Fireside Chats: Communication and Consumers' Expectations in the Great Depression

Mathieu Pedemonte*

Department of Economics, University of California, Berkeley

April 20, 2020

[Link to the most recent version]

Abstract

Motivated by an increasing interest from economic authorities to use communication as a policy tool, I use regional variation in radio exposure in 1930 to analyze the impact of President Franklin D. Roosevelt's 1935 speech, in which he showcased the introduction of important economic policies. I document that cities with higher exposure to the announcement exhibited a significant increase in spending on durable goods. I transcribed weekly data on banks debits and show that cities one standard deviation more exposed to the speech increased their bank debits by 3.6 percent following the speech. I provide evidence that suggests that this result is not driven by wealth or other potentially confounding variables. I provide evidence that the effect is associate with the content of the speech and might come from a combination of economic confidence and the details of the policy announced.

Keywords: Great Depression, Expectations, Household Consumption, Media

*I thank Yuriy Gorodnichenko for invaluable guidance and support. I am also grateful for comments and discussion with Christina Romer and David Romer. I thank Chris Campos, Brad DeLong, Marc Dordal, Barry Eichengreen, Alejandro Favela, Alessandra Fenizia, Natalia Gárbiras, Ezequiel García-Lembergman, Pierre Olivier Gourinchas, Arlen Guarín, Sylverie Herbert, Juan Herreño, Matthias Hoelzlein, Sofía Jordan, Sergio Ocampo, Martha Olney, Emi Nakamura, Candy Moreno, Peter McCrory, Felipe Menares, Todd Messer, Pablo Muñoz, Walker Ray, Andres Rodríguez-Clare, Carlos Rondón, Nick Sander, Benjamin Schoefer, Jón Steinsson, David Sraer, Mauricio Ulate, Damián Vergara, Román D. Zárate, the participants in the Macro Lunch, Macroeconomic Seminar and Economic History seminar at UC-Berkeley, the participants in the 2019 Young Economists Symposium and the participants of the All UC Economics History Graduate Student Workshop for useful comments and suggestions. All errors are my own. University of California at Berkeley, Dept. of Economics. E-mail: mpedemonte@berkeley.edu

1 Introduction

Monetary and fiscal authorities increasingly appreciate the significance of communicating their policies to the public. Indeed, in the current environment where central banks are greatly constrained in using conventional policy tools, management of expectations about future policies can help to stabilize the economy. While these unconventional, communication-based policies can have a large effect on the economy in theory, little evidence supports the uses of such strategies in practice. This is not surprising given the numerous challenges related to identifying an exogenous communication treatment as well as measuring how the provided information is received by economic agents and how they act upon this information. This paper attempts to overcome those challenges using an important historical event with a clean identification strategy that allows measuring the causal effect of a relevant policy announcement on macroeconomic outcomes in a depressed economy.

Specifically, this paper advances understanding of the matter by measuring how changes in expectations affect economic outcomes. I show how communication from economic authorities can change consumers' behavior and have an expansionary effect in a recession. To do this, I use the uneven introduction of the radio in the United States in the 1930s and the Fireside Chat by President Franklin D. Roosevelt on April 28, 1935, as a natural experiment. I find that exposure to that speech significantly impacted consumer choices. I transcribe weekly data on bank debits, which are highly correlated with expenditure on durable goods, at the city level, and find a positive and significant increase in bank debits in more exposed cities the week after the speech. One standard deviation increase on the exposure to the speech increased bank debits by 3.6 percent two weeks after the speech, compared with two weeks before the speech. Using more aggregated data, I find that spending on cars increased, and savings (measured by total deposits) decreased in more exposed states. I also find that the effect is not driven by other characteristics that are correlated with the use of radio. These findings suggest that effective communication, particularly during recessionary periods, can amplify the effects of countercyclical policies.

The Fireside Chats were a series of speeches that President Roosevelt (FDR) to communicate

directly with the public. Aimed at the common American, the chats deliberately used informal language. FDR designed the chats to be very important events, announcing the schedule several weeks in advance, and airing them at a prime time (usually after a popular show). I focus on the speech of 1935 for several reasons. First, it was an isolated event. (No other Fireside Chat happened that year.) Second, the speech focused on boosting confidence in the economy. FDR also introduced and explained the benefits of important future social policies, such as the Works Progress Administration (WPA) and the Social Security Act (SSA). Third, because President Roosevelt had proven to be willing to increase government spending with the New Deal, the announcement was a credible. Moreover, the bills for the WPA and SSA were in Congress.

Using Census data from 1930, I construct the pre-announcement regional intensity in radio usage by households to measure exposure to the event. With this measure, I evaluate how regions behaved before and after the speech, depending on their radio share using a difference-in-difference strategy. This setting, plus the high frequency of the data that I obtain, allow me to identify the causal effect of the speech on outcomes related to expenditure and saving. In addition, I present various robustness checks, such as a placebo test and instrumental variable estimations.

The empirical evidence shows an increase in spending on durable goods after the announcement. This result with an increase in economic confidence, understood as animal spirit or expectations about future positive shocks. I show that other previous speeches that did not include announcement about future policies, do not have have a similar big and lasting effect as the speech of April 1935. This means the announcement of the policy is key. In particular, announcing social protection can work in that line, as consumers should decrease precautionary saving, but there is no evidence that regions with higher percentage of individuals affected positively by the policy react differently.

I show that the reaction of consumer is consistent with the announcement of a decrease in payroll taxes, in lines with the idea of unconventional fiscal policy. Because of intertemporal substitution, consumers anticipate the increase in taxes by increasing their stock of durable

goods. In section A.5 in the appendix, I develop a general equilibrium model where consumers have sticky information to show how more informed consumers react to the announcement of a payroll tax and the role of durable goods. This means that even the contractionary part of the announcement should produce results in line with the empirical findings at the moment of the announcement.

