanations: (1) the implementation of the National Industrial Recovery Act and (2) mixed signals from the Roosevelt administration regarding its commitment to an inflationary regime.

2. Why Narrative Evidence?

There are several ways in which market participants and observers can estimate inflation expectations today. They can use both market-based and survey-based measures that are published regularly. First, inflation expectations can be estimated by comparing the difference in yields on a regular Treasury security and a Treasury Inflation Protected Security (TIPS) of similar maturity—the “breakeven” inflation rate. However, this measure is not available for 1933 since TIPS were only first auctioned in January 1997. Second, inflation expectations can be estimated

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3 Our findings are also complementary to a recent study by Hausman (2013). Hausman concludes that devaluation, by raising farm incomes, boosted output growth in agricultural states in the spring of 1933. However, because the positive impact of devaluation on farm incomes would be counteracted by the negative impact of higher prices for foods on urban consumers, Hausman concludes that another channel must explain the overall recovery. He posits that devaluation may have signaled higher inflation and thereby, boosted inflation expectations. We view our findings as consistent with this channel. Thus, our paper both supports and complements the work of Hausman (2013).
using the Michigan Survey. These estimates are obtained from questionnaire responses from consumers to questions about their expected inflation rate over the next one and 5 to 10 year time horizons. Again, this widely-used measure of inflation expectations is not available for 1933 since the Michigan Survey was first published in January 1978. The Philadelphia Fed publishes a third measure of inflation expectations, based on a quarterly survey of professional forecasters (SPF). The estimates are based on the responses from private sector economists who produce regular forecasts of economic variables as part of their jobs in the business world or on Wall Street on the probability they attach to different outcomes. This survey started in the fourth quarter of 1968 and cannot therefore be used to estimate inflation expectations in 1933. Thus, data limitations make estimating inflation expectations in the 1930s difficult.

Nonetheless, two previous studies have attempted to measure inflation expectations during the depression. Cecchetti (1992) constructs forecasts for inflation based on contemporaneously available data, whereas Hamilton (1992) analyzes commodities futures markets. Though both studies are primarily concerned with the question of whether deflation was anticipated during the onset of the depression, the two studies provide estimates for expected inflation throughout the depression. The estimates for 1933 are shown in Table 1.

For the second quarter of 1933, the results presented in the table arrive at conflicting conclusions: three of four specifications predict deflationary expectations (-10.48%, -11.75% and -5.55%), whereas one predicts positive inflationary expectations (12.39%). The three specifications that predict deflationary expectations during the second quarter of 1933 indicate a later switch to inflationary expectations months after the recovery from the depression began—the third quarter of 1933 in two of Cecchetti’s specifications and the last third of 1933 in the Hamilton specification. These results are, seemingly, at odds with the accounts of Temin and Wigmore (1990) and Eggertsson (2008), who suggest that the change in expectations occurred during the second quarter of 1933, precisely as the recovery took hold. A switch from deflationary to inflationary expectations that lagged the recovery would contradict their central hypothesis that a shift in expectations, the result of a regime shift, drove the recovery. Nonetheless, because the results for 1933 are not consistent across the various specifications—for example, expected inflation is positive during the second quarter of 1933 in one of Cecchetti’s three specifications, the empirical estimates are both inconclusive and noisy. In addition, because Cecchetti and Hamilton arrive at contradictory findings for their primary period of interest—1929-30, they engage in a heated debate over which of their methodological approaches is more accurate.
Cecchetti argues that Hamilton’s use of commodity futures markets may generate inaccurate estimates for expected inflation since the government intervened, via the Federal Farm Board, to prevent swings in agricultural commodities prices by trading futures contracts. On the other hand, Hamilton argues that the models used by Cecchetti generate very different forecasts, under different, though equally plausible specifications.

Moreover, there is an additional methodological concern with these studies for the window of the second quarter of 1933. Time-series forecasting models, such as those employed by Cecchetti and Hamilton, assume that market participants formulate inflationary expectations on the basis of how previous trends evolved. Such a framework may not work during a regime shift because a regime shift, by definition, involves a sudden break from the past—a sudden break in how policy variables are going to evolve and in existing macroeconomic trends and relationships. This raises the possibility that the change in expected inflation, surrounding a regime shift, could be substantially different from what is found using the time-series forecasting models adopted by these previous studies.

Thus, additional evidence on inflationary expectations—to resolve the question of whether market participants expected inflation during the second quarter of 1933—is needed. Narrative evidence on inflationary expectations can shed enormous insights into market participants’ expectations for inflation. Indeed, narrative evidence provides a number of advantages. First, the writings of contemporary observers at the time should reveal whether market participants expected inflation. If there was a dramatic shift from deflationary to inflationary expectations, such a sudden swing in public perceptions about inflation should be reflected in both the contemporaneous economic and financial press and the reports of contemporary forecasters. For example, Nelson (1990) carefully examines the historical news record during the onset of the depression and finds overwhelming evidence in the financial press that market participants expected deflation. Yet, a comparable examination of the historical news record during the recovery from the depression does not exist. Thus, there is potentially a wealth of information in the historical narrative record on market participants’ expectations for inflation that has so far been unexplored.4

Footnote 4: For example, Cecchetti (1992) notes the benefits of using narrative evidence. Though he develops three empirical specifications to back out forecasts of expected inflation, based on data contemporaneously available, Cecchetti praises the work of Nelson (1990) for using narrative evidence to determine whether the deflation of 1929-1930 was anticipated. Indeed, Cecchetti views the narrative evidence compiled by Nelson as a complement to his own findings. Specifically, Cecchetti (p. 142) writes, “This econometric
Second, statistical techniques to estimate expected rates of inflation via forecasts based on data contemporaneously available to market observers presuppose that market participants in 1933 actually made forecasts in such a sophisticated manner—an assumption that may not be entirely accurate, especially in light of the evidence we document in Section 3.2 on how contemporary business analysts generated forecasts in 1933. By contrast, an analysis of the narrative record reveals the kinds of forecasts actually made in real time.

Third, narrative evidence has the potential to identify the sources of any shifts in inflationary expectations, in a way that may not be possible using purely statistical information. For instance, Romer and Romer (2013) examine the historical narrative record to identify the source of deflationary expectations during the onset of the depression.5 Likewise, identifying the source of any shifts in inflationary expectations during the recovery from the depression is equally important. For Temin and Wigmore’s argument to hold—that a regime shift drove the recovery, it must not only be the case that inflation expectations changed, but also, that they changed as a direct result of Roosevelt’s policy statements and actions.

3. Narrative Evidence of Inflationary Expectations

In this section, we document the narrative evidence we have acquired on inflation expectations. We examine four types of evidence: (1) the reports of contemporary observers contained in the historic news accounts, (2) the forecasts of contemporary business analysts, (3) a newly constructed data series reporting the number of articles containing the term inflation, and (4) an event studies analysis of the impact of inflationary news shocks on financial markets.

3.1 The Reports of Contemporary Observers Contained in the Historic News Accounts

evidence complements the direct historical evidence reported in a recent paper by Daniel Nelson (1990)…Nelson examines articles in the contemporary business and financial press to argue that in 1929 and 1930 many analysts expected the price level to decline by as much as 50 percent to its pre-World War I level.”

5 According to them, for a monetary explanation of the Great Depression to hold, it must not only be the case that market participants expected deflation, but also that the deflationary expectations were driven by monetary contraction. By carefully analyzing the historical news record, Romer and Romer (2013) show that deflationary expectations in 1930 and 1931 were indeed the result of monetary contraction, thereby reaffirming the role played by monetary forces in causing the depression.
This section describes the evidence that we gather from the historical news record to identify whether inflation expectations changed during the second quarter of 1933. We read *Business Week*, a domestic news source, and the *Economist*, an international news source with correspondents reporting from the United States, to gain access to a diverse range of coverage. Both *Business Week* and the *Economist* provide detailed contemporaneous coverage of economic, financial, and political news in the United States and offer a clear sense of how contemporaries gauged prospective macroeconomic developments. This section presents our findings from October 1932, during the election campaign, through July 1933.

### 3.1.1 Before the Abandonment of the Gold Standard

From the election until the abandonment of the gold standard, inflation expectations remained relatively constant. However, speculation that Roosevelt might pursue an inflationary set of policies began to mount after the inauguration.

**From the election campaign until inauguration:** Though Roosevelt ran a campaign marked by optimism and a commitment to recovery, he did not present a detailed economic plan before the election. As a result, the editors of the *Economist* and *Business Week* did not expect Roosevelt’s policies to be fundamentally different from those of the previous administration and were pessimistic about his ability to quickly take the country out of the Depression:

> [W]e do not anticipate that any very radical experiments will be made. We doubt whether Mr Roosevelt, in any attempt which he may make to lift America from the depression ‘by her own boot-jacks,’ will succeed in evolving measures very different from those formulated and applied during the past two years by Mr Hoover (*Economist*, 11/12/32, “The New President,” p. 865).

No well-informed man in Wall Street expects the outcome of the election to make much real difference in business prospects, the argument being that while politicians may do something to bring on a trade slump, they can do nothing to change a depression into prosperity (*Economist*, 10/29/32, “United States,” p. 777).

There are important decisions of public policy to be made, but Administration new or old can perform no more miracles for business (*Business Week*, 11/16/32, “And So to Work,” p. 36).
Furthermore, during the interregnum period between Election Day and the inauguration, Roosevelt continued to keep the public in the dark about his likely policies, leaving the country in a political standstill:

The market has tacitly suspended action and judgment until the new Roosevelt administration has assumed office and declared its policy on major questions (\textit{Economist}, 2/11/33, “Investment Notes,” p. 311).

Nonetheless, amidst this backdrop, a pro-inflationary movement—designed as a means of reversing four years of deflation and depression—was steadily gaining traction among the general public. The \textit{Economist} described the growing influence of “Father Coughlin,” a Catholic priest from Detroit who preached the virtues of higher inflation in his Sunday radio sermons. According to the \textit{Economist}, members of Congress were receiving letters from their constituents demanding support for Father Coughlin’s inflationist policies (3/4/33, “United States,” p. 462):

[Former U.S. Rep] Mr. Luce reminded his audience that outside Congress there was a sort of modern Peter the Hermit fomenting the present crusade for inflation by arguments which people in a million homes were eagerly absorbing by radio every Sunday afternoon. He referred to the addresses of the Rev. Father Coughlin, a Catholic priest of Canadian birth, of high standing in his church, and who is a pastor near Detroit. Every Sunday afternoon Father Coughlin discourses for an hour over a national ‘hook up’ on the issues of the day. He disclaims any sympathy with arraignment of the existing economic and financial system and, reserving his chief fury for the bankers, preaches doctrines which horrify them. He would have the Government re-mint every 20-dollar gold piece and make it a 40-dollar gold piece, thus doubling the volume of gold dollars and reducing the real value of every paper dollar outstanding to 50 cents. He claims that in this way more currency would be forced into circulation, and automatically cause a 50 per cent reduction of the burden of debt under which so many citizens of the United States, especially farmers, are being crushed. At the same time, he contends that the prices received by farmers and other producers would double overnight.

It costs Father Coughlin about $4,000 per week for his national ‘hook-up,’ and he spends as much more in printing and distributing his addresses. But he secures practically all the money needed for these purposes in 1-dollar bills from people who listen to his speeches, feel that he is their self-appointed champion against their banker oppressors, and want the crusade to be a success. Every member of the old and the new Congress is daily receiving scores of letters from constituents demanding that he support the ‘Father Coughlin plan.’
Inflation had clearly become a general topic of discussion among the American public. Moreover, the incoming Congress was set to receive an influx of new members who had capitalized on this pro-inflation movement during the 1932 election. The Economist reported, “it is well known that the inflation element which has Republican as well as Democratic adherents, will receive heavy reinforcements from the personnel of the new Congress, many of whose members, particularly in the West, won large numbers of votes by their specific pledges to support a policy of currency inflation.”\(^6\) Thus, the emerging political forces in 1933 were beginning to favor inflation.

However, Roosevelt was initially not seen as a firm adherent of this new inflationary movement. A month before the inauguration, the Economist considered Roosevelt to be “ampley committed, both by the party ‘platform’ and by his own campaign speeches, against any attempt to tamper with the currency”\(^7\) and further noted that “very few of the prominent leaders in either political party have so far definitely committed themselves to support inflation.”\(^8\) Roosevelt’s relative silence on the topic of inflation helped to moderate inflationary expectations in early 1933.\(^9\)

**From inauguration until the exit from the gold standard:** President Roosevelt’s inaugural address on March 4, 1933, came in the midst of crisis. A severe banking panic had swept the country in the weeks leading up to the inauguration. Close to $2 billion, a third of the country’s stock of currency, was withdrawn from the banks, and many states were forced to declare bank holidays. George Harrison, governor of the New York Fed, and Eugene Meyer, chairman of the Federal Reserve Board, urged President Hoover to declare a national banking holiday, but the “lame duck” president, unable to convince the president-elect to sign a joint proclamation, decided not to act.\(^10\)

Though President Roosevelt’s inaugural speech did not include any immediate actions, he expressed his determination to “act, and act quickly,” signaling the beginning of a change in tone. Roosevelt’s first action in office was to order a four-day nationwide banking holiday and to

\(\text{\(^6\) Economist, 3/4/33, “United States” p. 462.}\)

\(\text{\(^7\) Economist, 2/4/33, “Confusion in Congress,” p. 232.}\)

\(\text{\(^8\) Economist, 3/4/33, “United States,” p. 462.}\)

\(\text{\(^9\) The US adherence to the gold standard was another topic for which no change was expected. From the days of the election campaign until inauguration, both the Economist and Business Week consistently reported an American exit from the gold standard as very unlikely (see, for example, Economist, 10/15/32, “The U.S. Election and the Dollar,” p. 680, and Business Week, 3/8/33, “The Dollar,” p. 6).}\)

suspend all transactions in gold. The Economist described the reactions to the Bank Holiday at the London Stock Exchange as reflecting “the general conviction that America’s troubles would not involve the devaluation of the dollar;” nonetheless, the period between inauguration and the abandonment of the gold standard was characterized by growing uncertainty about the value of the dollar. Business Week reported some uneasiness in the markets about the future of the dollar:

Of course the country immediately began to debate whether it was off the gold standard. Secretary Woodin stoutly asserted it was not… Dealings in foreign exchange here and abroad were suspended, but various bootleg transactions, and clues to be had from movement of certain key prices, indicated that the rest of the world does not believe the dollar will soon be redeemable in gold of the old weight and fineness. Perhaps the best clue came from Canada, where the US dollar dropped to parity with the Canadian. The latter had been at about 14% discount compared with ours” (3/15/33, “New Deal, New Money, New Banks,” p. 4).

Alongside this growing uncertainty about the U.S. commitment to the gold standard, speculation that Roosevelt would pursue an inflationary course of action to fight the depression began to mount. On March 15, Business Week published an article discussing whether Roosevelt’s banking emergency plan might be inflationary. The article concluded that, despite containing deflationary measures, it was on the whole inflationary (3/15/33, “New Deal, New Money, New Banks,” p. 3):

Whether his program for dealing with the banking emergency is inflationary or deflationary is still being debated. The answer seems to be that on the whole it is inflationary. It proposes to close indefinitely a large number of banks which by no stretch of imagination can be classed as “strong” – perhaps 5,000 of them – and that certainly is deflation. But the issuing of emergency currency based on any “good” asset of a bank, or even on its bare note, to almost any amount needed, is inflation with a vengeance. It turns frozen loans into currency on demand.

Furthermore, in the following issue, Business Week reported that a large group of economists had advised Roosevelt to take actions to raise the general price level as a means of achieving recovery (3/22/33, “Inflation, Please,” p. 6):

On the plea that “recent banking developments present an unprecedented opportunity for attacking depression through restoring and stabilizing our broken down price level,” 141

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economists representing 35 universities and colleges reminded President Roosevelt last week that they had counseled such an attack in a petition sent to him and to Congress on Feb 25 … Its members say they wanted to show that “there is a very considerable conservative element, including professional economists who have spent much time in studying the matter, in favor of sound action designed to raise the general price level as a means of starting America on the road leading out of the depression.”