This paper contributes to a growing debate on how monetary authorities and governments should communicate their present and future policies to the public, and what the potential effects of such communication may be. Should communication employ technical language and concepts targeted at those with financial expertise or should communication rely on simple words and framing to make complex information accessible to the general public? This debate becomes particularly relevant when monetary authorities use policies such as forward guidance. The literature has taken some steps to examine the ways in which the U.S. Federal Reserve communicates, and whether a target audience should primarily be households or financial markets. For example, Hernández-Murillo and Shell (2014) show that the communication of the Federal Reserve has become more complex over the years, such that only very sophisticated individuals can understand the documents they release. Coibion, Gorodnichenko, Kumar, and Pedemonte (2018) discuss the importance of communicating effectively to the general public as a way to help increasing the effect of policies that involve changing expectations. Nevertheless, the question of whether expectations-based policies work remains an open. For instance, policies such as forward guidance have big countercyclical effects in the New Keynesian model, but Del Negro, Giannoni, and Patterson (2012) find that the empirical effects do not match the impact suggested by the model. D'Acunto, Hoang, and Weber (2018) discuss how announcing fiscal policies that are better understood by consumers, could have a stronger effect than monetary communication-based policies.

A few recent papers study the role policy announcements may play in changing consumers' expectations. D'Acunto, Hoang, and Weber (2016) find that an announcement of an increase in the value-added tax in Germany had a strong effect on consumers' inflation expectations and their spending decisions. Similarly, Kueng (2014) finds that spending of high-income households in the United States increased strongly in response to announcements that raised their

expected after-tax lifetime permanent income. Coibion, Gorodnichenko, and Kumar (2018) also find that changes in the inflation expectations of the firms managers affect their economic decisions at the firm level. Using an experiment, Coibion, Gorodnichenko, and Weber (2019) find that the Federal Open Market Committee statements are not more informative for the public, than an information treatment containing only the inflation target. This result shows that complex policy announcements might not be well understood by the general public.

This paper contributes to this debate by showing the effect of the communication of policies, exploiting the differential access to the announcement of a policy that affected equally the treated and control groups. It also provides an example of communication that aimed to convey the spirit of complex policies in an approachable way. The Fireside Chats targeted at the general public as their audience. Strategically, Roosevelt chose special dates and used simple language to communicate with regular people. I show that this communication policy produced an expansionary effect on more exposed regions. The findings of this paper have can help to develop communication strategies for governments and central banks focusing on the general public, differing from the recent trends on monetary policy communication strategies.

To the best of my knowledge, this paper is the first to use this identification strategy to study the effect of communication outcomes in a macroeconomic context[1]. Previous work in other fields has used a similar strategy to study the effect of communication on other outcomes, such as conflict and election turnout, showing that media exposure has a substantial impact on people's behavior in term of political participation and choice.[2] These results are not surprising; many politicians in the United States and other countries use the mass media and new social

[1] A related work in the field of political economy is Strömberg (2004), who uses radio exposure in the same period studied in this paper. He finds that resources of the Federal Emergency Relief Program (FERA) were allocated to areas where a larger share of the population had radios between 1933 and 1935. In this paper I look at the differential effect after the event; by contrast he looks at the cross-sectional allocation of FERA. In any case, any systematic differences in government expenditure will be captured by zone fixed effects, as explained in the empirical section.

[2] a similar identification strategy to estimate the effect on political outcomes has been used by Enikolopov, Petrova, and Zhuravskaya (2011) DellaVigna and Kaplan (2007), González and Prem (2018), DellaVigna, Enikolopov, Mironova, Petrova, and Zhuravskaya (2014), and Yanagizawa-Drott (2014), among others. In general, they find high effects.

media to communicate policies. Roosevelt is well-known for his radio talks, others have also used similar tools. President Ronald Reagan, for instance, used the television to explain his tax plans, and, Presidents Barack Obama and Donald Trump used Facebook and Twitter to communicate.

Other works have also studied the role of expectations and communication in the Great Depression. Romer (1990) discuss how the Great Crash of 1929 produced uncertainty about future income. According to that work, that uncertainty generated a reduction in consumers' spending on durable goods. This could be associated with the start of the Great Depression. Eggertsson (2008) discuss how the election of FDR shifted expectations about the fiscal policy that was being implemented. Using a general equilibrium model, he shows that a change in expectations about fiscal policies can produce an economic expansion as the one that started in 1933. In this same line, Eggertsson and Pugsley (2006) show that at the zero lower bound, even small changes in consumers belief about the governments' policies can produce big changes in output and inflation. They discuss the implication of that model in the context of the recession of 1937. Then, using a narrative approach they show that poor communication from economic authorities, in particular the confusing communication about the price targets from President Roosevelt that year, can produce the a recession like the one in 1937. This event is known as the *Mistake of 1937*. These papers show the importance of communication in the context of the Great Depression, which can explain the size of the results that I find.

The remainder of this paper is organized as follows: Section 2 discusses the historical context of the paper. Section 3 presents the data used in the empirical part. Section 4 presents the main empirical strategy and main results. Section 5 shows the effects at the state level. Section 6 shows the consistency of the results using instrumental variables. Section 7 discusses the effect of the event in other relevant variables. Section 8 discusses the effect of other speeches made by Roosevelt. Section 9 discusses possible mechanisms. Section 10 concludes.

2 Context

In 1932, Franklin Delano Roosevelt was elected president of the United States. At the time of his Inauguration, in March 1933, the country was reaching the deepest point of the Great Depression. On the morning of Inauguration Day, both the New York Stock Exchange and the Chicago Board of Trade suspended trading. The Roosevelt administration started with a banking holiday that lasted a full week. In this context, Roosevelt passed a series of policies that aimed to reactivate the economy. First, he cut $500 million from the federal government spending budget because he considered that was "on the road to bankruptcy." Then, he signed the Economy Act and the Beer-Wine Revenue Act, which anticipated the end of Prohibition. These bills gave the government new sources of revenue.

With the objective of stabilizing the economy, Roosevelt sent several bills to Congress with policies that came to be known as the New Deal, which were rapidly implemented a period known as the "Hundred Days." Policies included the creation of unemployment relief and the Civilian Conservation Corps, which sought to employ a quarter of a million young people to develop the National Park System, among other projects. He also created the Federal Emergency Relief Administration (FERA) to coordinate unemployment assistance and established the Tennessee Valley Authority (TVA). The government also launched the National Industrial Recovery Act (NIRA), which included labor regulation such as minimum wages and maximum hours. The Public Works Administration (PWA) oversaw public construction programs. Finally, the NIRA created the National Recovery Administration (NRA) to regulate competition and workers' bargaining power.

All these new agencies and bills are the core of the New Deal and sought to increase production in a context in which the country mired in the depths of the Great Depression amid a turbulent world. Roosevelt was able to do this thanks to the Democratic party majority in Congress. However, as Kennedy (1999) and Chester (1969) point out, Roosevelt faced a communication problem. As conservatives owned many of the newspapers, Roosevelt's message was not able to reach the audience in the way that he wanted. This fact was particularly relevant considering the upcoming midterm elections in 1934 and Presidential elections

in 1936.

To resolve this issue, Roosevelt used the radio, a relatively new technology at the time, to communicate with the public. In contrast to newspapers, radio gave Roosevelt the opportunity to speak directly to the American people. Even though the invention of the radio had happened decades before, and its presence in the United States dated back to the beginning of the 20th century, broadcasting was mainly an amateur that lacked widespread outreach. The first-ever scheduled, pre-advertised radio program in the United States occurred in Pittsburgh in November 1920, with the announcement of the results of the Presidential Election.

According to the 1930 Census of Population, only 36 percent of households had at least one radio. This relatively small number did not prevent politicians from using this new communication instrument. In 1924, the Democratic National Convention was broadcast; in 1928, both presidential candidates, Herbert Hoover and Al Smith, used the radio for campaigning. By 1932, many local candidates used the radio. Roosevelt himself communicated through the radio as governor of New York. Many historians (e.g., Chester (1969)) highlight that President Roosevelt had great oratory skills; after the speech of April 28th, 1935 The New York Times said that "He (the President) confirmed that no politician of his time equals him in the adroit use of this means of approach to his fellow-citizens all over the land." During his presidency, he used the radio extensively. Just days after his inauguration, he launched the first of a series radio talks. This was a way of communicating directly with the audience, bypassing the editors of newspapers that opposed his presidency.

According to Lenthall (2008), prior to Roosevelt, President Hoover also used the radio to deliver speeches and communicate. Though his speaking skills were considered subpar, Hoover used the radio many times and this "overexposure" seems to have affected Hoover's popularity negatively. Armed with this knowledge, Roosevelt pursued a different strategy: he limited his exposure to a few, well-announced appearances that commemorated important occasions. Lenthall (2008) describes how Roosevelt's press secretary Stephen Early worked to establish the Fireside Chats as major events. They were announced several weeks in advance and were

scheduled after popular evening shows to ensure a high audience.

Roosevelt's communication style differed from the speeches of other politicians at the time. He used less formal language, and aimed his rhetoric squarely at the common man. With this unique approach, he used this platform to answer critiques of his policies, and to explain how his government was working to solve issues, particularly through the New Deal. He used the radio as an educational news agency and shaped his style to explain and inform about his policies, in a context were the other sources of information, notably newspapers, were mostly in opposition. Consequently, Roosevelt became a radio celebrity. After these speeches, he received as many letters and telegrams as president Wilson during World War I. According to Lenthall (2008), many people reported that by listening to the president speech, they felt better about their "Depressions troubles," indicating how he shaped expectations about the economy. In a 1933 letter to the White House, for example, a citizen who had listened to a fireside chat wrote:

"[...] I feel that he walked into my home, sat down and in plain and forceful language explained to me how he was tackling the job I and my fellow citizens gave him."

Roosevelt delivered a total of 28 "Fireside Chats" on the radio. In the first one, Roosevelt addressed the end of the banking holiday of 1933. That same year he used the radio on three more occasions. These speeches were, in general, between the hours of 8 p.m. and 10 p.m. Eastern Time, in order to reach the whole country. After that, he gave two more speeches in 1934, and one in April 1935.

President Roosevelt gave a speech on the radio in which he discussed the general motivation of the policies that were being discussed in the Congress in April 28th, 1935. He emphasized on the approval of the Works Progress Administration (WPA) and the Social Security Act (SSA). The speech focused on confidence and its importance for the recovery:

"Never since my Inauguration in March, 1933, have I felt so unmistakably the atmosphere of ***recovery****. But it is more than the* ***recovery*** *of the material basis of our individual lives. It is the* ***recovery of***

confidence *in our democratic processes and institutions. We have survived all of the arduous burdens and the threatening dangers of a great economic calamity. We have in the darkest moments of our national trials retained our faith in our own ability to master our destiny. Fear is vanishing and confidence is growing on every side,* ***faith is being renewed*** *in the vast possibilities of human beings to improve their material and spiritual status through the instrumentality of the democratic form of government. That faith is receiving its just reward. For that we can be thankful to the God who watches over America."*

In the speech he explained the objective of policies that gave security about the future. The main message was that provisions of the SSA (Unemployment Insurance and aid for retirement) and the WPA (jobs through public work programs), would give households more certainty about the future. Among the letters that President Roosevelt received, Thos. J. Vernia said that the speech "created a further feeling of confidence." In his speech, FDR said that the objective of the legislative agenda was to create "wise provisions for the protection of the weak."

The press reacted to the speech in the following days, focusing on the legislative program that the President emphasized. The press also noticed that this speech was different in nature. While other Fireside Chats had focused on answering critiques in this speech the President "ignored the critics," as the *Washington Post* put it on April 29, 1935. He used particular chat to explain future projects and how they would bring progress as a whole. On April 30, 1935, *The New York Times* reported that the speech contained "nothing new to any fairly close reader of the metropolitan press." However, the same newspaper later observed "The Metropolitan press is numerically small in proportion to the citizenship of the country. Many readers do not remember the news of the previous day, and he (Roosevelt) thought it both wise and necessary to tie everything together." The paper's analysis concluded that Roosevelt had employed a different strategy: to use the radio to explain the objectives of his agenda a at a time when Congress seemed poised to delay its progress. In that sense, the speech can be understood as increasing the probability that those policies will occur. The bills were in Congress and many probably had an idea of them. The fact that Roosevelt emphasized on the approval of those policies, given the majority that Democrats had in Congress after the

midterm election of 1934, increase the likelihood that those policies will actually be approved soon.

Congress had already approved the WPA earlier in April. The objective of the WPA was to create government jobs for 3.5 million Americans. Newspapers of the time said that President Roosevelt had $4 billion available to spend. The program eventually employed more than 8.5 million workers on 1.4 million public projects. Roosevelt himself had provided more in detail about the WPA in January 4th, 1935, in the State of the Union Address. He also had described details of the Social Security Program in a message to the Congress that was read by some radios. Nevertheless, his main audience on these previous occasions was not the general public, but the members of Congress. Furthermore, the State of the Union Address took place on a Friday at 12:15 p.m. and the message to Congress was read at that same time on a Thursday – times that precluded many working people from listening to these speeches.