In April, it became widely believed that the Roosevelt Administration would shift towards an inflationary set of policies. Business Week reported that during a press conference at the White House, Administration officials suggested a change in the direction of policy—a signal the magazine interpreted as evidence of a prospective shift toward an inflationary course of action (4/19/33, “Without Benefit of Greenbacks,” p. 32):

The excited rumor goes the rounds in Washington and in Wall Street that inflation is imminent…We pointed out last week that the Administration had not yet attacked the one great central problem of business recovery. We remarked that the program up to that time had been deflationary, and that constructive plans had yet to be developed. Since then, a press conference at the White House developed the fact that the Administration holds exactly that view of the situation. The Administration will not rest content with clearing up the wreckage and softening hardships; it will formulate and enact a program for business revival. That it will be bold we have no doubt; the farm bill is evidence enough that the Administration is not afraid to experiment. Certainly, any plan for recovery that has any chance of success must be bold; the timid, piecemeal efforts have all been futile. This is inflation, if you like, in the sense that it is the reverse of deflation…Business recovery we must have, and in that sense, inflation. It must be brought about by government action. There is nothing in this to be terrified about. On the contrary—let’s go!13

Furthermore, as the inflationary tendencies of the Roosevelt administration became more widely discussed by the news media, public interest in the topic of inflation grew (4/19/33, “Recovery: The Next Effort,” p. 1–2):

13 Though the editors of Business Week expected inflation, they considered devaluation of the dollar unlikely by mid-April. Their argument was that the U.S. had such large gold reserves that abandonment of the gold standard would prove unnecessary. Indeed, the Business Week’s issue published in the morning that Roosevelt took the U.S. off the gold standard affirmed, “In the judgment of the Business Week, no change in the monetary system is among the early probabilities, nor will there be any such step taken save as a final resort” (4/19/33, “Without Benefit of Greenbacks,” p. 32).
The whole subject of inflation is befuddled. The average business man is in a funk when the discussion starts. But because of the imminence of inflation and because of its extremely practice consequences, it behooves him to find out what it is all about.

The Economist also described inflation expectations on Wall Street (4/22/33, “Investment Notes: Wall Street and the Dollar,” p. 868):

As usual, Wall Street has interpreted the policy of the Washington Administration with uncanny accuracy. For a week or so before President Roosevelt announced his abandonment of the gold standard, Wall Street was “talking inflation.” It was generally believed that the Administration would continue to exercise a deflationary influence while banks were being closed and reorganized, insurance companies taken over, railroads placed in receivership, debts written down, and so on. It was shrewdly suspected, however, that the policy would subsequently be changed in an inflationary direction.

3.1.2 After the Abandonment of the Gold Standard

According to the news accounts, inflation expectations increased dramatically after the abandonment of the gold standard. Market participants continued to expect inflation through July.

The abandonment of the gold standard: The event that sharply raised inflation expectations, however, was the abandonment of the gold standard. On April 19, the abandonment of the gold standard surprised much of the financial community and reinforced the perception that inflation was imminent. In its first edition after the U.S. departure from the gold standard, Business Week wrote, “Inflation has begun. The Administration is definitely committed to reducing the purchasing power of the dollar.”

The magazine also described the abandonment of the gold standard as “the first move in the Administration’s program to raise prices” and concluded, “the long debate as to whether we are or are not going to attempt inflation is over—the Administration is committed.” The Economist concurred in this assessment, affirming that a key reason for the abandonment of the gold standard was “to give an impetus to a rise of prices in America.” The Economist viewed the exit from the gold standard as “the culmination of a rapidly growing volume of support in Congress and in American public opinion for inflationary measures.”

15 Business Week, 4/26/33, “We Start,” p. 32.
17 Ibid.
Therefore, the abandonment of the gold standard was a crucial turning point in public perception about the likelihood of a rise in inflation.

**The Inflation Amendment:** However, perhaps no less important, a couple of weeks later, the Farm Relief Bill, containing the Thomas Inflation Amendment, passed both chambers of Congress with overwhelming majorities (64 to 21 in the Senate and 307 to 86 in the House). The Inflation Amendment included a number of provisions designed to raise prices and further reinforced the notion that inflation was on the horizon. Among other things, the Inflation Amendment required the Federal Reserve Banks to buy $3 billion of Federal bonds, upon Presidential request, and also granted the President of the United States the powers to reduce the legal gold content of the dollar, to make silver equally acceptable with gold at any ratio, and to issue up to $3 billion in legal tender notes to meet maturing obligations or to buy Government bonds.\(^{18}\)

Contemporaries were stunned by the magnitude of these new powers. The *Economist* noted that the first provision—the purchasing of $3 billion of bonds by the Federal Reserve Banks—would alone “more than double the resources of the money market.”\(^{19,20}\) The Amendment was widely viewed as giving President Roosevelt “dictatorial powers” to control inflation: “the country has exchanged a President with little effective power for a ‘currency dictator.’”\(^{21}\) The *Economist* concluded that the net effect of these new powers would be “to vest in the Executive discretionary control over the volume, character and metallic content of the currency.”\(^{22}\)

Also in early May, Roosevelt gave the second of a series of fireside chats to the nation.\(^{23}\) In his radio address to the American public, Roosevelt pledged to raise prices to their pre-depression levels and vowed to use his new powers—if necessary—to achieve this goal:

> The administration has the definite objective of raising commodity prices to such an extent that those who borrowed will on the average be able to repay money with the same

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\(^{19}\) *Ibid*.

\(^{20}\) It is interesting to note the familiar resemblance of this provision to the recent commitment of the Bank of Japan to double its monetary base in two years, also as part of a bold effort to restart its economy.


\(^{23}\) Roosevelt’s first fireside chat as President of the United States was on March 12, about the banking crisis.
kind of dollar which they borrowed… These powers will be used when and if necessary to accomplish this purpose.24

Thus, in the three weeks following the abandonment of the gold standard, Roosevelt promised to raise prices and Congress endowed the President with enormous powers to achieve this goal.25

These dramatic developments caused market participants to expect inflation. Business Week reported, “the passage of the Thomas amendment by both houses of Congress has answered the question of whether we are going to have inflation.”26 The Economist wrote, “the only topic of conversation in New York during the past week has been ‘inflation,’”27 and observed, “it is evident that the tide of inflationary sentiment is running at full flood.”28 Indeed, the view—described in both Business Week and the Economist—was that the Roosevelt Administration was embarking on a set of policies designed to generate a “controlled inflation”—one that would not runaway. Business Week described its assessment as follows: “This inflation is different. It contains controls that can be used to prevent a runaway…” (5/17/33, “Controlled Inflation,” p. 18)29

The World Economic Conference: Roosevelt reinforced his commitment to domestic objectives—namely to raise the price level in the U.S.—at the World Economic Conference in June. Representatives from 66 nations met at the Conference to discuss joint action to fight depression, promote international trade, and stabilize exchange rates. However, during the conference, Roosevelt rejected a measure to promote currency stabilization. In a message to conference participants, Roosevelt denounced exchange stabilization “as one of ‘the old fetishes of so-called international bankers’”30 and declared that America would not be deterred from its program to raise prices:

The sound internal economic system of a nation is a greater factor in its well-being than the price of its currency in changing terms of the currencies of other nations… The

25 The new powers in the Inflation Amendment were discretionary and there was substantial speculation about how Roosevelt intended to use them. Nonetheless, it was widely believed that Roosevelt would not allow these new powers to go to waste. For example, the Economist (5/13/33, “Foreign Stock Exchanges – New York,” p. 1035) reported, “Opinion is divided as to the use President Roosevelt will make of his powers, but no one expects that he will allow them to rust.”
29 In May, Business Week ran regular advertisements, publicizing books and selling investment services, specifically catered to the topic of inflation.
revaluation of the dollar in terms of American commodities is an end from which the Government and the people of the United States cannot be diverted. We wish to make this perfectly clear: we are interested in American commodity prices. What is to be the value in terms of foreign currencies is not and cannot be our immediate concern.\textsuperscript{31}

*The Economist* noted that the implications of Roosevelt’s message were clear:

> The implications of his message were that America was no longer prepared to consider even an eventual return to an international gold standard, but was determined to retain *ad infinitum* a ‘managed’ dollar, whose exchange stability with other currencies would depend on the rest of the world keeping in step with the price level of the United States.\textsuperscript{32}

Roosevelt’s position on currency stabilization frustrated many of the conference participants (and was cited as a reason for the breakdown of Conference talks), but his commitment to an inflationary course of action was perceived as unwavering.\textsuperscript{33, 34}

Given these powerful signals, market participants continued to expect inflation in June and July. In early July, the *Economist* newspaper analyzed President Roosevelt’s commitment to raise prices to their pre-depression level as a form of price-level targeting. According to their calculations, a 41 to 54 percent cumulative rate of inflation would be necessary to achieve the Administration’s goals (7/1/33, “Investment Notes. Wall Street Prospects,” p. 26):

> Let us assume that President Roosevelt would be content with the 1928 dollar which he mentioned in a broadcast about two months ago. To restore the 1928 situation it would be necessary for American wholesale prices (Bureau of Labor index) to rise 54 per cent and retail prices 41 per cent.

While it is unclear whether the *Economist* believed that Roosevelt would be able to engineer such a dramatic increase in prices, it is nonetheless evident that market participants were expecting inflation during the second quarter of 1933.\textsuperscript{35}

\textsuperscript{31} *Economist*, 7/8/33, “World Conference. The Monetary Declarations,” p. 64.
\textsuperscript{33} Even abroad, it was clear that the U.S. was embarking on an inflationary program. Roosevelt’s inflationary policies were frequently described as the “American experiment.” (*Economist*, 7/1/33 “Unfinished Symphony,” P. 57-58.
\textsuperscript{34} The U.S. departure from the gold standard signaled Roosevelt’s intention to focus on the domestic economy. This is in sharp contrast with the U.S. response to Britain’s departure from the gold standard in 1931, which signaled the U.S. commitment to address external considerations over internal balance.
\textsuperscript{35} To the best of our knowledge, there is no record of the Federal Reserve’s opinion about Roosevelt’s pro-inflationary policies. We have read the minutes of the meetings of the Open Market Policy Committee (OMPC)—which became the Federal Open Market Committee (FOMC) with the passage of the Banking Act of 1933—and the monthly issues of the Federal Reserve Bulletin from November 1932, to July 1933, and found little evidence on the Federal Reserve’s view on this matter. There is, nonetheless, some mention in the minutes of the OPMC meeting in January 4, 1933, of concerns among members of the executive committee about “agitations, especially in Congress, for the adoption of inflationary measures.”
In sum, the historical news record indicates that inflation expectations changed dramatically during the second quarter of 1933. Roosevelt’s statements, along with key actions, such as the abandonment the gold standard and the passage of the Thomas Inflation Amendment, caused the shift in market expectations.

3.2 Contemporary Forecasts

The preceding section provides evidence from the historical news record that market participants expected inflation during the second quarter of 1933. In this section, we analyze another piece of evidence: the forecasts of contemporary business analysts. This type of evidence may be particularly useful if forecasters reflect the expectations of market participants or influence the formation of market expectations. At a minimum, the forecasts reveal the expectations among a subset of informed market observers.

The forecasts that we examine are those in *The Review of Economic Statistics, The Magazine of Wall Street, Moody’s Investment Survey, Standard Statistics Company’s Standard Trade and Securities*, and *Business Week*. These publications provided investment advice, alongside coverage of economic, financial, and business-related news. Most importantly, each of these sources contains forecasts of prospective macroeconomic developments. The forecasts were intended for any interested reader, but were often a component of their investment advice. Since a detailed justification accompanied each forecast, these sources shed light on the sources of any shifts in inflationary expectations among professional forecasters. Moreover, in contrast to the retrospective forecasts of Cecchetti (1992) and Hamilton (1992), we are able to discern the forecasts that were actually made in real time using these sources.

(Open Market Policy Conference files, box 1438, folder 1, January 4, 1933). For example, Governor Black of Atlanta stated in that meeting that “he was greatly impressed by the dangers of unsound inflationary proposals.” In fact, according to Alan Meltzer, during the Roosevelt administration, “the Federal Reserve played a subsidiary role—the backseat” (Meltzer, 2007, p. 415). The Federal Reserve took few policy actions in the spring of 1933, and changes in the system’s portfolio of government securities were essentially a response to decisions by President Roosevelt and the Treasury. Among other things, the president and the Treasury decided upon the plan to reopen banks after the panic, the country’s gold policy, and the dollar exchange rate (Meltzer, 2007, p. 421—422).

These are the same five forecasters analyzed by Romer (1990) in her study of the effects of uncertainty in the aftermath of the Great Crash of 1929. The Harvard Economic Society’s *Weekly Letters*, one of the forecasters used by Romer, was absorbed by the Harvard Economic Society’s magazine, *The Review of Economic Statistics*, beginning in 1932. *Business Week* is primarily a news magazine, but it occasionally provided forecasts. As such, we treat it as both a forecaster and a news magazine, though its forecasts are more sporadic than the other sources.
Before discussing the results, it is useful to examine how contemporary business analysts formulated their forecasts. They did not perform sophisticated statistical analyses nor did they conduct widespread surveys to gauge consumer or business expectations. Moreover, they did not assign numerical estimates to their forecasts. Instead, they forecasted general trends, based on whatever evidence—new policy developments, perceptions of market sentiment, data—they had at their disposal. As an illustrative example, consider The Review of Economic Statistics, which focused on two main pieces of information in formulating their forecasts: (1) new policy proposals and (2) three data series. The three data series they analyzed in each issue were a speculation index (a stock market index reflecting the prices of all listed stocks), a business index (a measure of bank debits in 241 cities outside of New York City) and a money index (rates on short-term money). For instance, in the following excerpt, The Review of Economic Statistics illustrates how the co-movements in these data series can generate a forecast: “When business is depressed, a continued upward movement of Curve A (the speculation index) and a continued decline of Curve C (rates on short-term money) would forecast an upturn in business.” In addition, they incorporated the likely effects of new policy developments into their forecasts. For example, during the second quarter of 1933, Roosevelt’s promise to raise prices factored heavily into their inflation forecasts. Thus, though contemporary business analysts did not rely on sophisticated statistical techniques to formulate their forecasts, they nonetheless made informed predictions, based on market sentiment, new policy proposals, and any relevant data series they deemed appropriate.

Table 2 summarizes the main results. All five forecasters predicted inflation, by some point, during the second quarter of 1933. Moreover, these inflationary forecasts were a direct result of Roosevelt’s actions and statements. On April 19, in response to signals from the Administration that it would seek an inflationary course of action to fight the depression, Business Week wrote, “our forecast is an inflation which will almost precisely parallel the wartime inflation.” On April 29th, following the abandonment of the gold standard and passage in the Senate of the Thomas Inflation Amendment, The Magazine of Wall Street predicted, “We Move Toward Inflation.” On May 15th, in its first monthly issue since the abandonment of the gold standard and the passage of the Inflation Amendment, The Review of Economic Statistics forecasted, “It

39 “We Move Toward Inflation,” p. 3.
has rather suddenly become evident that some sort of inflation is to come.” On May 18th, Moody’s Investment Survey noted, “the feeling seems to be that higher prices and activity will in any event be forced by more direct methods.” Finally, by May 24, Standard Trade and Securities wrote, “a policy of price stimulation will be carried out.” Thus, beginning in April, business analysts were forecasting inflation and by the end of May, all five forecasters had switched toward predicting price increases in some form. Moreover, these inflationary forecasts continued into June and July.

There is, however, variation in the timing of the swing toward inflationary expectations among the forecasters. Business Week, The Magazine of Wall Street, and The Review of Economic Statistics confidently predicted inflation by mid-April to mid-May, whereas Moody’s Investment Survey and Standard Trade and Securities were initially more skeptical of the notion that Roosevelt would resort to inflation and as a result, discounted the possibility of inflation. On May 3, Standard Trade and Securities wrote, “Little need for full recourse to these extreme [inflationary] measures is ever likely to arise,” and on May 8, Moody’s wrote, “the outlook is against an inflation of currency in the near future (notwithstanding all the talk and all the “motions” of inflation).” Nonetheless, soon thereafter, these two sources switched toward inflationary forecasts and embraced the notion that inflation would materialize. By May 15, Moody’s shifted away from deflationary expectations, writing, “Whatever may be thought about inflation, deflation is at an end.” Two weeks later, on May 29, Moody’s declared that Roosevelt was committed to raising prices: “The nature of last week’s news, which included the start of Federal Reserve open market operations and the proposal to take the country off gold by statute, should make it clear that the Administration is not waverin its primary aim of securing a higher price level.” On June 15, Moody’s again referred to the “determination of the Government to raise prices” and on July 20, predicted, “the trend of prices remains upward.”