The WPA was signed into law on May 6, 1935, and the SSA bill was signed into law on August 15, 1935. The SSA introduced unemployment insurance and old-age pensions. It also included help for indigent elderly as well as child and health services. In the Fireside Chat of April 28th, 1935, Roosevelt recognized that, even if reducing unemployment was important, the government "cannot continue to create government deficits for that purpose year after year." To finance the unemployment plan, the act relied on a 1 percent on employers' contributions (firms with eight or more workers), which increased to 2 percent in 1937. The pension plan was financed by a 1 percent employee contribution. Finally, payroll taxes were instituted in a range from 4 percent for lower incomes to 79 percent for incomes larger than $5 millions (a tax that was specifically used to target Rockefeller's own fortune). Because of the minimum taxable income, less than 5 percent of Americans paid this tax.

The SSA also provided an important source of income for retirees. Many of them stayed in the labor force, as they didn't have any other source of income for retiring. According to Costa (1998), even if some states had a pension system, retirees depended on their own savings and

family support. Haber and Gratton (1993) estimate that by the 1920s, the median household had saved between $2,500 and $5,000 by the retirement age. This means that 40 to 50 percent of households could finance a ten-year annuity of $616 in 1917 dollars. These numbers indicate that people close to retirement had significant savings that could be spent if the SSA gave them some income in the future. Additionally, as a part of that population could retired with this policy (they would not need to work if given an SSA income), the SSA could have opened new opportunities to younger workers in the labor force. In Roosevelt's words, the SSA could "help those who have reached the age of retirement, to give up their jobs and thus give to the younger generation greater opportunities for work and to give to all a feeling of security, as they look toward old age."

The benefits of these federal programs targeted a considerable proportion of the country's population. In particular, social insurance could have improved consumers' confidence and reduced the amount of precautionary saving, increasing expenditure. However, the communication effort did not necessarily reach the whole country evenly. In the next sections, I use the geographical heterogeneity of the introduction of the radio to evaluate the impact of Roosevelt's communication. This heterogeneity can help to understand the effect of changes in expectations, given that this particular policy that affects the saving-consumption decisions of consumers. The next section explains the data used to estimate this effect.

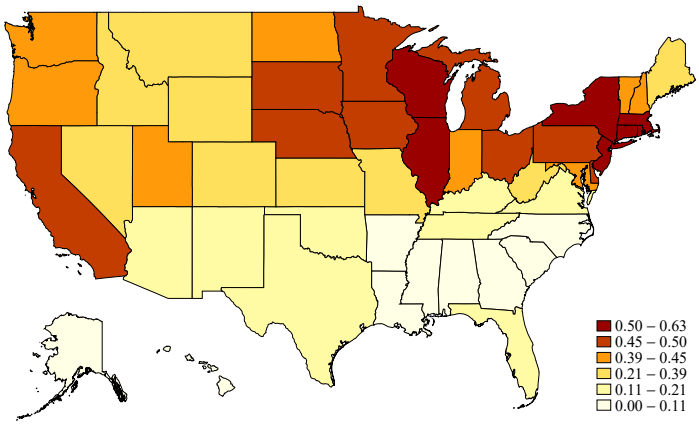
3 Data

This paper tries to estimate the effect of a communication treatment on economic behavior. In order to estimate that effect a measure of how many people listened to the speech is needed. One of the challenges is that there is not a variable that measured how many people listened to the speech or the geographical distribution of listeners. In addition, listening to the speech is not exogenous. That is why, I use the share of households in a given area that had a radio at the time as a proxy for having listened to the speech.

I use the 1930 Census of Population data to determine the average number of houses with radio in each region. Throughout this paper I will use different level of aggregation. The share

of households in a given area with radio is used as exposure to the speech[3]. The radio usage data are from 1930, two years before Roosevelt's election, and five years before the speech analyzed. Therefore, the measure of radio usage is not related with the actual event that I will analyze. Table A.1 shows the high degree of heterogeneity in radio adoption, ranging from 5.3 percent of households with radio in Mississippi to 62.5 percent in New Jersey. In general, southern states had fewer radios compared with northern states. This measure is gathered half a decade before the event, so it is not influenced by the event itself. Figure 1 shows the geographical heterogeneity by state:

Figure 1: Share of Households with radio by state in 1930



Note: The graph shows the share of households with at least one radio in 1930 at the state level, according to the 1930 Census of Population. This graphs uses the same numbers used in table A.1

The differences in distribution of radios might correlate with other economic variables, such as income. To prevent contamination from systematic differences at the state or city level, I control by those fixed effects. Through the paper, I use different sources of information and data. I estimate the effect of communication on spending on durable goods and savings. Table 1 shows the different sources of data, frequency and aggregation:

[3]I obtain the percentage of households that have a radio, using the 5 percent representative sample available online. I use households' expansion factors

Table 1: Variable Level, Frequency and Source

Variable	Level	Frequency	Source
Radio Share	State, County and City	1930	1930 Population Census
Demographic Characteristics	State, County and City	1930	1930 Population Census
Share of Woodland	State, City and County	1930	1930 Agricultural Centus
House Ownership	State, City and County	1930	1930 Population Census
Cars per capita	State	Annual	Hausman (2016)
State income per capita	State	Annual	BLS
State Income Growth	State	Annual	BLS
Deposits (logs)	State	Annual	Flood (1998)
Inflation	City	Annual	BLS
Public help per capita	City	Annual	Fishback, Horrace, and Kantor (2005)
Retail sales per capita	City	Bi-Annual	Fishback, Horrace, and Kantor (2005)
Building permits per capita	City	Annual	Hausman (2016)
Bank Debits	City	Weekly	G.6. Federal Reserve Board

Note: This table presents the main data used in the paper. For each variable I present the level of aggregation, frequency that the data is available and the source of the data.

The frequency of the data and aggregation depends on the availability. I use data from 1930 to 1939 at a state level. Hawaii and Alaska don't have data, as they became state in 1959. Because of this, I will use yearly data for 48 states plus the District of Columbia. Table 2 shows some summary statistics for the state-level data:

Table 2: State-level Variables

Full Sample	Obs	Mean	Std. Dev.	Min	Max
Radio Share	49	35.00%	16.69%	5.29%	62.50%
Cars per capita	490	0.018	0.009	0.003	0.056
State income per capita	490	462.2	203.9	122.0	1314.0
State Income Growth	490	-0.61%	15.40%	-36.69%	70.61%
Deposits per capita (logs)	490	-1.42	0.73	-3.51	0.50
Variable in 1935	Obs	Mean	Std. Dev.	Min	Max
Cars per capita	49	0.022	0.008	0.009	0.051
State income per capita	49	443.8	169.7	174	1031
State Income Growth	49	15.53%	13.30%	1.29%	61.38%
Deposits per capita (logs)	49	-1.49	0.710	-2.83	0.30

Note: The Table displays summary statistics for state level variables. The variable cars per capita comes from Hausman (2016). State income per capita and income growth come from the BLS and deposits come from Flood (1998).

As the table shows, the number of cars per capita was relatively low, averaging one car for every 50 persons, but reaching levels as high as one per 20 persons in some states, depending

on the year. Substantial heterogeneity emerges in income per capita, which was almost six times higher on some states than others in 1935 between states. In addition, income growth rates varied enormously from -36 percent to 70.61 percent. However, in 1935 all states were growing, which mitigates some concern about negative shocks hitting some areas, even if there is heterogeneity in growth rates. The data also show a high degree of heterogeneity in deposits. In per capita terms, these numbers range from a minimum of $0.029 to a maximum of $1.6.

In the main results, I use city-level data. For this level of aggregation, I obtain the radio usage variable from the 1930 Census of population as with the state level data. I have data on building permits from Hausman (2016). CPI data is available for a few cities and obtained from the BLS. Data on Federal aid and local sales come from Fishback, Horrace, and Kantor (2005). I obtain weekly data on bank debits from the report G.6., weekly published by the Federal Reserve Board. The radio share is obtained for the county where the city is located. The following table gives some descriptive statistics of those variables:

Table 3: City-level Variables

Full sample	Obs	Mean	Std. Dev.	Min	Max
Radio Share	261	39.16%	15.52%	4.19%	71.91%
Bank Debits (logs)	6,749	9.055	1.462	5.723	15.97
Inflation	154	-1.56%	4.93%	-13.42%	7.14%
Public help per capita	1,130	33.38	26.27	0.00	125.90
Building permits per capita	979	4.29	5.68	0.00	51.23
Variable t=event	Obs	Mean	Std. Dev.	Min	Max
Bank Debits (logs)	270	9.062	1.482	5.927	15.969
Inflation	14	2.86%	1.79%	-0.80%	6.25%
Public help per capita	113	41.02	18.36	6.08	85.09
Building permits per capita	100	2.39	2.75	0.00	15.21

Note: The Table displays summary statistics for city level variables. The first part of the table shows the statistics for each variable for the whole sample that it is available. In the case of the Radio Share, the data is only available for 1930. In the case of Bank Debits for all 1935. Inflation, public help and building permits are available from 1930 to 1940 at a yearly basis. The second part shows the statistics at the moment of the speech. For the yearly variables is in 1935 and for the bank debits is the week ending on April 24th, 1935.

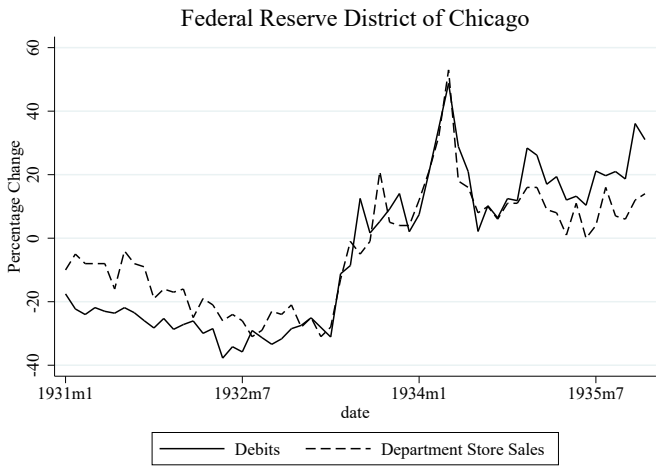
The table shows that the average percentage of households with radio is higher in cities than in states. This can be explained by the fact that radio infrastructure was developed to

target more populated areas, which were concentrated in counties with the cities listed in the reports. This might have created an incentive to obtain radios in those cities, where signals were more reliable.

The table also shows a high heterogeneity in inflation over time. On average inflation is negative, which is characteristic with this period, when the U.S. economy was hit by the Great Depression. On average, inflation was higher in 1935, which indicates the recovery underway at that time, even as some cities still exhibited negative inflation rates. The table also indicates that the level of federal fiscal aid was higher in 1935, with high levels of heterogeneity. There is also heterogeneity on building permits and on retails sales per capita.

The main results look at the effect of the communication event on bank debits. Bank debits represent the amount of money that exits the bank, so an increase in this variable is related to a decrease in deposits. Note that bank debits only represent one side of the equation, as I do not have the flow of income entering to the bank or the stock of deposits. Nonetheless, this variable is highly correlated with other variables that represent economic activity. For instance, the U.S. Federal Reserve, Report G.7.2 presents monthly percentage changes in department store sales at the Federal Reserve district level. Department store sales represent mostly expenditure on durables and semi-durable goods (Romer (1990)). I compare these data with bank debits aggregated monthly and at the Federal Reserve district level. Figure 2 shows the correlation for the Federal Reserve district of Chicago:

Figure 2: Yearly Percentage Change in Bank Debits and Department Store Sales in the Federal Reserve District of Chicago



Note: The solid line represents monthly debits in the Federal Reserve district of Chicago between 1931 and 1935. The dashed line shows the monthly department store sales in the Federal Reserve district of Chicago. Department store sales comes from the Federal Reserve Report G.7.2 and Debits from the Federal Reserve Report G.5.

The figure displays a high correlation not only in levels but also in changes. In particular, the variables coincide in periods of big changes. This feature is present in all the Federal Reserve districts. To undertake a more systematic analysis, I run a regression with different fixed effects and lags. The results are presented in Table A.2 in Appendix A.1. Current and past values of the changes in debits correlate with the changes in department store sales. These results are robust to including many lags of debits. Three lags of the changes in debits explain current changes in sales. These results are robust to the inclusion of time and zone fixed effects[4]. Thus, bank debits provides a good proxy for department store spending, (i.e. the spending on durable goods).