41 “The Outlook,” p. 725.
42 P. 1.
43 For example, on June 24, the Magazine of Wall Street wrote, “The American government is obviously committed to a policy of fostering a higher price level at home” (“The Trend of Events,” p. 209) and on July 15, The Review of Economic Statistics predicted, “It is now evident that not a little but a good deal of inflation is intended” (“The Experiment with Inflation,” p. 107).
45 P. 761.
46 P. 739.
47 P. 709.
48 P. 665.
49 P. 597.
Likewise, on June 21, *Standard Trade and Securities* wrote, “Further inflation…seems indicated”\(^\text{50}\) and on July 26, predicted, “the stage is set for large potential inflation of credit and currency.”\(^\text{51}\)

There is also variation in the magnitude of expected inflation, as reflected in the forecasts. Though the forecasts did not assign numerical estimates to their expectations for inflation, *The Review of Economic Statistics* notes that inflation could range from “moderate” to “wild”:

“At the time of writing, the possible future developments range all the way from the adoption by the National Administration of what we will call "moderate" measures of inflation—which, if fortune favors, may be kept under control—to the wildest currency and credit expansion. It is still conceivable that, if developments at home and abroad are favorable, the United States will return to the former gold standard at no remote date. But it is also true that the forces of inflation, once released, have a way of gathering momentum not realized by those who advocate a managed currency, and, particularly if other developments are unfavorable, may carry a country to any extreme. Where, between these two limits, inflation will go, cannot possibly be foretold at the present time.”\(^\text{52, 53}\)

In June, *Standard Trade and Securities* implicitly reveals a range of estimates by expressing a hope for controlled—rather than runaway—inflation: “The Administration intends that prices should go higher, but an orderly, gradual and interrelated rise is hoped for, rather than runaway markets.”\(^\text{54}\) On July 26, *Standard Trade and Securities* factored President Roosevelt’s objective of raising prices to their pre-depression level into their forecasts—at one point suggesting that a quick period of reflation back to pre-depression prices could be a possibility within months:

At present, the outlook is for devaluation of the gold dollar, the time method and degree being highly uncertain. Much will depend upon the rapidity with which prices rise. Thus, if the general wholesale price level, now about 68, rises in the next five months to 100, the 1926 base, it is believed that the President would then formally reduce the gold content of the dollar to the point at which it has depreciated in terms of foreign gold

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\(^\text{50}\) P. 1.

\(^\text{51}\) “Budgetary Inflation,” p. 7.


\(^\text{53}\) A month later, *The Review of Economic Statistics*, however, clarified their inflationary expectations as a result of Roosevelt’s policies and pledges: “In our issue of May 15 we pointed out that the prospect definitely was for inflation of some sort, but that the evidence then available was insufficient to justify a forecast of the extent to which it would be carried. The past month has made the situation clearer… The developments of the month, therefore, leave no reasonable doubt of the intention of the Administration to resort to distinctly inflationary measures; and this has evidently been the interpretation placed upon them by commodity and security markets.” (6/15/33, “The United States: Index of General Business,” p. 98.)

\(^\text{54}\) 6/21/33, p. 1.
exchange. Thereafter, the attempt will be made to stabilize prices at that level by expanding and contracting the volume of currency and credit.”

Thus, though the forecasters predicted inflation to materialize in some form, there was substantial uncertainty about its speed and magnitude, ranging from protracted and moderate to rapid and wild.

Moreover, these inflation forecasts informed the investment advice offered by these publications. The forecasters encouraged investors to protect their investment holdings, under the threat of inflation. Specifically, the Magazine of Wall Street encouraged its readers to buy stocks, writing, “this publication has envisioned the possibility of some degree of inflation and has recommended investment protection by means of purchase of sound and carefully selected equities—equities which would give substantial promise of appreciation either under inflation or under normal economic revival.”

Likewise, due to expectations of higher prices, Moody’s adopted similar recommendations, writing, “the Administration’s goal in the matter of the price level is, at least, a good distance ahead yet. Therefore, subject to interruptions from time to time, the outlook is for further rising stock prices over a period…Investment policy should be based on that belief. Stocks should not be sold by long term holders. Purchases for the long pull are to be recommended among carefully selected stocks.”

Lastly, in addition to their own inflationary expectations, the forecasters also made frequent references to the widespread perception among the general public that inflation was coming. Moody’s referred to the inflationary psychology among the public by writing, “Departure of this country from the gold standard, announcement by the President of his objective of price raising and finally the inflation means put at his disposal by Congress have stimulated speculative imagination and raised prices substantially.”

The Review of Economic Statistics notes “Without much doubt the prospect of inflation is now a definite factor in determining business sentiment.”

The Magazine of Wall Street wrote, “Inflationary psychology…has at this writing burst into full bloom of positive public conviction,” and directly noted the presence of “expectations of inflation.”

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57 6/5/33, p. 701.
58 5/18/33, p. 725.
That all five forecasters predicted inflation can be taken as strong evidence, alongside the other narrative evidence gathered from the historical news record, that market participants expected inflation during the second quarter of 1933. Moreover, the reports of these forecasters reveal that the switch toward inflationary expectations was a direct result of Roosevelt’s policies, actions, and statements.

3.3 Quantitative Evidence of a Shift in Inflation Expectations: A New Series on Inflationary News Coverage

The preceding two sections presented evidence from the narrative record indicating that inflation expectations changed during the second quarter of 1933. Moreover, the accounts of contemporary observers contained in the historical news record and the reports of contemporary forecasters suggest that the swing toward positive inflationary expectations occurred as early as April. In this section, we create a new data series—based on information contained in the historical news record—that allows us to pinpoint when the shift in inflation expectations occurred.

Specifically, we construct a new series that reports the number of news articles in five national news sources that contain the terms “inflation” or “inflationary.” The five national news sources that we use are the New York Times, the Wall Street Journal, the Los Angeles Times, the Chicago Tribune, and the Washington Post. Each of these newspapers is available electronically via ProQuest, permitting us to conduct a frequency keyword search for articles containing particular terms.

Most importantly, the new series that we construct allows us to identify when public interest in inflation spikes. If a radical shift toward inflationary expectations occurred, as our reading of the narrative record indicates, there should be a corresponding spike in coverage about inflation in the historical news record at the precise moment of the shift in expectations. In a sense, we are employing a mixed methods strategy of converting qualitative information contained in the historical news record into a quantitative series that we can empirically analyze.

Figure 1 displays the new series, broken down by year, from 1929-1937. It reports the aggregate number of articles containing the terms “inflation” or “inflationary” in these five national news
sources. The figure reveals a dramatic spike in news coverage about inflation in 1933: 7985 articles, compared to 1962 articles in 1932, 1034 articles in 1931, 549 articles in 1930 and 701 articles in 1929. Relative to 1932, the number of articles containing the terms inflation or inflationary increases fourfold and relative to the average of 1929-1932, increases by more than seven-fold. These results indicate that public discussion about inflation did indeed surge in 1933.\textsuperscript{62}

To identify when in 1933 the shift in inflationary expectations occurred, Figure 2 presents the results for 1933, partitioned by month. The figure reveals a dramatic spike in news coverage about inflation in April. Furthermore, the spike is consistent with our earlier findings from the historical news record and reports of contemporary forecasters. It suggests that the shift in inflationary expectations occurred in April of 1933.\textsuperscript{63}

Moreover, as is visible in Figure 2, the series maintains a high position in May, suggesting that talk about inflation remained elevated during that month, but then declines in June and July. Why did news coverage about inflation decline in those months? Based on our reading of the narrative record, the decline in the series does not reflect a decline in inflation expectations. On the contrary, the narrative accounts indicate that market participants continued to expect inflation in June and July. Thus, it would be inappropriate to interpret a decline in the series as a decline in inflationary expectations. Instead, a likely explanation for the decline is that the elevated news coverage in April and May reflects the initial shock of the Roosevelt Administration’s plans to pursue inflation. After two months of intense coverage, the shock value dissipates as market participants have had sufficient time to process the new developments.

Most notably, the data series that we construct allows us to pinpoint when inflationary expectations shifted. Thus, we are able to empirically assess the findings from our reading of the historical narrative record. The spike in the series corroborates the accounts of contemporary observers and the reports of forecasters, suggesting that inflationary expectations changed suddenly and abruptly in April 1933.

\textsuperscript{62} The increase in 1932, relative to 1931, most likely reflects the political debate about inflation during the 1932 presidential election. Nonetheless, the increase in 1932 does not come close to the dramatic spike in 1933.

\textsuperscript{63} Breaking the results down by newspaper does not alter the findings. Across all five newspapers, there is a dramatic spike in April 1933.
3.4 Inflationary News Shocks: An Event Studies Analysis

The evidence presented in the preceding sections suggests not only that inflationary expectations changed dramatically during the second quarter of 1933, but also that many events played a role in shifting inflationary expectations. In this section, we compile a list of those events. Specifically, we examine the daily historical news record to identify the dates of news shocks that were perceived to be inflationary. We then analyze their impact on financial and exchange-rate markets. In essence, we conduct an event study analysis to identify the key events that shifted inflationary expectations.  

To begin, we define an inflationary news shock as an event that provides new information that raises the prospects of inflation, in the eyes of contemporary observers. In other words, to constitute an inflationary news shock, the event must be perceived as inflationary by contemporaries.  

To identify the dates of inflationary news shocks, we read two daily newspapers—The New York Times and The Wall Street Journal. The daily news accounts offer three main benefits in assembling a list of inflationary news shocks. First, a careful reading of the news accounts, which reflect prevailing market perceptions, allows us to identify the events that were perceived as inflationary by contemporary observers.  

Second, using the daily news accounts, we can identify the precise date when news shocks reached the public. Moreover, equipped with daily data, we can then analyze the impact of these news shocks on financial markets within a less-than-24-hour window. This window is narrow enough that it reduces the chances that other shocks confound our analysis, but large enough that it gives financial markets time to process the news.  

Third, the daily news accounts allow us to separate developments that had already been anticipated from those that came as a surprise. Consider, for example, the Thomas Inflation

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64 Our approach is similar in spirit to other event studies of recent years that have analyzed the impact of monetary policy announcements on financial markets. See, for example, Chodorow-Reich (2014b), English, Van den Heuvel, and Zakrajsek (2012), Gagnon, Raskin, Remache and Sack (2010), Gilchrist and Zakrajsek (2012), Kiley (2013), Krisnamurthy and Vissing-Jorgenson (2011), Nakamura and Steinsson (2013), Swanson and Williams (2013), and Swanson (2011). For an early event study analysis, see Cook and Hahn (1989). To our knowledge, our paper is the first to conduct a comparable event studies analysis during the 1930s—and in particular, during a window of the depression.
Amendment, which was first passed by the Senate and then by the House, and ultimately signed into law by President Roosevelt. What dates represent surprise news shocks? Did all three events—the passage in the Senate, the passage in the House, and the signing into law by Roosevelt—come as a surprise? Or did passage in one body, combined with public support from Roosevelt, ensure its eventual enactment? In other words, what date really matters? Reading the historical news record allows us to get a sense of what developments were unanticipated, apart from those that had already been incorporated into market participants’ expectations. A careful examination of the historical news record, therefore, allows us to separate surprise news shocks from developments that had already been anticipated.

Thus, we read the daily historical news accounts to compile a list of inflationary news shocks. Specifically, we read the “Topics in Wall Street” section in The New York Times and the “Abreast of the Market” section in The Wall Street Journal. These sections provide in-depth, daily coverage of financial developments for readers interested in economic, business and financial news. We focus on the period from April to July 1933, the months that coincide with elevated inflationary expectations, according to the contemporary news accounts and reports of forecasters, documented in sections 3.1 and 3.2 of the paper.

Events

The historical news record identifies five inflationary news shocks: (1) the abandonment of the gold standard, combined with a pledge by Roosevelt to raise prices (April 19), (2) the passage of the Thomas Inflation Amendment in the Senate (Apr 28), (3) the announcement of open-market operations (May 24), (4) the announcement of the government’s decision to repeal the gold clause, alongside overnight news of a reduction in the rediscount rate of the Federal Reserve Bank of New York (May 26), and (5) Roosevelt’s rejection of a plan to stabilize the value of the dollar at the World Economic Conference (June 19). We consider these episodes one at a time.

Event #1: Abandonment of the Gold Standard, Combined with a Pledge by Roosevelt to Raise Prices (April 19)

On April 19, President Roosevelt ordered an embargo on all exports of gold, except those earmarked for foreign countries, effectively taking the United States off the gold standard. Simultaneously, the Administration announced that it would seek from Congress, in the form of
an amendment to the farm-relief bill, broad powers to dictate a policy of controlled inflation to raise prices.

These actions were unanticipated. On the morning that Roosevelt took the U.S. off the gold standard, *The New York Times* reported, “There was no indication that among the influential elements in the financial community there is any less hostility to ‘currency tinkering’” and *The Wall Street Journal* reported, “the President made it known that he did not favor any of the currency inflation proposals before the Senate”—statements that reflect a lack of awareness about Roosevelt’s upcoming plans to abandon the gold standard and seek inflationary powers from Congress.

The actions of April 19th were perceived as inflationary. *The New York Times* wrote that the main motivation behind the Administration’s actions was “to bring commodity prices up” and reported, “Wall Street seemed to be interested yesterday chiefly in the inflationary influences set in motion by the news from Washington. Commission houses spoke assuredly of an inflation market and rallied their followers accordingly.” *The Wall Street Journal* described the news about the administration’s plans as a potential precursor to “outright inflation.” *The New York Times* summarized the mood by noting, “Talk of inflation monopolized interest in Wall Street.”

**Event #2: The Passage of the Thomas Inflation Amendment in the Senate (April 28)**

Though the Thomas Inflation Amendment was widely discussed in the news accounts during the last two weeks of April, it was not known whether the Farm Relief Bill, containing the Inflation Amendment, would clear the Senate, causing investors to hold back until the fate of the bill became settled. On Wednesday April 26, *The New York Times* reported, “The view was expressed in some quarters that aggressive operators are unlikely to be resumed until after the fate of the Thomas inflation bill becomes known. This may explain the eagerness with which Wall Street is awaiting the final vote on the bill.” On Thursday April 27, *The New York Times* wrote, “the uncertainties of the moment, particularly those surrounding the progress of legislation in

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65 4/19/33, p. 23.
66 4/19/33, p. 2.
68 4/20/33, p. 27.
70 4/21/33, p. 25.
71 P. 21.
Washington, were uppermost in the minds of speculative operators.”

On Friday April 28th, hours before the bill was passed, *The New York Times* noted, “speculative impulses [were] largely suppressed as a result of the approaching vote in Washington on the Thomas inflation bill.” The Senate passed the bill and adjourned at 7:02 pm, after the close of the Stock Exchanges on Friday April 28.

The news of the passage of the inflation amendment was perceived as inflationary. *The Wall Street Journal* described the amendment as “embodying the Administration’s inflation program.” In addition, passage in the Senate, combined with public knowledge about the large pro-inflationary forces in the House and Roosevelt’s support for the bill, ensured that the measure would become law in the eyes of contemporaries. Indeed, after the bill cleared the Senate, *The New York Times* wrote, “the reasonable certainty of [the] passing of the measures is recognized in Wall Street.”

**Event #3: Announcement of Open-Market Operations (May 24)**

On May 22 and 23, rumors began to circulate that the government would commence open-market purchases of government securities, though the rumors could not be confirmed, with *The New York Times* reporting, “Wall Street was unable to confirm [the rumors].” However, on May 24, the Administration made a formal announcement of its intention to begin buying government securities, as provided in a provision of the Thomas Inflation Amendment which authorized purchases of up to $3,000,000,000 in government securities, at the behest of the President.

The May 24th announcement was perceived as inflationary. *The New York Times* reported, “What Wall Street described as a ‘secondary inflation market’ aroused speculative enthusiasm on all Exchanges yesterday” and *The Wall Street Journal* wrote, “Formal announcement from the Secretary of the Treasury that the Federal Reserve had been authorized to start purchase of government securities, to bring about a further expansion of credit, stimulated a return of

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72 P. 25.
73 P. 27.
75 5/1/33, p. 2.
78 5/25/33, p. 29.
Event #4: Announcement of the Government’s Intention to Repeal the Gold Clause, alongside Overnight News of a Reduction in the Rediscount Rate of the Federal Reserve Bank of New York (May 26)

Two inflationary developments appeared in the news on May 26. First, the Federal Reserve Bank of New York made an overnight announcement of a reduction in its rediscount rate of 50 basis points (from 3% to 2 1/2%). Second, Roosevelt announced his plan to repeal the gold clause in all public and private obligations, rendering unenforceable any contracts that specified payment in a fixed amount of gold, as opposed to legal tender.

These actions appear to be unanticipated. The news accounts in the days leading up to May 26 do not indicate any knowledge about these prospective events. Moreover, these actions were perceived as inflationary. In particular, the repeal of the gold clause reinforced the perception that the Administration was planning to resort to inflationary measures and would not be returning to its former gold standard. Due to these developments, The New York Times wrote that the market “was being swept by inflation fever.” Moreover, once Roosevelt announced his

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79 5/25/33, p. 2.
80 Because the rumors of the government’s open-market operations were unconfirmed until the Secretary of the Treasury’s formal announcement on May 24th, we list May 24th as the date of the inflationary news shock. Nonetheless, it is important to note that the rumors may have influenced expectations, among at least some market participants, by at most one or two days earlier.
81 Specifically, this development occurred after the close of the market on May 25th. The Wall Street Journal reports, “The announcement of the reduction in the bank rate came after the close [of the market]” (5/26/33, “Bank Rate Cut to 2 1/2,” p. 2). As a result, markets did not process the news until May 26th.
82 5/27/33, p. 19.
83 One of the forecasters, The Review of Economic Statistics, cites the developments at the end of May—the announcement by the Administration that it had authorized the Federal Reserve to begin purchasing government securities and that it planned to repeal the gold clause, alongside the reduction in the Federal Reserve Bank of New York’s rediscount rate—as justification to continue forecasting inflation in its June issue. Specifically, The Review of Economic Statistics writes, “In our issue of May 15 we pointed out that the prospect definitely was for inflation of some sort, but that the evidence then available was insufficient to justify a forecast of the extent to which it would be carried. The past month has made the situation clearer. The embargo on gold was not inconsistent with an intention to return presently to the former gold standard; but the inflation act authorizing extreme measures of currency expansion—and even authorizing devaluation of the dollar to 50 per cent of its present content—made it seem probable that permanent abandonment of the old standard was contemplated. The first step in carrying out the policy of the act was the resumption of purchase of government securities by the reserve banks. Following this, the Federal Reserve Bank of New York reduced its rediscount rate, at a time when this rate was low and there was little demand upon the commercial banks for accommodation. At the same time came the proposal (since enacted into law) to repeal the gold clause of the Act of 1900, which established the gold dollar of the then existing weight and fineness as the standard of value in all contracts, public and private. So long as this act
support for the measure, the news accounts described passage by Congress as certain.\(^{84}\)

Event #5: Roosevelt’s Message to the World Economic Conference (June 19)

On Monday June 19, Roosevelt announced to the World Economic Conference that contrary to rumors then circulating, his Administration would not support any plans to stabilize the dollar, citing internal considerations, i.e., the need to raise domestic price levels, as more important than stable exchange rates. The announcement came as a surprise. In the run-up to the announcement, speculation mounted that the deliberations of the World Economic Conference would lead to a plan for currency stabilization. For example, on June 17, the New York Times reported, “Bankers, for the most part, felt that if some plan for steadying the exchanges had not yet been settled on, it soon would be.”\(^{85}\)

Moreover, contemporary observers interpreted Roosevelt’s June 19\(^{th}\) message as inflationary. The New York Times reported, “the financial community yesterday construed President Roosevelt’s rejection of the stabilization plan as meaning that inflation was to be pursued”\(^{86}\) and The Wall Street Journal described Roosevelt’s announcement as “new evidence that the Administration is bent on bringing about a further rise in the domestic price level.”\(^{87}\)

Events that did not make the list

While a careful reading of the daily news accounts identifies the five inflationary news shocks noted above, a few well-known events did not make our list of inflationary news shocks. We consider those events here.

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\(^{84}\) For example, on May 29, The New York Times reported, “Passage is Held Certain” (5/29/33, “Gold Clause Vote Scheduled Today,” p. 22). Indeed, a few days later, on June 5, Roosevelt signed into law the Gold Standard Act, which repealed the gold clause.


\(^{87}\) 6/20/33, p. 2.
The fireside chats

Roosevelt delivered a radio address—his second fireside chat—on May 7. According to the press accounts, in the run-up to the address, market observers were eager to know how Roosevelt planned to use his new inflationary powers. While Roosevelt re-affirmed his commitment to raise prices in the address, he did not disclose additional details about how he intended to use his new powers. Moreover, because the Administration had already been pledging to raise commodity prices, beginning on April 19th, the day the Administration took the U.S. off the gold standard and announced its plan to seek broad powers from Congress to raise prices, Roosevelt’s radio address did not provide new information, in the eyes of contemporary observers. Indeed, in summarizing the reaction to the address, on May 9, The Wall Street Journal wrote, “While the President’s radio address to the country was regarded as generally constructive in tenor, it did not add anything to the country’s knowledge of what the Administration proposes to do with the powers over the currency reposed in it by Congress” and The New York Times reported, “Wall Street sought to judge the status of the president’s inflation program. Speculators were wary; they could not tell from the President’s radio address what he had in mind in the way of a definite monetary policy.” Because the daily news accounts describe Roosevelt’s May 7th radio address as failing to provide new information, this episode does not constitute an inflationary news shock.

Roosevelt delivered his next fireside chat on July 24th. This address focused on the Administration’s objectives of achieving recovery via the newly passed National Industrial Recovery Act (NIRA). Yet, similar to the previous fireside chat, the daily news accounts characterize this radio address as failing to offer new information. The Wall Street Journal reports, “The speech revealed nothing new, merely elaborating previous views expressed in Administration quarters in regard to the need of increasing purchasing power and getting people back to work.” Thus, because the news accounts describe Roosevelt’s radio address on July 24th as failing to provide new information, this episode also does not make our list of inflationary news shocks.

The passage of the NIRA

88 The first fireside chat was on March 16, 1933 and focused on banking.
90 5/9/33, p. 25.
91 7/26/33, “Market Diary,” p. 15.
The passage of the National Industrial Recovery Act was not described as inflationary by the daily news accounts. Though some features of the Act (e.g., codes designed to increase wage rates and the authorization of a large public works program, to be financed through borrowing) may have been perceived as inflationary, the actual passage of the NIRA did not trigger the same kind of inflationary enthusiasm generated in the aftermath of the passage of the Thomas Inflation Amendment, according to the press accounts. There are several potential explanations. First, market participants may have adjusted their expectations gradually over time in response to new information about the NIRA, rather than on the days the bill cleared certain legislative hurdles or became law. Second, market participants may have held off on making inflationary predictions, until the specific codes, which were not announced until later, became public knowledge. Third, some measures of the bill, such as tax increases, may have been perceived as deflationary, potentially offsetting the inflationary influences of other provisions of the bill. And fourth, though the National Industrial Recovery Act was designed, in part, to raise wages, the public may not have viewed the Act as an effective tool to raise the general price level, akin to the Thomas Inflation Amendment. Future research may be needed to sort this out. Nonetheless, because the daily news accounts do not describe the passage of the NIRA as inflationary, it does not make our list of inflationary news shocks.

Nonetheless, a crucial caveat accompanies the omission of these episodes. Though the two fireside chats and the passage of the NIRA do not make our list of inflationary news shocks, it would be difficult to argue that these events were inconsequential. Direct and repetitive communication of the administration’s objective of raising prices to their pre-depression level permitted many of the forecasters to estimate the magnitude by which prices might rise, as indicated in section 3.2 of the paper, and may have reinforced the notion that prices would rise among the general public. Moreover, the NIRA helped fuel the narrative, echoed in the historic news accounts and in the reports of contemporary forecasters, that Roosevelt was willing to experiment with bold, new measures to jumpstart recovery. Thus, even if those episodes do not

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92 The NIRA was signed into law on June 16, 1933.
93 It is, nonetheless, important to note that our reading of the daily news accounts does not identify any clear days when news about the NIRA was described as inflationary.
94 In reporting the passage of the NIRA by Congress, The Wall Street Journal suggests that this may be the case: “In the coming months, that program will be given a thorough test. The administering of the terms of the National Industrial Recovery Act and the moves of industrial groups, under its provisions, will be a most important factor stock market-wise” (6/15/33, “Market Diary,” p. 2).
95 For example, The New York Times writes that business men may “become discouraged over the many new taxes included in the National Industrial Recovery Act” (6/17/33, “Taxes and Repeal,” p. 17).
appear on our list of inflationary news shocks, those events most likely did matter in cementing the notion that a change in the macroeconomic policy regime had taken place.

**The Response of Financial Markets To Inflationary News Shocks**

Equipped with a list of inflationary news shocks, we can examine the impact of these events on financial markets—specifically, on stock and foreign exchange markets. Indeed, because we have identified the dates of these shocks and have daily data on stock prices and exchange rates, we can analyze the impact of these news shocks within a narrow window.

If higher inflationary expectations generate expectations of higher future nominal earnings and dividends, stock prices should rise. Or, alternatively, if investor psychology links higher inflation with higher stock prices, a development that raises inflationary expectations would induce investors, in an attempt to profit from subsequent price advances, to quickly buy stocks, thereby causing an immediate increase in stock prices. The narrative accounts support this latter interpretation. For example, in a May 1933 issue, *The Wall Street Journal* described “inflationary psychology as a factor contributing to the urge to buy stocks.”

Similarly, contemporary observers associated higher inflationary expectations with a depreciating dollar. The purchasing power parity (PPP) approach suggests that, once the U.S. is off the gold standard and its exchange rate is allowed to fluctuate, inflation differentials will be offset by changes in the exchange rate (unless tight capital controls are in place). Therefore, when prices in the U.S. are expected to rise faster than prices in other countries, the U.S. dollar will depreciate relative to other currencies to keep nominal prices between the U.S. and other countries relatively equal.

Table 3 displays the percentage change in the Standard’s Daily Stock Price Index and the unit change in cents in the dollar-to-pound and dollar-to-franc exchange rates surrounding the five inflationary news shocks. As is visible in the table, stock prices increase and the dollar depreciates substantially surrounding each episode, though the largest movements occurred

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97 The stock price data come from Standard Statistics Company’s *Standard Trade and Securities*. Specifically, we utilize Standard’s Daily Stock Price Index—a stock price index that reflects 90 composite stocks and that is weighted by the number of shares of each stock outstanding. The index is available at a daily frequency and is based on daily closing prices. In addition, the daily exchange rate data come from the daily issues of *The New York Times*. We report the exchange rate of the U.S. dollar against two of its major trading partners—one that was off the gold standard (Britain) and another that was on the gold standard (France).
following the abandonment of the gold standard and the announcement by the Administration that it would seek broad powers to raise prices on April 19, the overnight news of the passage of the Thomas Inflation Amendment in the Senate on April 28, and Roosevelt’s message to the World Economic Conference on June 19.  

To get a better perspective on the effects of these inflationary news shocks on financial and exchange-rate markets, we estimate the following equation:  

\[ \Delta f_t = \alpha + \beta_0 N_t + \beta_1 N_{t-1} + \epsilon_t \]

where \( \Delta f \) represents the daily change in stock prices (measured in log units) or the daily change in the dollar-to-pound or dollar-to-franc exchange rate (measured in log units) and \( N \) represents a news shock dummy that equals one on the day of an inflationary news shock. The coefficient of the contemporary news shock dummy identifies the effect of the inflationary news shock on stock prices or the exchange rate. Because we estimate the regressions at a daily frequency, this specification allows us to analyze the effects of an inflationary news shock on stock prices and exchange rates within a less-than-24-hour window. The coefficient of the lagged news shock dummy identifies any spillover effects into the following day.

The results are shown in Table 4. Specification 1 reports the results for stock prices, specification 2 reports the results for the dollar-to-pound exchange rate, and specification 3 reports the results for the dollar-to-franc exchange rate. Across all three specifications, the constant term is positive—0.002 in specification 1, 0.001 in specification 2, and 0.001 in specification 3 suggesting that stock prices were growing and that the dollar was depreciating over this period.

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98 Because we focus only on the daily impact in financial markets, we may be underestimating the effects of these events on financial markets, if market participants took more than one day to fully absorb the news or if rumors about the inflationary developments leaked earlier. For example, according to the daily news accounts, the stock market continued to process the inflationary news from April 19th into the following day—April 20th, with the *New York Times* reporting, “Talk of inflation monopolized interest in Wall Street” (4/21/33, “Topics in Wall Street,” p. 25). Indeed, on April 20th, the stock index increased by 9.5%—even larger than the increase on April 19th. Or consider another episode—inflationary news shock #3, which involved the May 24th announcement of open market operations. According to the daily news accounts (and as noted in the body of the paper), rumors began to surface, in the form of an unverified dispatch from Washington that could not be confirmed by the press, that the government would begin purchasing government securities (Source: *The New York Times*, 5/23/33, “Open-Market Operations,” p. 27). Perhaps, as a result of these rumors, stock prices increased by 3.8% on May 23. Combining the increases on April 19-20 and May 23-24 into one statistic yields 17.4% and 5.8%, respectively—much larger increases in stock prices than those noted in Table 3. A similar calculation for exchange rates also yields larger effects (33 cent and 27 cent depreciations in the dollar-pound and dollar-franc exchange rates on April 19-20 and 3.25 cent and 3.67 cent depreciations in the dollar-pound and dollar-franc exchange rates on May 23-24).

99 If the news shock occurred after the close of markets (as was the case for inflationary news shock #2), then the dummy records a value of one on the following day, the first day the markets can process the news.
though these coefficients are insignificant (p-values = 0.540, 0.375, and 0.360, respectively).

The main result from the regressions, however, is that the coefficient of the inflationary news shock dummy is large, positive, and strongly significant in all three specifications. The coefficient is 0.047 (p-value<0.001) in specification 1, 0.018 (p-value=0.002) in specification 2, and 0.022 (p-value<0.001) in specification 3, suggesting that on average an inflationary news shock caused a stock price increase of 0.047 log points and a depreciation in the dollar-to-pound and dollar-to-franc exchange rates of 0.018 and 0.022 log points, respectively, by the close of markets on the day of the shock. Converting these estimates into percent changes indicates that an inflationary news shock causes an increase in stock prices of roughly five percent and a depreciation in the value of the dollar of roughly two percent on the day of the news shock. The lag on the inflationary news dummy is also positive across all three specifications, suggesting some spillover effects into the next day, though the coefficients are smaller and insignificant at conventional levels.

The finding that an inflationary news shock raises stock prices and reduces the value of the dollar is consistent with the reports of contemporary observers. During the second quarter of 1933, the newspaper accounts made frequent references to “an inflationary flight into equities”\textsuperscript{100} and to an “inflationary purchase of speculative ordinary stocks”\textsuperscript{101}—statements that suggest a link between higher inflationary expectations and stock prices. Likewise, the widespread perception of a link between inflationary expectations and the value of the dollar, as expressed in the historic news reports, is supportive of these findings. For example, \textit{The Wall Street Journal} noted, “movements in the pound sterling will continue to be the immediate gauge of inflation prospects.”\textsuperscript{102}

Most importantly, the empirical results reveal that these news shocks had substantial and powerful effects on financial markets. The movements in financial markets—large increases in stock prices and substantial declines in the value of the dollar in foreign exchange markets—suggest that market participants reacted quickly to news about the prospects for inflation, bidding stock prices up and the value of the dollar down. The behavior of financial markets, thus, provides additional evidence that these news shocks raised inflationary expectations during the

\textsuperscript{100} \textit{The Economist}, 4/22/33, “Investment Notes: Wall Street and the Dollar,” p. 868.
\textsuperscript{101} \textit{The Economist}, 5/6/33, “Course of Equity Share Values, p. 972.
\textsuperscript{102} 6/20/33, “Revising the Outlook,” p. 2.
second quarter of 1933.  

4. **Was the Second Quarter of 1933 a Regime Shift?**

The narrative evidence—the reports of contemporary observers, the forecasts of contemporary business analysts, the newly constructed series on inflation news coverage, and the event studies analysis—indicates that inflation expectations changed dramatically during the second quarter of 1933. But was this a regime shift? Temin and Wigmore (1990), in their seminal contribution, argue that a pro-inflation regime shift explains why the recovery from the depression began in April 1933. Yet, they make little use of contemporaneous narrative sources to document that a regime shift did indeed occur. As a consequence, a logical question to ask is whether the narrative accounts are consistent with this interpretation. According to the narrative evidence, did a regime shift occur during the second quarter of 1933?

Temin and Wigmore rely on the framework used by Sargent (1983) to characterize the events of the second quarter of 1933 as a regime shift. According to Sargent, a regime shift requires an abrupt change in government policy—in the rule or strategy for taking actions. Sargent also clarifies the distinction between isolated actions, which exist within the context of a given strategy, and a change in the general strategy; only the latter constitutes a regime shift. Temin and Wigmore (1990) apply this framework to analyze the end of the depression, arguing that Roosevelt implemented a dramatic change in the policy regime. Moreover, both Sargent

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103 In addition, there is suggestive evidence in the historical narrative record that prior to each of these news shocks, inflationary expectations may have been on the verge of subsiding. We describe this evidence in Section A1 of the Appendix. This narrative evidence leads us to conclude that these news shocks were critical in sustaining positive inflationary expectations from April to July. It appears that Roosevelt, intentionally or unintentionally, intervened to reassert his Administration's commitment to raise prices, at those precise moments when inflationary expectations, as reported in the press, showed signs of subsiding. Please see Section A1 of the Appendix for in-depth details.

104 “It would require a change in the policy regime: there must be an abrupt change in the continuing government policy, or strategy” (p. 42).