I use data from city-level bank debits, which were collected weekly by the Federal Reserve for 270 cities[5]. I then examine whether a reaction surfaces in this measure right after the speech. I aggregate these data bi-weekly to address cyclically noisy data for some cities.[6] The speech took place on a Sunday; the Federal Reserve reports weekly data from Thursday to Wednes-

[4]Also, I find similar results if I include lags of the retail sale variable

[5]The number varies over time. Clean data are available for 270 cities. Dropping cities with incomplete data and considering the state fixed effects reduces the total number of cities to 263.

[6]This could be because some individuals were paid every two weeks. Results hold with weekly data

day, meaning that incorporating a full week of time before the speech requires aggregation of two weeks of data. Therefore, in all the estimations, the first point estimate considers data collected from the Thursday before the speech to Wednesday a week after the speech (10 business days).

I have weekly data on bank debits at the city level, which is helpful because I can identify the effect the week after the speech. Bank debits are a good proxy for spending on durable goods. Nevertheless, I also show the effect of the speech at the state level using yearly data with more direct variables of consumption.

4 Estimation and City-level Results

4.1 Empirical Strategy and Main Results

To estimate the effect of being exposed to the speech on economic variables, I run a difference-in-difference regression. This specification includes a post-treatment dummy interacted with the regional ownership of radio in 1930. I run the following regression:

$$y_{ct} = \beta I(1\ if\ week > t_0) * RadioShare_{c,1930} + \gamma_c + \kappa(c)_{s,t} + \kappa(c)_{f,t} + \varepsilon_{ct} \tag{1}$$

Where c is the city, s the state, f the Federal Reserve district, and t the time that corresponds to two weeks. $y_{ct} = log(BankDebits)_{c,t}$ is the log of bank debits in a given city and time. As explained in the previous section, this is the sum of two weeks of bank debits. With the city fixed effect, I control for any systematic demographic and economic characteristics that might affect the results. State-time and Federal Reserve district-time fixed effects are important because the WPA and Social Security Act targeted some demographic characteristics (the unemployed, children, pensioners, veterans), and as a result, those demographics characteristic could explain part of the results. These results are robust to controls for some characteristics of the population affected by the policy (see Section 4.2). Because the effect could interact with the expectation of the policy reaction from any economic authority at the state or Federal Reserve district levels, incorporating time-variant fixed effects is important to incorporate variation at that level. As a result, findings should be interpreted as the within state (state-Fed in case a

state is spited by a Federal Reserve district) difference in expenditure. The convergence of the data is also at that level.

I take the share of households that own a radio for the county where the city is located.[7] These data also come from the Census of Population of 1930. I run regressions, including state-time fixed effect, Federal Reserve district-time fixed effect and city fixed-effect. I also control for the share of urban population specific trends, share of black population and the share of population with a population aged 55 or older. I have a total of 266 cities. After excluding cities that present changes in logs bigger than 1 or -1 at one point of the period in some specifications,257 cities remain. The average debit by city is $58,415 with a standard deviation of $444,784. Big financial cities such as New York influence this number. Results are presented in Table 4.

Table 4: Difference-in-difference Results at the City Level

	(1)	(2)	(3)	(4)	(5)
Radio Share ($t > t_0$)	0.181***	0.182***	0.209***	0.218***	0.229***
	(0.042)	(0.063)	(0.063)	(0.073)	(0.079)
City FE	Yes	Yes	Yes	Yes	Yes
State-Time FE	No	Yes	Yes	Yes	Yes
FRD-Time FE	No	No	Yes	Yes	Yes
Outliers	Yes	Yes	Yes	No	No
Controls	No	No	No	No	Yes
Observations	1,052	1,024	1,024	916	916

Note: The table shows the results for running specification 1. Column (1) shows the results for the specification without controls. Column (2) add state week fixed effect. Column (3) is (2) plus Federal Reserve District Fixed effects. Columns (4) is (3) and drops outliers. Outliers are cities with weekly changes greater than $|1|$ in logs and drops 5% of the bigger and smaller cities. Column (5) is (4) plus controls. Controls are trends interacted with the share of urban population, African American population and share of population older than 55 years old. Standard errors are clustered at the city level.

There is a significant effect in more exposed cities. The month after the speech, more exposed cities increased their bank debits by between 18.1 percent and 22.9 percent. These results are significant at the 1 percent for all the specifications. Taking into consideration the relevant variation on the radio share, one standard variation in the measure of exposure is about 15.52%.

[7] I use county, because the rural population would use the city bank. In case there is more than one city by county I use the city level radio share. I do the same in the case of cities that do not depend on counties

This means that the effect is between 2.8% and 3.55% on one standard deviation on the exposure. Taking into consideration the correlation between the change in debits and the change in department store sales, this means a increase in expenditure close to 2% depending on the specification.

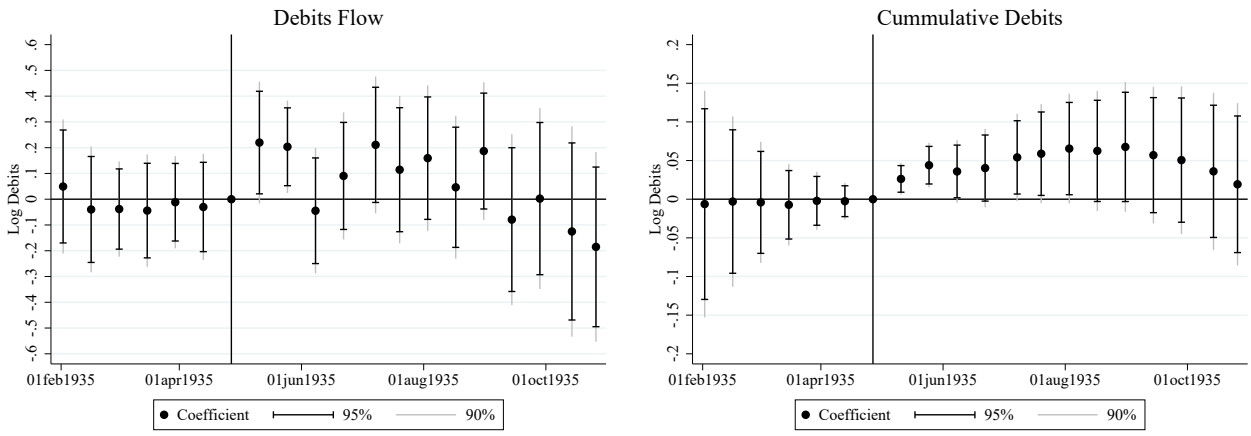
The identification assumption relies on the fact that nothing relevant happened related with the radio usage in the periods previous to the speech. In this sense, the previous results could be taking some previous higher growth of bank debits in cities with more radios. Then, I have to test whether the point estimates of the bank debits are similar to the baseline period before the speech. This means to show whether the coefficients of the pre-treatment are not statistically different from the period before the speech. To evaluate this, I run the following specification:

$$y_{st} = \sum_{t \neq t_0} \beta_y I(1\ if\ week = t) * RadioShare_{c,1930} + \gamma_c + \kappa(c)_{s,t} + \kappa(c)_{f,t} + \varepsilon_{ct} \tag{2}$$