105 “It will be useful first to expand a little more generally on the distinction between the effects of isolated actions taken within the context of a given general strategy, on the one hand, and the effects of choosing among alternative general strategies or rules for repeatedly taking actions, on the other. The latter choice I refer to as a choice of regime. The values of government expenditures and tax rates for one particular quarter are examples of actions, while the rules, implicit or explicit, for repeatedly selecting government expenditures and tax rates as functions of the state of the economy are examples of regimes” (p. 47).

106 “[Arresting the Great Contraction] required a change in the policy regime, that is, in the rule for taking actions. There had to be an abrupt change in the continuing government policy, or strategy, for determining the money supply, government expenditure, and the exchange rate that was sufficiently binding to be widely believed” (p. 486).
(1983) and Temin and Wigmore (1990) emphasize that the immediate effects operate through altered market expectations.\textsuperscript{107}

The above framework defines a regime shift as an abrupt change in the continuing government policy, strategy, or rule for taking actions. Moreover, because the immediate effects of the regime shift occur through rapidly revised expectations, market participants must be aware of the regime shift and expectations must adjust accordingly. Thus, there are two necessary conditions for a regime shift: (1) there must be a widespread perception among contemporary observers of a dramatic change in the rule or strategy for taking policy actions and (2) market expectations must change dramatically.

According to the narrative record, were these two conditions met? A reading of the historical news accounts reveals that the answer to this question is a resounding yes. During the second quarter of 1933, Roosevelt’s policy statements and actions shocked market participants. Contemporary observers considered them to signal a sharp break in the government strategy or rule for taking actions. For example, the following passage from the \textit{Economist} reflects the widespread contemporaneous perception of a dramatic and sudden break from orthodox policy:

\begin{quote}
There is no record, until the present year, of a Government which has deliberately planned an inflation of credit or currency not as a means of raising revenue but with the conscious aim of raising the price level … The canons of orthodoxy were broken as completely as precedent was shattered. Having demonstrated his ability to balance the ordinary Budget, the President has now instituted enormous extraordinary expenses which are to be met by borrowing. The dollar has not so much been allowed to fall after a heroic struggle to maintain its value as encouraged and egged on to depreciate. The printing of paper money, the familiar symbol of Governmental insolvency, has not been rigidly forsworn, but held over the markets as an ultimate threat. The Administration has taken powers of compulsion over industry, not in order to moderate the rise in costs of production, but by raising wages and limiting the hours of work deliberately to increase them as rapidly as possible. In these ways the wind has been sown.\textsuperscript{108}
\end{quote}

The narrative accounts make it clear that market participants interpreted the events of the second quarter of 1933 as an abrupt change in the government rule or strategy for taking policy actions (condition 1).

\textsuperscript{107} For example, Temin and Wigmore (1990, p.484) write, “Actions were needed to establish the new regime and its credibility, but Sargent argued that the immediate effects were through rapidly revised expectations.”

\textsuperscript{108} \textit{Economist}, 7/15/33, “Sowing the Wind.” pp. 113—114.
Moreover, this perception of a sharp break with previous policy produced a dramatic change in expectations. As documented in Section 3, inflation expectations changed abruptly during the second quarter of 1933 due to Roosevelt’s statements and policy actions. Furthermore, market observers were euphoric that action was finally being taken to end the depression and raise prices to their pre-1929 level. The *Economist* described the “psychological optimism” that prevailed throughout the nation:

> There is a sense, both at Washington and throughout the country, of confidence, almost amounting to elation, that action will be taken to grapple with the forces that have brought about the depression.\(^{109}\)

In addition, because four years of deflation and depression made the two synonymous in the eyes of many contemporary observers, the notion that prices would rise was accompanied by hopes of an end to the depression and therefore, expectations of higher income and output growth. As a result, the perception of an abrupt break in the government rule or strategy was accompanied by a sudden shift in market expectations (condition 2). The narrative accounts thus indicate that a regime shift did indeed occur.\(^{110}\)

Furthermore, Figure 3 complements this qualitative evidence from the historical news record with four new data series constructed from the historical accounts of five national news sources: the *New York Times*, the *Wall Street Journal*, the *Los Angeles Times*, the *Chicago Tribune*, and the *Washington Post*. Each series reports the number of news articles containing a particular combination of words: (1) Roosevelt and inflation, (2) Roosevelt and deflation, (3) Hoover and inflation, and (4) Hoover and deflation.\(^{111}\) These series are analogous to the inflation series constructed in section 3.3 (and depicted in Figures 1 and 2). Figure 3, however, partitions the results for these four new series by quarter from 1929 to 1933, as opposed to by year or by month.

The construction of these series allows us to identify when, if at all, a regime shift occurred. Because a regime shift involves a sudden change in the continuing government policy, strategy or rule for taking actions that produces a dramatic change in market expectations, the news accounts


\(^{110}\) Actions also bolstered the regime shift. Sargent (1983) and Temin and Wigmore (1990) emphasize the role of actions in establishing the credibility of a regime shift. During the second quarter of 1933, key actions—such as those identified in Section 3.4—clearly reinforced the regime shift.

\(^{111}\) In searching for articles, we treat the terms inflationary and deflationary as synonymous with inflation and deflation, respectively.
should reflect a spike in coverage linking Roosevelt with inflation, if a regime shift did indeed occur in 1933.

As is visible in the figure, there is a dramatic spike in news articles containing the words Roosevelt and inflation during the second quarter of 1933, but no corresponding spikes in the other three series. The peak in the Roosevelt-Inflation series is nearly seven times larger than the peak in any of the other series, at any other period between 1929 and 1933. This reveals that the news accounts linked inflation to the Roosevelt Administration—a strong signal that the Roosevelt Administration was indeed perceived, in the eyes of the general public, as an inflationary macroeconomic policy regime shift. Most notably, the spike in the series indicates that the regime shift occurred during the second quarter of 1933, corroborating the qualitative evidence from the historical news record.

5. The Macroeconomic Effects of the Regime Shift

Given that a regime shift occurred, what were its effects? In this section, we present an empirical framework to tease out the effects of the regime shift.

This is important for a few reasons. First, identifying the effects of a regime shift, like identifying the effects of a fiscal or monetary policy action, is a valid empirical macroeconomic question in its own right. Second, answering this question sheds light on a significant historical episode: the surge in output growth in the spring of 1933, following other contractionary developments, including a banking crisis, earlier in the year.\(^\text{112}\)

Indeed, this extraordinary behavior of output in 1933 relates to the early debates in macroeconomics between Friedman and Schwartz (1963) and Romer and Romer (1989) regarding the effects of monetary disturbances. Based on a careful reading of the historical, narrative record, Friedman and Schwartz identify four relatively exogenous reductions in the supply of money and note that each of these episodes preceded large declines in output. On this basis, they conclude that changes in the money supply cause movements in output. In a subsequent study, however, Romer and Romer (1989) reevaluate the work of Friedman and Schwartz. Though they praise Friedman and Schwartz’s contributions as groundbreaking, they

\(^{112}\) In recent work, Hausman (2013) emphasizes the fact that recovery in the spring of 1933 came in the direct aftermath of a major financial crisis.
argue that Friedman and Schwartz may have suffered from unintentional bias in their
identification of monetary shocks, primarily because their definition of an exogenous shock—an
unusual movement in money—lacks precision and thereby, leaves too much room for personal
discretion. Romer and Romer identify two candidate episodes, 1933 and 1941, not included by
Friedman and Schwartz that underscore these concerns. In both episodes, output growth surged
in the aftermath of contractionary monetary developments—a finding that would seemingly be at
odds with Friedman and Schwartz’s central argument. As a result of these concerns, Romer
and Romer (1989) conduct a new test—one that is modeled in the spirit of Friedman and
Schwartz’s narrative approach, but improves on their methodology by using a more precise
definition to identify relatively exogenous monetary shocks from postwar U.S. history. They find
that monetary shocks do indeed have substantial real output effects, which is in line with the
broad conclusions of Friedman and Schwartz.

Nonetheless, a lagging question remains: if financial crises and contractionary monetary shocks
reduce output, why then did output grow so strongly during the second quarter of 1933? The
findings of this paper, together with those of Temin and Wigmore (1990) and Eggertsson (2008)
provide an answer: a regime shift boosted output growth in the second quarter of 1933. This
suggests then that the expansionary effects of the regime shift counteracted the contractionary
effects of the financial crisis and other monetary shocks earlier in the year.

For example, regarding 1933, Romer and Romer (1989) write: “1933. A massive wave of banking
failures began in the final months of 1932 and worsened in early 1933. In addition, expectations that
Roosevelt might devalue or abandon the gold standard on taking office caused large gold outflows and led
to an increase in the discount rate from 2.5 to 3.5% in February to defend gold. By February banking
conditions had degenerated into panic, causing widespread bank failures. The failures were in turn followed
by the declaration of bank holidays in many states. On his inauguration in March, Roosevelt imposed a
nationwide banking holiday—a step that, in Friedman and Schwartz’s view, was extraordinarily disruptive
of the financial system and much more drastic than was needed. (Friedman and Schwartz 1963, pp. 324-32,
349-50, 389-91, 421-34.) The events of these months have the features of what under different
circumstances Friedman and Schwartz would be willing to describe as a monetary shock, or indeed as
several shocks. At other times widespread banking failures and panic conditions much milder than those of
early 1933 are considered to be monetary disturbances. The gold outflow and the increase in the discount
rate to defend the gold standard despite the depressed level of real activity clearly represent unusual
monetary developments, similar to those of the fall of 1931. And the banking holiday shares with the
episodes emphasized by Friedman and Schwartz the feature that it appears to be a major contractionary step
arising from an inadequate understanding of the workings of the financial system. In sum, it seems
extremely plausible that if the Depression had continued to worsen in 1933, Friedman and Schwartz would
have characterized the events of January-March 1933 as a fifth “crucial experiment” (pp. 128-129).

The literature on the contractionary effects of financial crises and declines in the money supply is
voluminous. For monetary shocks, see Friedman and Schwartz (1963), Richardson and Troost (2009),
Romer and Romer (1989, 2004), and Velde (2008). For financial crises, see Cerra and Saxena (2008),
Thus, in estimating the impact of the Roosevelt regime shift on output, it is crucial to develop a framework that controls for the effects of the banking crisis and other monetary shocks. Specifically, we construct an empirical model based on the framework developed in Bernanke (1983), that captures the relationship among three variables: money, financial crisis indicators, and output. We then augment this model by including a dummy variable in the months that coincide with the Roosevelt regime shift. The dummy variable captures the effects of the regime shift, after controlling for the effects of financial crises and other monetary developments.

Indeed, the model that we construct mirrors the framework used by Bernanke (1983), in his seminal study on the causes of the Great Depression. To tease out the nonmonetary effects of the financial crisis from the effects of changes in the supply of money, Bernanke estimates the following equation:

$$Y_t = \sum_{i=1}^{2} \beta_i Y_{t-i} + \sum_{i=0}^{2} \alpha_i M_{t-i} + \sum_{i=0}^{1} \delta_i DBANKS_{t-i} + \sum_{i=0}^{1} \phi_i DFAILS_{t-i} + \epsilon_t$$

(1)

where $Y$ denotes the growth rate of industrial output (relative to its exponential trend), $M$ represent monetary shocks (“M1 shocks” or “price shocks”), and DBanks and DFails are financial crisis proxies that measure the first difference of deposits of failing banks and the first difference of liabilities of failing businesses, respectively. The regressions are estimated at a monthly frequency from January 1919 to December 1941. The monetary shock variables are designed to measure the effects of nominal disturbances, while the financial crisis proxies are designed to tease out the nonmonetary effects of the financial crises, after controlling for the effects of monetary shocks. Because the financial crisis proxies and the monetary shock variables are large and statistically significant, Bernanke concludes that the financial crises had substantial nonmonetary effects on output, apart from the monetary effects identified by Friedman and Schwartz. Based on the findings from his model, Bernanke argues that the nonmonetary effects of the financial crises played a crucial role—alongside monetary forces—in causing the Great Depression.

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115 In his 1983 study, Bernanke argues that the financial crises of the Great Depression raised the costs of credit intermediation and thereby, reduced output through a nonmonetary channel. His work remains one of the leading studies on the causes of the Great Depression.

116 M1 shocks are the residuals from a regression of the rate of growth of M1 on four lags of the growth rates of industrial production, wholesale prices, and M1 itself. Price shocks are defined symmetrically, using wholesale prices. See Bernanke (1983, p. 268) for more details.

117 Though Bernanke’s analysis focuses on a different channel to account for the output losses of 1929-1933, his work ultimately builds on the Friedman-Schwartz monetary analysis of the Depression.
To identify the effects of the Roosevelt regime shift, apart from the other developments of 1933, we augment Bernanke’s original model to include a regime shift dummy. We estimate the following regression:

\[ Y_t = \sum_{i=1}^{2} \beta_i Y_{t-i} + \sum_{i=0}^{2} \alpha_i M_{t-i} + \sum_{i=0}^{1} \delta_i DBANKS_{t-i} + \sum_{i=0}^{1} \phi_i DFAILS_{t-i} + \lambda R_t + \epsilon_t \] (2)

where \( R_t \) represents a Regime Shift Dummy that equals one in the months that coincide with the Roosevelt regime shift. We construct the Regime Shift Dummy based on the narrative evidence presented in Section 3. The narrative evidence is clear in assigning the regime shift to the period between April and July 1933—that is, when there was a widespread perception of an imminent rise in inflation among market participants.

Our empirical strategy contains several advantages. First, by augmenting Bernanke’s specification with a regime shift dummy, we are able to tease out the effects of the Roosevelt regime shift, while controlling for the monetary and financial crisis effects highlighted by Friedman and Schwartz (1963) and Bernanke (1983) as crucial causes of the Depression.

Second, adding a regime shift dummy further clarifies the empirical relationships identified in Bernanke (1983). If Temin and Wigmore (1990), Eggertsson (2008), and Sargent (1983) are correct in arguing that regime shifts have substantial real output effects, then failing to incorporate the effects of the Roosevelt regime shift could raise concerns of omitted variable bias in Bernanke’s original empirical specification. Are Bernanke’s results sensitive to the dramatic developments of 1933? Do the original relationships hold after controlling for the effects of the regime shift? Adding a regime shift dummy addresses these potential concerns.

Third, Bernanke (1983) explicitly notes that his model does not provide a complete explanation of the Great Depression and directly calls for future research to make progress in identifying other causes of output movements between 1929 and 1933.\(^\text{118}\) The narrative evidence indicates that a regime shift played a role in ending the Depression. Thus, the inclusion of a regime shift dummy

\(^{118}\) Specifically, Bernanke writes “It should be stated at the outset that my theory does not offer a complete explanation of the Great Depression” (p. 258) and later clarifies, “comparison of financial to totally nonfinancial sources of the Great Depression, such as those suggested by Temin, is left to future research” (p. 268).
dummy enriches Bernanke’s original specification by incorporating an additional channel to explain the turnaround recovery during the second quarter of 1933.\(^{119}\)

Table 5 displays the results. Columns 1-3 use M1 shocks while columns 4-6 use price shocks. Also, columns 1 and 4 report the original Bernanke (1983) specifications, without the regime shift dummy, whereas columns 2, 3, 5, and 6 include the dummy.\(^{120}\) Though there are subtle changes with the inclusion of the regime shift dummy, Bernanke’s main results still hold. Contemporaneous monetary shocks (M1 shocks and price shocks) and one of the financial crisis proxies, DBanks, are strongly significant in all regressions. This suggests that the financial crises of the Great Depression had nonmonetary effects, apart from the purely monetary forces highlighted by Friedman and Schwartz. Thus, these results support Bernanke’s original interpretation.\(^{121,122}\)

The key result, however, is regressions 2 and 5, which add the regime shift dummy. In both regressions, the coefficients of the regime shift dummy are large, positive, and strongly significant. The coefficients of the regime shift dummy are 0.0697 (t-stat = 5.17) in regression 2 and 0.0385 (t-stat = 2.73) in regression 5. This suggests that during the months that coincided

\(^{119}\) Though our empirical strategy has many strengths, one might wonder whether endogeneity concerns are an issue with our specification. Indeed, the issue of whether money or financial crises affect output, rather than vice versa, has been extensively debated. See, for example, Friedman and Schwartz (1963) and Romer and Romer (1989, 2004). Bernanke directly addresses endogeneity concerns in his paper. He argues that the historical evidence indicates that failures of banks are generally not caused by anticipations about future output, thereby alleviating concerns about endogeneity, at least in the case of financial crises (see pages 271-272). Nonetheless, even setting these issues aside, what is most relevant for our purposes is the question: how did output growth differ from normal during the months that coincided with the Roosevelt regime shift? Our empirical specification allows us to identify the extent to which output growth differed from normal, given the behavior of money and financial crisis indicators. Most importantly, the narrative evidence that is documented in section 5 of this paper indicates a causal link between the regime shift and output growth during the second quarter of 1933. Thus, regardless of concerns about the relative endogeneity of financial crises and changes in the money supply, the coefficient on the regime shift dummy provides a plausible estimate of the impact of the Roosevelt regime shift on output growth.

\(^{120}\) Columns 3 and 6 also include the dollar exchange rate, in addition to the dummy, which we discuss in detail in the next section.

\(^{121}\) The coefficient estimates for regressions 1 and 4 in Table 5 differ slightly from those in Bernanke (1983). The data series used by Bernanke on industrial production and wholesale prices have undergone revisions since the publication of Bernanke’s study. For accuracy, the coefficient estimates that we report in Table 5 reflect the most recent set of revisions and thus differ slightly from the coefficients reported in Bernanke (1983). Nonetheless, the basic findings remain intact.

\(^{122}\) The subtle changes with the inclusion of the regime shift dummy, nonetheless, merit attention. Though DBanks is still statistically significant in all regressions, the lag on DBanks is no longer significant at the p<0.05 level with the inclusion of the regime shift variable, as it was in regressions 1 and 4, nor is the lag on DFails still statistically significant, as it was in regression 1. In addition, though contemporaneous price and money shocks are still strongly significant, the lag on the “price shock” is no longer significant at the p<0.05 level with the inclusion of the regime shift dummy, as it was in regression 4.
with the Roosevelt regime shift, output growth was higher by 4 to 7 percentage points than what would have been predicted, given the normal behavior of money and financial crisis indicators from 1919 to 1941. Moreover, adding the regime shift dummy increases the explanatory power of the regressions. The R-squared increases from 0.46 to 0.51 in the specification with M1 shocks and from 0.48 to 0.5 with price shocks—a large improvement in the fit of the model given that the regime shift covers only one quarter in a sample period of more than twenty years. Together, this suggests that the Roosevelt regime shift contributed significantly to the rise in output growth during the second quarter of 1933.

Moreover, given the results reported in Table 5, the estimated four-month cumulative impact of the regime shift on industrial production is 50.4% for regression 2 and 27.4% for regression 5.123 Since industrial production grew by 57% between March and July 1933,124 this indicates that the Roosevelt regime shift can account for between 48 and 88 percent of the recovery over this period. Interestingly, these estimates are similar to those of Eggertsson (2008). In his calibration of a dynamic stochastic general equilibrium model of the U.S. economy from 1929 to 1937, Eggertsson concludes that the regime change can account for 79 percent of the recovery in output in the period 1933-1937. Thus, the results from our empirical framework complement those of Eggertsson and provide additional support to the notion that a regime shift drove the initial wave of recovery during the second quarter of 1933.125

5.1 Could other forces or policies have driven the recovery?

The preceding results indicate that output growth surged during the second quarter of 1933, relative to what would have been predicted, given the normal behavior of money and financial crisis indicators. We attribute this output boom to a pro-inflationary regime shift. Yet, one concern with the preceding empirical specification could be that a dummy variable that equals one in the months that coincided with the Roosevelt regime shift picks up the effects of the

123 The cumulative impact over four months includes the direct contemporaneous effects of the regime shift in each month, along with the effects working through the behavior of lagged output. For example, the impact in month 1 is the Roosevelt regime shift dummy, \( \lambda \). The impact in month 2 is \( \lambda + \beta_1 \lambda \), the Roosevelt regime shift dummy, \( \lambda \), plus the impact in month 1 times the coefficient on lagged output, \( \beta_1 \lambda \). The impact in month 3 is \( \lambda + \beta_1(\lambda + \beta_1 \lambda) + \beta_2 \lambda \), the Roosevelt regime shift dummy, \( \lambda \), plus the impact in month 2 times the coefficient on lagged output, \( \beta_1(\lambda + \beta_1 \lambda) \), plus the impact in month 1 times the coefficient on the second lag of output, \( \beta_2 \lambda \), and so on.

124 Source: FRED series INDPRO, seasonally adjusted.

125 Eggertsson, however, focuses on the recovery from 1933-1937, whereas we focus on the turning point in the second quarter of 1933.
regime shift, along with any other concurrent forces or policies that may have played a role in stimulating the recovery. Thus, it is natural to wonder whether the surge in output growth might be the result of other forces or policies.

5.1.1 Abandoning the Gold Standard

One obvious possibility is the abandonment of the gold standard, which coincided with the swing from contraction to expansion in April 1933. Could the direct effects of devaluation and abandonment of the gold standard have driven the rapid recovery? Several pieces of evidence indicate that the direct effects of devaluation are unlikely to be the main source of the rapid recovery.

First, international trade was a small share of the U.S. economy—according to the BEA, total trade (exports plus imports) was 7.3 percent of U.S. GDP in 1933.\(^ {126}\) This means that any potential terms-of-trade effects of the U.S. departure from the gold standard and consequent dollar devaluation—through an increase in exports and a decline in imports—cannot have had a very large effect on the economy. Furthermore, though the trade deficit should have shrunk in 1933, it actually widened (from 11.5 billions of dollars in 1932 to 12.8 in 1933).\(^ {127}\)

Second, the boom in output growth in the months that followed the U.S. abandonment from the gold standard was unusual, relative to other country experiences. Table 6 presents the percentage change in industrial production in the four months after abandonment of the gold standard across a range of countries. The data come from the League of Nations Statistical Yearbook.\(^ {128}\) The table shows that the United States is a huge outlier. According to the League of Nations, industrial production in the U.S. increased by 69.5%, whereas in other countries, it declined by 3.4% on average.\(^ {129}\) To put this in comparison, the country that ranks second in terms of output growth is the United Kingdom, with a percentage increase of only 9%—a more than sixty percentage point difference with the United States. This huge divergence between the United

\(^{126}\) Source: BEA NIPA table 1.1.6.

\(^{127}\) Ibid.

\(^{128}\) See the note to Table 6 for further details.

\(^{129}\) The industrial production data from the League of Nations differ slightly from the Federal Reserve’s industrial production data for the United States. According to the Federal Reserve’s G.17 Statistical Release, U.S. industrial production increased by 57% from March to July, whereas according to the League of Nations Statistical Yearbook, U.S. industrial production increased by 69.5%. Though there is some discrepancy between these two sources, what is most important is that both sources indicate dramatic increases in industrial production during the second quarter of 1933.
States and the rest of the world suggests that something else, beyond the direct effects of devaluation and abandonment of the gold standard, drove the U.S. recovery.

Third, contemporaries were aware of the uniqueness of the rapid recovery in the U.S., in comparison to other countries’ post-devaluation experiences, and attributed the strong recovery to the expansionary regime adopted by the Roosevelt Administration. For example, in May 1933, the *Economist* reported that public opinion abroad began to shift in favor of inflation, as a result of the perceived successes of Roosevelt’s policies:

> It was hardly to be expected that President Roosevelt could, as if with a magician’s wand, produce such impressive evidences of recovery without convincing many people that he has discovered the sovereign cure for all our ills. In his own country he is carrying all before him. Monday’s debate in the House of Commons showed that there is an impressive body of opinion in this country prepared to follow in his footsteps, and it is only natural that each fresh appearance of success should attract new followers. The Dominions and the Scandinavian countries are already half-converted. Only in the nations of Continental Europe is there a total lack of enthusiasm for a policy of monetary expansion—a body of dissent rendered formidable by its recent and thorough familiarity with the subject. It is thus no exaggeration to say that opinion in at least half of the world is moving rapidly towards acceptance of deliberate inflation.\(^{130}\)

Moreover, in July 1933, the editors of the *Economist* wrote an article that compared the British devaluation in September of 1931 with the recent U.S. devaluation. The editors described the more rapid U.S. recovery and attributed this difference in economic performance between the two countries, in part, to the elevated inflation expectations in the United States:

> When the United States went off gold … the depreciation of the dollar gave rise to fear—or hope—of inflation, which made people anxious to transfer their money into goods. The resultant increase in the demand for goods tended to raise prices and increase the volume of goods moved. On the other hand, when Great Britain went off the gold standard there was no hoarded money within the country, and the temporary rise in prices which set in immediately after the depreciation was not maintained.

Most importantly, the editors of the *Economist* attributed the heightened inflation expectations and the more robust U.S. recovery to the different set of policies pursued by the two countries in the immediate aftermath of abandoning the gold standard:

> The American authorities … maintained and intensified a policy of monetary expansion immediately after the country had left the gold standard. This difference in the policy

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pursued subsequent to the depreciation naturally produced a different effect on general business conditions and price relations. The relative self-sufficiency of the United States, which is much greater than that of Great Britain, gave the Federal authorities in Washington and New York a much greater freedom to launch an expansionist policy than the authorities in London could safely initiate. Conscious of this freedom, the Roosevelt Government has adopted a programme designed to promote recovery by monetary as well as by other means...It is important to remember these differences, for they are a warning against the natural tendency to expect more or less the same consequences from the depreciation of the dollar as those which followed from the depreciation of sterling. The differences in the basic conditions and in the subsequent policy are so important that the resultant position may be vastly different in the two cases.\textsuperscript{131}

This narrative case study of the U.S. and British post-devaluation experience seems to corroborate the broader trends noted in Table 6—that the rapid U.S. surge in output was unusual, relative to other country experiences. Furthermore, as is clear in the above accounts, contemporaries attributed the robust U.S. recovery, at least in part, to the expansionary set of measures adopted by Roosevelt and to the heightened inflation expectations. Thus, the narrative evidence provides further support to the notion that a pro-inflation regime shift—rather than the direct effects of devaluation—drove the recovery.\textsuperscript{132}

Fourth, adding the dollar exchange rate vis-à-vis the British pound as an additional explanatory variable in our empirical framework does not change any of the results presented above. Regressions 3 and 6 confirm that, after including this proxy for the direct effects of U.S. exit from the gold standard, the coefficients of the Regime Shift Dummy are still large, positive, and significant. In addition, the coefficient for the dollar exchange rate is statistically insignificant in both regressions.


\textsuperscript{132} One potential concern may be that suspension occurred at different timings for different countries. Because the U.S. abandoned the gold standard after a longer period of contraction, in comparison to the wave of countries that abandoned the gold standard in the fall of 1931, one might wonder whether the U.S. recovery was more rapid because the U.S. had fallen further and for a longer period. Indeed, the \textit{Economist} article described above that compares the U.S. and British devaluations echoes this concern. However, one piece of evidence suggests otherwise—and in particular, a piece of evidence not available to contemporary observers in 1933. Countries that suspended the gold standard after March 1933 also did not grow rapidly in the immediate aftermath of suspending. Table 6 contains four countries that suspended after the U.S.—none of which experienced a recovery even remotely comparable to the rapid U.S. boom: Belgium (3.2\% increase in industrial production), France (6.1\% decline), Italy (5.6\% increase), and Poland (2.8\% increase). This suggests that the U.S. recovery in the four months following the suspension of the gold standard was truly unusual, relative to other countries’ experiences, even after taking into account varying dates of suspension.
Fifth, in a recent, excellent study of the U.S. recovery in the spring of 1933, Hausman (2013) concludes that, by raising farm incomes, devaluation directly stimulated demand in agricultural states, helping to boost output growth in 1933. Yet, Hausman notes that the positive impact of devaluation on farm incomes via higher prices for farm goods would likely be counteracted by the negative impact of higher prices for goods on urban consumers. As a result, Hausman concludes that another channel, beyond the direct effects of devaluation, must explain the overall recovery. He proposes that devaluation, by raising farm prices, signaled higher inflation and thereby, stimulated the economy via increased inflation expectations. This channel is consistent with the findings of our study that a sudden change in inflation expectations drove the recovery from the Depression.\footnote{Hausman (2013) considers two possible channels through which devaluation could have stimulated an overall recovery: (1) by raising farm prices, devaluation signaled higher inflation and (2) devaluation eroded farm debt burdens and thereby improved rural bank health. Hausman, however, finds little evidence in support of the second channel.}

Together the evidence suggests that the direct effects of devaluation are insufficient to explain the rapid recovery during the second quarter of 1933. Instead, the findings of this paper are consistent with the argument of Temin and Wigmore (1990) that the abandonment of the gold standard played a crucial role in the recovery, perhaps in part because devaluation had direct effects, but much more importantly, because devaluation signaled a new policy regime.

5.1.2 Could something else have driven the recovery?

The preceding evidence suggests that the direct effects of devaluation cannot account for the rapid recovery. But could some other, unknown force—beyond the regime shift—have driven the recovery? To answer this question, we gather evidence from Friedman and Schwartz (1963) and the historical narrative record.

In their *Monetary History of the United States*, Friedman and Schwartz (1963) claim that the “economic recovery in the half-year after the panic owed nothing to monetary expansion.”\footnote{Friedman and Schwartz (1963), p. 433.} After correcting for statistical discrepancies caused by a shift in the treatment of restricted and unrestricted deposits in unlicensed banks, they conclude that the money stock rose only slightly after March 1933.\footnote{Friedman and Schwartz argue that the drastic decline in the recorded money stock in March 1933 and the consequent apparent rise throughout the rest of the year are “statistical fiction”: restricted and} Yet, despite small changes in the money supply, the U.S. economy
experienced four months of extraordinary growth in the spring of 1933. Figure 4 shows that, according to the Federal Reserve, industrial production rose 57 percent from March to July. Department store sales, in Figure 5, increased nearly 20 percent in the same period. Prices also rose, though less remarkably—Figure 7 shows that wholesale prices (PPI) rose 14 percent while consumer prices increased 4 percent from March to July. This expansion in total nominal spending without a commensurate growth in the money supply indicates that any explanation of the recovery should be consistent with an increase in the velocity of money in circulation. This can be easily confirmed using the accounting identity MV=PY. With the price level (P) little changed during this period and the money supply (M) not increasing in line with the expansion in output (Y), there must have been a corresponding increase in velocity (V). Friedman and Schwartz also validate this interpretation by pointing to the reduction in the public’s money balances relative to income (an increase in the velocity of money) as an important contributor to the recovery after the banking panic (pp. 433—464).

Thus, the evidence suggests that the force driving the increase in the velocity of money also explains the rapid recovery. What then spurred this rapid increase in velocity? The narrative record provides a clear answer: a sudden change in expectations. The editors of The Economist attributed the rapid recovery to the “enhanced velocity of monetary circulation” and identified a sudden shift in market expectations—or in their words, “a change in national psychology”—as the source of this increase in velocity:

Though much has been heard of America’s ‘inflationary’ intentions, of actual inflation, so far, there has been none. The entire increase in America’s economic activity is due to enhanced velocity of monetary circulation, reflecting a change in national psychology.¹³⁶

Not only does the above passage from The Economist corroborate the quantity theory interpretation of events outlined above, but it also reveals that contemporaries attributed the rapid increase in velocity to a dramatic change in market expectations.

Moreover, the narrative record provides perhaps even stronger evidence that the Roosevelt regime shift, by inducing a change in market expectations toward higher inflation, drove this rapid increase in velocity. The narrative accounts directly discuss the transmission mechanism from higher inflationary expectations to real recovery during the second quarter of 1933.

According to the *Economist*, consumers, acting in anticipation of price increases, raised their spending, helping to boost aggregate demand:

The depreciation of the dollar gave rise to fear—or hope—of inflation, which made people anxious to transfer their money into goods. The resultant increase in the demand for goods tended to raise prices and increase the volume of goods moved.\(^{137}\)

Indeed, available data on consumer demand corroborate this evidence. Figure 5 shows that seasonally adjusted retail sales jumped in April and continued to increase through August. In addition, according to the news accounts, wholesalers, acting in anticipation of price increases, increased their spending to build up their inventory holdings:

It appears that active buying has come from jobbers and wholesalers who are replenishing or accumulating stocks in anticipation of further advances in price. It is hardly too much to say that the rise in price has been more the cause than the result of demand…It may be difficult for European readers of the *Economist* to understand the mental processes of the average American confronted by a programme frankly described as inflation and devaluation…when an American shopkeeper acts in expectation of ‘inflation,’ he does not turn to a foreign currency, but increases his inventory or purchases common shares. Indeed, he does not visualize ‘inflation’ as a depreciation of the dollar but as a rise in other forms of value.\(^{138}\)

In another passage, the *Economist* suggests that expectations of higher future input costs and growing consumer demand induced producers to increase production:

It is already being appreciated that the remarkable expansion in industrial activity is partly in anticipation of a rise in working costs and partly a gamble on a sustained increase in consumption.\(^{139}\)

This increase in production is also present in the data: industrial production jumped from April through August at an average rate of 5.5 percent per month (see Figure 4). Inventories were slower to increase given the concurrent surge in production and sales, but they started to rise in June and increased throughout the rest of the year (see Figure 6).