Tables A.3 and A.4 in Appendix A.1 shows the results for this and other specifications for the flows and cumulative bank debits respectively.[8] The left panel of Figure 3 presents the results for column (6) in Table A.3, that includes controls and excludes outliers in changes and levels. The right panel presents the results for column (6) in table A.4. Standard errors are clustered at the city level. In addition to that result, the right panel shows the results for the cumulative city debit over the year 1935:

[8]Results are consistent when controls are excluded. I also show results excluding big financial centers (defined as cities with a regional Federal Reserve) and excluding cities that are between the 5% with more and less debits on average during the period. I also present results excluding New York City.

Figure 3: Biweekly Debits



Note: Left panel of the figure represents results of column (6) in table A.3. The dependent variable of the regression is biweekly sum of debits in logs and the dots represents the point estimate of a bi-week dummy interacted by the county share of radio. In the right panel there is the same specification, but with the sum over 1935 of the city's biweekly debits. Figure shows the results of column (6) in table A.4.The vertical dark lines represent confidence intervals at a 90 percent. The vertical gray lines represent confidence intervals at 95 percent. Standard errors are clustered at the county level.

The vertical line represents the week of FDR's speech[9]. We can see an increase in bank debits after the first two weeks. This effect is positive and statistically significant at the 95 percent level. After that period, we still see a positive impact, but not statistically significant at a 95 percent level. Overall, there is a positive effect.

The estimated effect is large: The coefficient reports an increase of 23 percent in bank debits if the city has full exposure compared with a region with no exposure to the speech the two-weeks after the speech. This means that a city with one standard deviation more radio usage increased their bank debits by 3.6 percent. There is no evidence of a pre-trend. Three months before the event, the effect is approximately zero and not significantly different to the baseline period. This result can be interpreted as an increase in the flow of spending of durable durables, that is significantly higher in more exposed cities a month after the speech. This doesn't mean that there is convergence after two weeks. After a month, less exposed cities will have a lower stock of durable goods.

[9]The speech was given a Sunday, so the vertical line indicates the week right before the speech, if we consider Sunday the first day of the week.

In order to evaluate when convergence occurs, the right panel shows the results for the annual sum of bank debits, in order to have a measure of the stock of spending in durable goods. We can see that the effect lasts for many more periods. After the initial post-speech increase, the stock of debits remains positive for 26 weeks, or six month. The effect is also statistically different from zero at a 90 percent for 14 weeks. Then it slowly converges to zero. This convergence is at the state level, as the regression includes state-time fixed effects. As Figure 3 shows, there are no pre-trends in this specification.

4.2 Robustness

The results presented above show an effect of the communication treatment on consumers' behavior that produced an increase in spending. The variable used to estimate the exposure is the share of households with radio in 1930. Even after controlling for local fixed effects and other variables, other omitted variables could bias the measure of exposure to the speech and affect the interpretation of the results. Different group of people could have reacted to the announcement and the regional importance of a group could be correlated with the share of radio ownership. The objective of this section is to clarify that the mechanism is listing to the speech through the radio and not a particular group reacting, independently of the share of radio.

The radio was not the only way to obtain information about the content of the speech. As in any communication treatment, individuals can get information by other sources as newspapers or talking with informed people. The information treatment in this case is the use of an homogeneous speech using a new technology. This mean that individuals exposed to the radio speech got the same information in a more efficient way. In that case, newspapers is also a relatively efficient way of getting information.

In the sample, I have the 263 relatively big cities. In those cities, access to newspapers was relatively high. But, there might be some heterogeneity in the access. In order to see if Newspapers played a role, I use a measure of newspaper circulation and control by it. Newspaper circulation can also be problematic. For instance, if I can access to the news-

paper circulation the next day, that measure can be contaminated by the treatment. Some people that listened to the speech might decide to read the debate the day after. This problem does not happen with the radio, once the speech is delivered, there is no other opportunity to listened to it. Because of that an ex-post measure of newspaper circulation will measure interest on the speech, in particular in cities with high homogeneity in the access. In order to address that concern I will use a measure of newspaper circulation previous the event.

I obtain data from Gentzkow, Shapiro, and Sinkinson (2011), where they have information on newspaper circulation for elections in the US. I obtain the data from 1934. With this, I run specification 1, but controlling by a time dummy interacted by that level of newspaper circulation at the city level. Table 4.2 present the results:

	(1)	(2)	(3)	(4)
Radio Share ($t > t_0$)	0.164***	0.175***	0.195***	0.208***
	(0.044)	(0.063)	(0.066)	(0.075)
City FE	Yes	Yes	Yes	Yes
State-Time FE	No	Yes	Yes	Yes
FRD-Time FE	No	No	Yes	Yes
Outliers	Yes	Yes	Yes	No
Observations	1,004	972	972	872

Note: The table shows the results for running specification 1. Column (1) shows the results for the specification without controls. Column (2) add state week fixed effect. Column (3) is (2) plus Federal Reserve District Fixed effects. Columns (4) is (3) and drops outliers. Outliers are cities with weekly changes greater than $|1|$ in logs and drops 5% of the bigger and smaller cities. Standard errors are clustered at the city level.

The results show similar effects, but smaller. The effects are between 1.4% to 0.7% the results found in the main results, with similar standard errors. This means that most of the variation found is not coming from newspapers and even controlling by that variable the results survive. This shows that the radio share did deferentially affected people behavior.