Thus, the narrative accounts clearly show that a shift in inflationary expectations changed consumer and producer behavior during the second quarter of 1933, helping to stimulate the recovery from the depression. This suggests that the regime shift, by changing market


expectations, played a causal role in spurring the recovery. It also reinforces the notion that a regime shift, as opposed to other forces or policies, drove the recovery.\footnote{Two important caveats merit attention. First, expectations of higher inflation accompanied expectations of higher growth. Four years of deflation and depression made deflation synonymous with depression in the minds of many Americans. As a consequence, expectations of higher inflation—the reverse of deflation—were often linked with expectations of future growth. In a recent paper, Werning (2011) argues that such expectations for higher growth may have their own direct stimulative effects on consumer and producer behavior, independent of the effects of higher inflationary expectations. Yet, in the context of the Great Depression, higher inflation expectations—widely viewed as a corrective strategy for reversing four years of deflation—led to expectations of higher growth. Therefore, a persuasive argument could be made that expectations of higher growth in 1933 were themselves a byproduct of higher inflation expectations. Second, Friedman and Schwartz explain the expansion in velocity as the result of the revival of the banking system after the panic of 1933. While rehabilitation of the financial sector no doubt improved confidence and restored trust in the banking system, our reading of the narrative record nonetheless indicates that a shift in inflation expectations accounts for the bulk of the increase in velocity. Thus, our findings for the second quarter of 1933 are more consistent with the account of Temin and Wigmore (1990) that a regime shift caused the recovery.}

5.2 Why Were the Effects So Rapid?

The preceding evidence suggests that a pro-inflation regime shift—by raising inflation expectations—explains the rapid recovery during the second quarter of 1933. Why were the effects so rapid? The perception that Roosevelt had adopted a set of inflationary policies to raise prices coincided with an almost immediate surge in economic activity. Most empirical studies indicate that monetary policy, via a standard real interest rate channel, affects the real economy only with a lag.\footnote{For example, see Romer and Romer (1989, 2004).} Why then were the effects of the sudden surge in inflation expectations so rapid during the second quarter of 1933?

Our reading of the historical, narrative record indicates that the spurt in inflationary expectations was connected with a general perception that prices would quickly rise to their pre-1929 levels. Roosevelt’s policy statements communicated a commitment to price level targeting, rather than inflation targeting. In other words, Roosevelt pledged to raise prices to the levels that had prevailed before the depression; he did not pledge to permanently raise the rate of inflation.

The literature on price level targeting has shown that, relative to inflation targeting, this policy choice has the advantage of removing more uncertainty in terms of the future level of prices.\footnote{The benefits from price level targeting in a rational expectations framework were first highlighted by Svensson (1999). For more recent work on the merits of price-level targeting in alleviating the effects of the zero lower bound for nominal interest rates see Eggertsson and Woodford (2003) and Gaspar, Smets, and Vestin (2003).}
Under price-level targeting, inflation depends on the relationship between the current price level and its target. Inflation expectations will be higher the lower is the current price level. Thus, Roosevelt’s commitment to a price-level target caused market participants to expect inflation until prices were back at that higher set target. As mentioned earlier in the paper, the historical news accounts and reports of contemporary forecasters described Roosevelt’s policies as designed to generate “controlled inflation.” This reflects a perception that prices would rise to their pre-1929 levels, but then once there, remain at that level.

Most importantly, there was a perception among some contemporary observers that prices would rise rapidly to the new target. Accordingly, consumers and producers needed to act quickly to stay ahead of inflation. This interpretation is borne out by the narrative record. For example, consider Figure 8, which appeared in *Business Week* on May 10, 1933. The Headline reads, “Inflation Will Catch You IF YOU DON’T WATCH OUT,” suggesting the need for consumers and businesses to act quickly to avoid being overcome by inflation. The advertisement contains the following warning about “the imminence of inflation”:

> Inflation means distribution of buying power, credit expansion, rising prices, restoration of markets, increased business turnover. But its benefits will not be distributed equally. Inflation will mean most to the business man who meets it half way, who increases his business pace to keep up with the accelerated dollar, who unleashes his jealously guarded cash reserves and credit, who first woos anew the markets he has neglected in the years just past…Inflation is already under way, will gather speed daily.

The narrative accounts reveal that market participants were receiving messages to act quickly—to stay ahead of inflation. This is consistent with the rapid increase in velocity, documented earlier. It also indicates that the pro-inflationary regime shift had such immediate effects because Roosevelt’s pledge to raise the price level to its 1929 level induced market participants to believe that inflation was imminent and thus, that they needed to alter their behavior quickly.

**6. Why Did the Recovery Falter During the Second Half of 1933?**

The preceding evidence indicates that the Roosevelt regime shift, by inducing a change in expectations, explains the dramatic turnaround recovery from April to July. Figure 4, which displays monthly U.S. industrial production from 1929 to 1933, shows the dramatic surge in industrial production during these months. But the figure also makes clear another dramatic fact:

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143 *Business Week*, 5/10/33, back of cover page.
the recovery stalled and experienced a setback in August of 1933 that lasted for the remainder of the year. After climbing for four consecutive months, industrial production fell in August and continued to decline through November. Though the level of industrial production in November still surpassed its level in May, the failure of industrial production to continue rising and its steady decline during the second half of the year represents a serious setback to the recovery. Temin and Wigmore (1990) also note the pause in the recovery during the second half of 1933.

Why did the recovery falter in August? To shed insights, we examined the historical narrative record. The reports of contemporary observers indicate two potential explanations: (1) the implementation of the National Industrial Recovery Act generated uncertainty, causing firms to curtail spending and (2) mixed messages from the Roosevelt administration regarding its commitment to an inflationary regime caused a change in market participants’ inflationary expectations. We consider these potential explanations below.

The Implementation of the National Industrial Recovery Act

The NIRA codes began to be implemented during the summer of 1933—and in particular, toward the end of July and continuing in August. The reports of contemporary observers contained in both the historical news record and the forecasts of business analysts indict the NIRA as a factor in the slowdown. Specifically, Standard Trade and Securities attributes the slowdown in economic activity to uncertainty generated by the NIRA codes:

“The codes, coupled with the aggressive campaign being waged by NRA constitute, in our judgment, the most important single cause for the hesitation in activity which is now becoming evident and which the inflationary moves are designed to combat…It is the widespread uncertainty as to the longer term aspects of the codes which is an essential factor in somewhat curtailing activity at the moment.”

Moody’s also cites the introduction of NIRA codes as “one of the original causes of the recession in business since July,” and the Magazine of Wall Street echoes this assessment, reporting, “the problem of price uncertainties during the interim while codes are being formulated and put into effect has caused sharp curtailment of incoming business in several basic lines.”

Mixed Messages from the Roosevelt Administration

144 9/1/33, “NRA the chief cause of uncertainty,” p. 390.
145 10/19/33, “Position of Industries,” p. 409.
Another explanation for the slowdown is that mixed messages from Roosevelt caused market participants to doubt the Administration’s commitment to an inflationary regime. Temin and Wigmore (1990) cite this as the main force behind the August slowdown. A reading of the historical narrative record provides additional evidence to support this potential explanation.

During the last week of July and the first week of August, the news accounts reported that Roosevelt was no longer planning to use his powers to generate inflation. On July 31, the New York Times published an article, entitled “Money Inflation Declared Unlikely,” with the caption: “President’s Advisers Say the Recovery Program Will Be Tested to Full Without It.”

Administration officials suggested that because the recovery had enjoyed four months of solid growth and because the NIRA was about to be implemented, inflation might no longer be necessary to achieve the Administration’s aims. The New York Times reports (7/31/33, p. 19):

> The policy of the administration is to test to the full extent the Industrial Recovery Act program before even seriously considering entrance upon any inflationary currency program, advisers of the President declare…Before he left on his vacation the President privately expressed the opinion that inflation of the currency did not appear as a necessary companion of the Recovery Acts.

A few days later, on August 3, the New York Times reported that inflation had been ‘called off’: “Talk of inflation has, in the parlance of the markets, been ‘soft-pedaled’ lately. There had been reports that, for the time being, inflation had been ‘called off.’”147 The next day, the New York Times ran an article, entitled, “Inflation Put Off, Officials Suggest.” The article characterized inflation as only a distant possibility (8/4/33, p. 4):

> The government does not contemplate entering upon inflation of the currency at present and will issue cheaper money only as a last resort to stimulate trade, according to a close adviser of the President who discussed financial policies with him this week. This official asserted today that the President was well satisfied with the business improvement and the government’s ability to borrow money at cheap rates. These are interpreted as good signs, and if the conditions continue as the recovery program broadened, it was believed no real inflation of the currency would be necessary. The President’s attitude is represented to be that more money need not be put into circulation if the recovery plan succeeds. If it is apparent after a thorough test of the recovery plans that additional stimulation to trade is necessary, then the President, it was said, will not hesitate to try some form of real currency inflation. But viewing the situation today, this

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official said that inflation appeared to be far distant and may never be made a part of the Roosevelt administration’s policies.

As a result of these messages, the forecasters began to express doubt about the Administration’s commitment to an inflationary regime. In mid-August, the Review of Economic Statistics, one of the early forecasters to predict inflation during the second quarter of 1933, backpedalled, voicing uncertainty about the prospects for inflation (8/15/33, “General Economic Conditions,” p. 122):

The government has at its command the power to inflate our currency, an expedient which, so far, it has not actually resorted to and has only threatened to employ. It may be that the President is on this point more conservative than most of his supporters, and will resort to measures of active inflation only as a last resort.

Toward the end of August, when the recovery began to show signs of faltering, the Federal Reserve Banks increased their purchases of government securities and Roosevelt authorized the Treasury to buy newly mined gold at the world price—two actions that were interpreted as inflationary. Standard Trade and Securities described these actions as “[inflationary] stimulants”148 designed to counter the decline in business activity.149 Nonetheless, shortly thereafter, the Administration appeared to continue to retreat from inflation, according to the news accounts. In mid-September, due to the lack of any substantial inflation, Senator Thomas, the author of the Thomas Inflation Amendment, led a charge in the U.S. Congress, reportedly representing more than one hundred members of Congress, for additional inflationary measures—for what the news accounts termed “outright currency inflation.”150 However, Secretary of Agriculture Henry Wallace declared, in response to this movement, that the Administration was “flatly opposed to currency inflation.”151

As a result of these developments, perceptions regarding the Administration’s commitment to an inflationary regime wavered in September, among forecasters and the general public. Moody’s reported, “the Administration itself appears to act as though it were ‘afraid’ of inflation, at least,

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149 Standard describes why this latter action was perceived as inflationary (9/1/33, “The Business Prospect,” p. 390): “Treasury purchase of gold for sale at the world price is not, apse facto, devaluation of the American dollar. But it is the one absolutely essential initial step if ultimately the gold content of the dollar is to be officially reduced. To the present owner of dollars, the move is important, therefore, as indicating that the gold value of these dollars will later officially be lowered.”
of any drastic inflation.”

The Magazine of Wall Street noted the existence of “inflationary doubts” among the public. In addition, Moody’s described Roosevelt’s policies as “confusing” and reported that inflationary expectations among an important subset of market participants—specifically, farmers—had subsided due to these confusing messages: “The more radical protagonists of higher prices (farmers, for instance) are dissatisfied with the credit inflation steps thus far taken, because they do not understand them.” The forecasters themselves often vacillated, at times expressing the view that Roosevelt’s price level target remained unchanged, but other times expressing more guarded skepticism. Moody’s summarized the confusing situation, by noting, “The Administration has been steering a middle course between these two semi-hostile fronts, and has failed to clarify its monetary policy even for the near future.”

By October, the forecasters began to conclude that the Roosevelt Administration had taken a definite turn toward a more conservative attitude, with respect to inflation. Moody’s noted, “the Administration [has turned] for the time being toward somewhat more conservative monetary theories and practices” and concluded, “A clearer shift in the direction of more conservatism in the Administration’s monetary policy was revealed by President Roosevelt’s two addresses, in Chicago and New York.” The Magazine of Wall Street corroborated this assessment, reporting “Curiously enough, some of the President’s advisors are telling him that the surest way to get plenty of money into circulation and raise prices is not to print any more but to announce resolutely that none will be printed and to proclaim triumphantly a new gold standard now, once and for all.” A new term for the Administration’s policies—“conservative inflation”—began to appear in the press; however, Moody’s reported that it only served to confuse the public (10/19/33, “Positions of Industries,” p. 409):

The Administration’s latest moves have apparently been calculated to reassure long term capital. At the same time, however, Washington is committed to a policy of raising the price level considerably and is pursuing a lavish credit expansion program. These conflicting efforts of the Government at what may be termed ‘conservative inflation’ may

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158 9/30/33, “‘When, As and If’ We Inflate,” p. 564.
well continue to confuse business and capital until either a purely conservative course or one of consistent inflation is determined upon.

Toward the end of October, however, Roosevelt appeared to embark on a reversal of a course of action, embracing the notion of inflation once again—perhaps as a result of continued weakness in economic activity. On October 22, Roosevelt gave a radio address, pledging to raise prices by reducing the gold content of the dollar via purchases of newly-mined gold by the Government. The *Magazine of Wall Street* concluded that this action by Roosevelt “re-introduces the factor of inflation.”

These mixed messages differ substantially from the steadfast embrace of inflation by the Administration during the second quarter of 1933. Indeed, the *Magazine of Wall Street* summarized the Administration’s post-July communications strategy as “alternating rumors and denials of inflation.” Most importantly, these mixed signals caused market participants to reevaluate the Administration’s commitment to an inflationary regime, according to the narrative record. By the end of the year, the *Review of Economic Statistics*, which had confidently predicted inflation in its May, June and July issues, declared that it could no longer venture a forecast: “the great uncertainty created by the Administration’s currency measures renders scientific forecast impossible.” Moody’s noted a decline in public discussions about inflation and speculated, “inflation talk may well continue to be subdued.” According to the narrative accounts, inflationary expectations experienced a setback during the second half of 1933 as a result of mixed messages from the Roosevelt Administration.

In addition, the narrative accounts identify this decline in inflationary expectations as a main force behind the slowdown. For example, the *Magazine of Wall Street* attributes both the recovery during the second quarter and the subsequent slowdown to the evolution of inflation expectations in 1933 (10/28/33, “Taking the Pulse of Business,” p. 35):

> In view of the fact that spectacular gains in foreign exchange rates, staple commodities, common stock prices and business activity during the second quarter were prompted largely by expectations of inflation, it is easy to understand why reaction set in as soon as doubts over the imminence of inflation began to appear on the horizon.

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Thus, according to the narrative accounts, the mixed messages by the Roosevelt Administration, by moderating inflation expectations, curtailed economic activity during the second half of 1933.\textsuperscript{164}

**What Caused the Slowdown?**

The narrative accounts suggest two potential explanations for the slowdown in economic activity: the implementation of the NIRA and the mixed signals from the Roosevelt Administration regarding inflation. While we reserve an evaluation of these two competing explanations for future research, it is possible that both played a role. Nonetheless, future research, distinguishing between these competing explanations, may be necessary.

7. **Conclusions**

This paper builds on our understanding of the recovery from the depression in several ways. First, this study indicates that inflationary expectations shifted dramatically during the second quarter of 1933. We examine a variety of evidence from the historical narrative record to show that inflation expectations shifted abruptly: (1) the reports of contemporary observers contained in the historic news accounts, (2) the forecasts of contemporary business analysts, (3) a newly constructed data series measuring the number of the news articles containing the term inflation, and (4) an event study analysis of the impact of inflationary news shocks on financial and exchange-rate markets. Moreover, in the process, we identify the source of the shift in inflationary expectations: signals and actions from the Roosevelt Administration caused market participants to expect inflation.

Second, the narrative evidence supports the notion that the second quarter of 1933 represents a regime shift—one that reversed market expectations and triggered a sudden boom in economic activity. Our empirical estimates suggest that the Roosevelt regime shift raised monthly output growth by 4 to 7 percentage points, depending on the specification. Most notably, the narrative evidence indicates a causal link between the Roosevelt regime shift and the recovery.

\textsuperscript{164} It is important to note that the absence of any substantial inflation to materialize by August 1933—four months after Roosevelt pledged to raise prices—might have made market participants particularly susceptible to hints from the Roosevelt Administration that it was retreating from inflation. Indeed, in this kind of climate, the slightest hint from the Administration that it would not pursue inflation may have been enough to shatter the public’s inflationary expectations.
Third, this paper bolsters the work of two influential studies on the turning point from the depression. Temin and Wigmore (1990) argue that a shift to a pro-inflationary macroeconomic policy regime triggered recovery and Eggertsson (2008) develops a theoretical framework to explain how an abrupt shift in expectations could have generated a recovery. Yet, neither study incorporates narrative evidence to document that (1) inflation expectations did indeed shift and (2) there was a widespread perception, among contemporary observers, of a dramatic change in the macroeconomic policy regime. This paper fills in this crucial gap.

Fourth, this study shows that a well-targeted communications strategy can dramatically shift market expectations during a depression. A growing theoretical literature argues that a shift to higher inflationary expectations can stimulate a depressed economy under the appropriate set of conditions. Yet, one area where this literature largely remains silent is over the question of whether macroeconomic policymakers can influence expectations substantially enough to produce a recovery. This paper shows that—under the right set of conditions—macroeconomic policymakers can engineer a change in expectations that can set a recovery in motion. Indeed, during the second quarter of 1933, Roosevelt established a bold new macroeconomic policy regime—one that shifted inflation expectations and sparked growth, effectively jumpstarting recovery.


166 For example, Krugman (2000, p. 236), in discussing the theoretical basis for raising inflationary expectations in a liquidity trap, notes that, “it is not enough to get central bankers to change their spots; one must also convince the market that the spots have changed, that is, actually change expectations. The truth is that economic theory does not offer a clear answer to how to make this happen.”

167 It is important to note, however, that Roosevelt benefited from a constellation of forces—growing political and public support for inflation and overwhelming one-party control of the executive and legislative branches of government—that may not always be within the reach of policymakers.
References


*Business Week*. 1933.


*The Economist*. 1933.


Table 1. Estimates for Expected Inflation in 1933 from Earlier Studies

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MA(2) Model</td>
<td>AR(1) Model</td>
</tr>
<tr>
<td>1933 Q1</td>
<td>-4.68</td>
<td>-6.48</td>
</tr>
<tr>
<td>1933 First Third</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933 Q2</td>
<td>-10.48</td>
<td>-11.75</td>
</tr>
<tr>
<td>1933 Second Third</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933 Q3</td>
<td>7.07</td>
<td>3.51</td>
</tr>
<tr>
<td>1933 Final Third</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933 Q4</td>
<td>22.97</td>
<td>16.62</td>
</tr>
</tbody>
</table>

Source: The first three columns display estimates of expected inflation from Cecchetti (1992), whereas the last column displays estimates from Hamilton (1992).
Note: Cecchetti's estimates for expected inflation correspond to quarters of the year, whereas Hamilton's estimates correspond to thirds of the year. Cecchetti uses three methods to extract forecasts for inflation—a MA(2) model, AR(1) model, and an interest-rate model.

Table 2. Inflation Forecasts

<table>
<thead>
<tr>
<th>Forecaster</th>
<th>Date</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Week</td>
<td>Apr 19 Issue</td>
<td>Our forecast is an inflation which will almost precisely parallel the wartime inflation.</td>
</tr>
<tr>
<td>The Magazine of Wall Street</td>
<td>Apr 29 Issue</td>
<td>We move toward inflation.</td>
</tr>
<tr>
<td>Review of Economics Statistics</td>
<td>May 15 Issue</td>
<td>It has rather suddenly become evident that some sort of inflation is to come</td>
</tr>
<tr>
<td>Moody's Investment Survey</td>
<td>May 18 Issue</td>
<td>The feeling seems to be that higher prices and activity will in any event be forced by more direct methods.</td>
</tr>
<tr>
<td>Standard Trade and Securities</td>
<td>May 24 Issue</td>
<td>A policy of price stimulation will be carried out</td>
</tr>
</tbody>
</table>
Table 3. Movements in Stock Prices and Exchange Rates on the Dates of Inflationary News Shocks

<table>
<thead>
<tr>
<th>Date of Inflationary News Shock</th>
<th>Percentage Change in Stock Index</th>
<th>Unit Change (in Cents) of the Dollar to Pound Sterling Exchange Rate</th>
<th>Unit Change (in Cents) of the Dollar to Franc Exchange Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 19</td>
<td>7.18</td>
<td>19.50</td>
<td>23.50</td>
</tr>
<tr>
<td>April 28</td>
<td>6.11</td>
<td>6.75</td>
<td>17.00</td>
</tr>
<tr>
<td>May 24</td>
<td>1.97</td>
<td>1.37</td>
<td>1.00</td>
</tr>
<tr>
<td>May 26</td>
<td>2.91</td>
<td>2.00</td>
<td>2.13</td>
</tr>
<tr>
<td>June 19</td>
<td>7.21</td>
<td>7.00</td>
<td>7.50</td>
</tr>
</tbody>
</table>

Note: For the second inflationary news shock, the table reports the change on April 29th—rather than April 28th. As noted earlier, the Senate passed the Thomas Amendment and adjourned at 7:02 pm, after the close of markets on April 28. As a result, financial markets could not process the news until April 29th, the following day.

Source: The stock price data come from Standard Trade and Securities and the exchange rate data come from the daily issues of the New York Times.

Table 4. Regression Results: Response of Financial Markets to an Inflationary News Shock

Dependent Variable: change in log

<table>
<thead>
<tr>
<th></th>
<th>Stock Prices</th>
<th>Dollar-to-Pound Exchange Rate</th>
<th>Dollar-to-Franc Exchange Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right hand side variable:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflationary News Shock Dummy</td>
<td>0.047***</td>
<td>0.018***</td>
<td>0.022***</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.006)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Lag on Inflationary News Shock Dummy</td>
<td>0.021</td>
<td>0.010</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.006)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.002</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
</tbody>
</table>

Note: The dependent variable is the log change in stock prices, the dollar-to-pound exchange rate or the dollar-to-franc exchange rate. The stock price data come from Standard Trade and Securities and the exchange rate data come from the daily issues of the New York Times. The regression is estimated from April 1, 1933 to July 31, 1933. Standard errors are in parentheses. *** denotes significance at the 0.001 level.
Table 5. Estimated output equations

<table>
<thead>
<tr>
<th></th>
<th>Shocks to M1</th>
<th>Shocks to Prices</th>
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<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>(6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly IP growth (t-1)</td>
<td>0.611*</td>
<td>0.519*</td>
</tr>
<tr>
<td></td>
<td>(9.77)</td>
<td>(8.37)</td>
</tr>
<tr>
<td></td>
<td>0.519*</td>
<td>(8.35)</td>
</tr>
<tr>
<td></td>
<td>0.601*</td>
<td>(9.56)</td>
</tr>
<tr>
<td></td>
<td>(9.00)</td>
<td>(8.97)</td>
</tr>
<tr>
<td>Monthly IP growth (t-2)</td>
<td>-0.123*</td>
<td>-0.125*</td>
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<tr>
<td></td>
<td>(-2.03)</td>
<td>(-2.17)</td>
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<tr>
<td></td>
<td>-0.125*</td>
<td>(-2.17)</td>
</tr>
<tr>
<td></td>
<td>-0.0846</td>
<td>(-1.39)</td>
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<tr>
<td></td>
<td>-0.0825</td>
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<tr>
<td></td>
<td>-0.0829</td>
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</tr>
<tr>
<td>Monetary Shock</td>
<td>0.350*</td>
<td>0.400*</td>
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<tr>
<td></td>
<td>(3.10)</td>
<td>(3.71)</td>
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<td></td>
<td>0.399*</td>
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<tr>
<td></td>
<td>0.600*</td>
<td>(4.47)</td>
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<tr>
<td></td>
<td>0.480*</td>
<td>(3.44)</td>
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<td>0.479*</td>
<td>(3.41)</td>
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<td>Monetary Shock (t-1)</td>
<td>0.0668</td>
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<td></td>
<td>0.156</td>
<td>(1.42)</td>
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<td></td>
<td>0.343*</td>
<td>(2.47)</td>
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<tr>
<td></td>
<td>0.259+</td>
<td>(1.84)</td>
</tr>
<tr>
<td></td>
<td>0.258+</td>
<td>(1.83)</td>
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<td>Monetary Shock (t-2)</td>
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<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>0.205+</td>
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</tr>
<tr>
<td></td>
<td>0.0964</td>
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<tr>
<td></td>
<td>0.0156</td>
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</tr>
<tr>
<td></td>
<td>0.0147</td>
<td>(0.11)</td>
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<tr>
<td>Monetary Shock (t-3)</td>
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<td>(2.55)</td>
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<td></td>
<td>0.275*</td>
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<tr>
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<td>-0.0835</td>
<td>(-0.63)</td>
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<tr>
<td>DBanks</td>
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<td>-0.00004*</td>
</tr>
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<td></td>
<td>(-5.16)</td>
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<td>-0.00004*</td>
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<td>(-3.75)</td>
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<td>D.Banks (t-1)</td>
<td>-0.00003*</td>
<td>-0.00002+</td>
</tr>
<tr>
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<td>(-1.97)</td>
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<tr>
<td></td>
<td>-0.00002*</td>
<td>(-1.97)</td>
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<td>-0.00002*</td>
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<td>-0.00002+</td>
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<tr>
<td></td>
<td>-0.00002+</td>
<td>(-1.97)</td>
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<tr>
<td>DFails</td>
<td>-0.00009</td>
<td>-0.00005</td>
</tr>
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<td>(-1.31)</td>
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<td>-0.00005</td>
<td>(-0.74)</td>
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<td>(-0.78)</td>
</tr>
<tr>
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<td>-0.00004</td>
<td>(-0.65)</td>
</tr>
<tr>
<td></td>
<td>-0.00004</td>
<td>(-0.65)</td>
</tr>
<tr>
<td>DFails (t-1)</td>
<td>-0.00015*</td>
<td>-0.00008</td>
</tr>
<tr>
<td></td>
<td>(-2.26)</td>
<td>(-1.28)</td>
</tr>
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<td>-0.000098</td>
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<tr>
<td></td>
<td>-0.00008</td>
<td>(-1.15)</td>
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<tr>
<td>Roosevelt dummy</td>
<td>0.0697*</td>
<td>0.0690*</td>
</tr>
<tr>
<td></td>
<td>(5.17)</td>
<td>(5.07)</td>
</tr>
<tr>
<td></td>
<td>0.0385*</td>
<td>(2.73)</td>
</tr>
<tr>
<td></td>
<td>0.0381*</td>
<td>(2.68)</td>
</tr>
<tr>
<td>ER: pounds per dollar</td>
<td></td>
<td>0.00230</td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.29)</td>
</tr>
<tr>
<td>Observations</td>
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<td>250</td>
</tr>
<tr>
<td></td>
<td>250</td>
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<td>250</td>
</tr>
<tr>
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<tr>
<td>R-squared</td>
<td>0.455</td>
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<td>0.479</td>
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<td>DW Stat</td>
<td>2.032</td>
<td>1.950</td>
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<td>1.951</td>
<td>1.987</td>
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<tr>
<td></td>
<td>1.925</td>
<td>1.925</td>
</tr>
</tbody>
</table>
| Note: Data are monthly; t-statistics in parenthesis; + p<0.10, * p<0.05. Sources: The industrial production index is from the Federal Reserve’s G.17 Statistical Release (revision 2013); M1 is from Friedman and Schwartz (1963), Table A-1; the wholesale price index is from NBER macrohistory series m04048; deposits of failing banks are from Survey of Current Business, Biennial Supplement; and liabilities of failing banks and exchange rates are from the Federal Reserve Bulletin. See text for detail on construction of variables.
Table 6. Percentage change in industrial production in the four months after suspension of the gold standard

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>% Change in Industrial Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Sep 1931</td>
<td>-5.5</td>
</tr>
<tr>
<td>Belgium</td>
<td>Mar 1935</td>
<td>3.2</td>
</tr>
<tr>
<td>Canada</td>
<td>Sep 1931</td>
<td>-12.1</td>
</tr>
<tr>
<td>Chile</td>
<td>Apr 1932</td>
<td>6.0</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>Sep 1931</td>
<td>-20.8</td>
</tr>
<tr>
<td>France</td>
<td>Oct 1936</td>
<td>-6.1</td>
</tr>
<tr>
<td>Germany</td>
<td>Jul 1931</td>
<td>-15.4</td>
</tr>
<tr>
<td>Hungary</td>
<td>Q3 1931</td>
<td>-8.6</td>
</tr>
<tr>
<td>Italy</td>
<td>May 1934</td>
<td>5.6</td>
</tr>
<tr>
<td>Japan</td>
<td>Dec 1931</td>
<td>-5.2</td>
</tr>
<tr>
<td>Poland</td>
<td>Apr 1936</td>
<td>2.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>Sep 1931</td>
<td>3.2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Q3 1931</td>
<td>9.0</td>
</tr>
<tr>
<td>United States</td>
<td>Mar 1933</td>
<td>69.5</td>
</tr>
<tr>
<td>Average, Excluding U.S.</td>
<td></td>
<td>-3.4</td>
</tr>
</tbody>
</table>

Source: All data are from various issues of *The League of Nations Statistical Yearbook*, which may be downloaded at http://digital.library.northwestern.edu/league/stat.html#1932

Note: The data reflect the percentage change in industrial output in the four months following suspension of the gold standard, with one main exception. The League of Nations only reports quarterly indices of industrial production for Hungary and the U.K. As a result, the table reports the percentage change in industrial production from the quarter of suspension to the following quarter for those two countries. In addition, dates of suspension come from Bernanke and James (1991), which also originate with the League of Nations. Bernanke and James list three dates: suspension of gold standard, foreign exchange control, and devaluation. Occasionally, these three dates differ. In cases where dates differ, we use the earliest date. For example, Bernanke and James list the U.S. as suspending the gold standard and imposing foreign exchange controls in March 1933, but devaluing in April 1933. Thus, the table above lists March 1933 as the date of suspension for the U.S. However, the results—described in the paper—are not sensitive to the method used to construct these dates. Because the increase in economic activity in the U.S. was so large relative to other countries’ experiences, the main findings still hold when the U.S. suspension is dated in April and when dates for other countries vary among the three categories listed by Bernanke and James. Thus, the results are robust to different methods in identifying dates of suspension.
Figure 1. Number of Articles Containing the Terms “Inflation” or “Inflationary” by Year

Note: The figure displays the number of articles containing the terms ‘inflation’ or ‘inflationary’ by year in five national news sources: the New York Times, the Wall Street Journal, the Los Angeles Times, the Chicago Tribune, and the Washington Post. These newspapers are available electronically via ProQuest.

Figure 2. Number of Articles Containing the Terms “Inflation” or “Inflationary” in 1933 by Month

Note: The figure displays the number of articles containing the terms ‘inflation’ or ‘inflationary’ in 1933 by month in five national news sources: the New York Times, the Wall Street Journal, the Los Angeles Times, the Chicago Tribune, and the Washington Post. These newspapers are available electronically via ProQuest.
Figure 3. Number of Articles Containing Combinations of the Terms:
Roosevelt or Hoover and Inflation or Deflation

Note: The figure displays the number of articles, by quarter from 1929-1933, containing four combinations of terms: (1) Roosevelt and inflation, (2) Roosevelt and deflation, (3) Hoover and inflation, and (4) Hoover and deflation. The figure presents the aggregate results for five national news sources: the New York Times, the Wall Street Journal, the Los Angeles Times, the Chicago Tribune, and the Washington Post. These newspapers are available electronically via ProQuest.

Figure 4. Industrial Production, seasonally adjusted, Jan1929 = 100

Source: The industrial production index is from the Federal Reserve’s G.17 Statistical Release (revision 2013).
Figure 5. Retail Sales, seasonally adjusted, Jan1929 = 100

Source: NBER macrohistory series m06002a, seasonally adjusted (from FRED).

Figure 6. Manufacturers’ inventories, seasonally adjusted, Jan1929 = 100

Source: NBER macrohistory series m05104a, seasonally adjusted (from FRED).
Figure 7. Consumer and Producer Price Indexes (Jan 1929 = 100)

Source: FRED series CPIAUCNS and PPIACO, not seasonally adjusted.
Figure 8.

Inflation Will Catch You
IF YOU DON’T WATCH OUT

U.S. Off Gold Standard, Roosevelt to Rule Currency; Dollar Drops Abroad, Stocks and Commodities Soar

NATION IS OFFICIALLY DECLARED OFF GOLD BASIS TO LIFT PRICES; STOCKS AND COMMODITIES SOAR

Stagflation in Chicago in May 1933

Inflation On Inflation and Sterling Risks To Lift Price

Roosevelt and Leaders Agree On Plan to Control Currency

Inflation means distribution of buying power, credit expansion, rising prices, restoration of markets, increased business turnover.

But its benefits will not be distributed equally. Inflation will mean most to the business man who meets it half way, who increases his business pace to keep up with the accelerated dollar, who unleashes his jealously guarded cash reserves and credit, who first woos anew the markets he has neglected in the years just past.

The business market will be the first to expand under inflationary influences. The market for everything that business and business men buy will develop first and fastest.

Inflation is already under way, will gather speed daily. Advertising is the only selling force that works fast enough to keep up with market expansion. Publications with fast publishing schedules and frequency of appearance can hold the necessary pace.

Don’t let inflation catch your advertising napping.

Source: Business Week, May 10, 1933, back of cover page.