Another concern is that there is a potential correlation between wealth and radio ownership. Wealthy consumers could have a differential effect on outcomes after the policy announcement. Even if I control by zone characteristics with the city fixed effect, richer groups could react more strongly to the announcement. The fact that richer groups possibly react more is not a threat

to my identification strategy per se because they nonetheless react to the announcement. What could be problematic is if only rich people reacted that day; in that case, my measure of exposure would capture the reaction of wealthy, rather than the reaction to the wide range of people listening to the announcement. I address this potential issue by using another variable in the census that is related to wealth, but that is not related to the exposure to the speech. This measure is the share of households that owned a house in 1930 in a given county. As we can see in the first column of Table 5, this variable is highly correlated with the use of radio.

Table 5: Correlation with Radio Share

	House Owners	Unemployed	Older	African Am
Radio	0.763***	0.826**	2.285***	-0.711***
	(0.080)	(0.326)	(0.252)	(0.036)
Observations	263	263	263	263
R-squared	0.290	0.029	0.246	0.485

Note: *** p<0.01, ** p<0.05, * p<0.1. Column (1) shows the correlation between radio share by county, and the share of houses owned by households in 1930. Column (2) shows the correlation with the unemployment rate in 1930. Column(3) shows correlation with the share of the population 55 and older and column (4) shows the correlation with the share of the African-American population. All variables are from the Census of Population of 1930. Robust standard errors are shown in parentheses.

In addition to this correlation, the policies announced in the speech benefited certain groups of people more. Thus, these groups could be reacting to the announcement. For example, the WPA offered benefits to counties with higher shares of unemployed people. Therefore, I also run robustness with the share of unemployed workers according to the Census of 1930. The SSA disproportionately benefited older population. I use the share of population in the county aged 55 and older. African American were disproportionately excluded of the SSA. Then, I use the share of African American population in the county.

The strong correlation that emerges suggests that the share of radio ownership is potentially correlated with wealth and with the populations that most benefited from the policies. To see if the effect is driven by one of these measures (and not from the exposure to listening to the speech), I run specification 1, but instead of using the radio ownership share, I use each of these variables interacted by the dummy of post treatment. The results are presented in the first row

of Table 6.

Table 6: Other Variables as Placebo and Control

	(1) House Owners	(2) Unemployment	(3) Older	(4) African Am
Placebo	0.138	-0.187	-0.254	0.208
	(0.105)	(0.208)	(0.281)	(0.130)
Radio	0.205***	0.213***	0.229***	0.225***
	(0.073)	(0.073)	(0.073)	(0.072)

Note: The table shows the results for running specification 1 in the version of column (4) in Table 4. In the row placebo, I run specification 1, but instead of using the radio share, I use the variable that is in the top of the column. In the row Radio, I run specification 1, but controlling by the variable of the top of the column interacted by the treatment dummy. Standard errors are clustered at the city level.

The table shows that none of these variables have a significant effect after the communication treatment. Looking at the first row, the results indicate that the groups of people who were more likely to benefit from the policies have point estimate in the opposite direction than the expected sign. In the case of house ownership, the reaction goes in a similar direction, but is smaller and non-significant. This means that these groups of population did not react after the speech of April 28th, 1935 differently, independent of the share of radio. Next, I estimate if these variables have an influence on the coefficient found in the previous section. In the second row of table 6, I run specification 1, but controlling by the variables indicated at the top of the column, interacted by the treatment dummy variable.

The table shows that the results are not affected by those variables, even if they are highly correlated with the share of radio ownership. The point estimates are similar, moving from 0.205 to 0.229. Standard errors are similar, so the precision of the estimation doesn't change much. In all these cases the results are significant at the 99 percent confidence level. These results confirm that the effect is coming from the share of radio ownership, (i.e. from exposure to the speech). Even when controlling with variables that are correlated with the share of radio and of population affected by the policy, the results do not change.

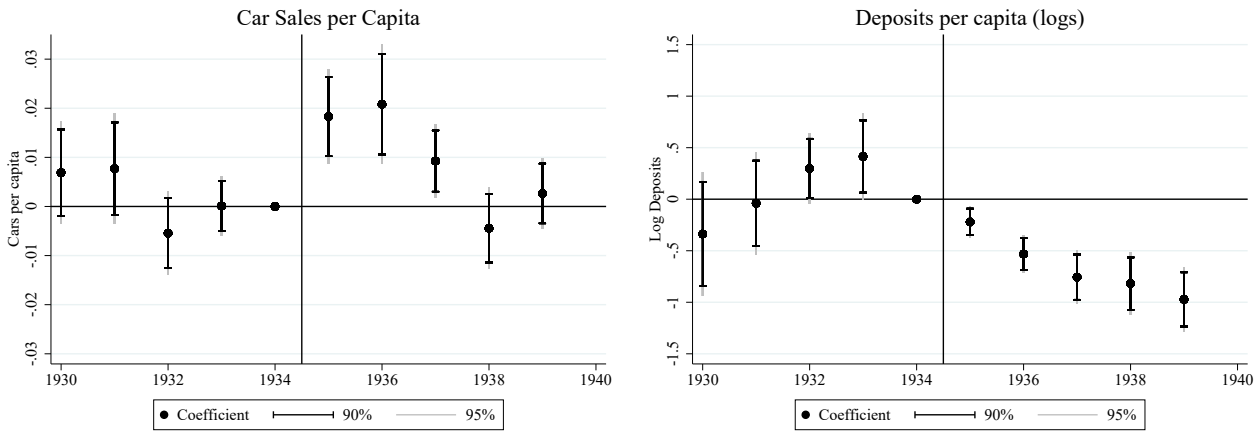
5 State-level Results

Previous results show a significant effect at the city level the week after the speech was made. The variable used correlated with expenditure on durable goods, which means that it can be a good proxy. In this section I run a similar specification, but with more direct measures in order to see if these results are consistent. One of the problems is that the aggregation will be higher in the number of individuals and periods. This section looks for consistency, as the identification is weaker.

I run specification 2 for two variables. The first is the expenditure on car per capita and the second is the log of deposits per capita. Instead of using state-time fixed effects, because of the variation that I have, I use geographical zone where the state is located. I use the eight Census zones: North East, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, Mountain, and Pacific.[10] I use income per capita growth and the income per capita in $t-1$, and their interaction with trends as controls. All regressions have state fixed effect and standard errors clustered at the state level. The set of results are presented in Appendix A.1 in Table A.5 for cars per capita and Table A.6 for deposits in logs. The left panel of Figure 4 displays graphically the results of column (6) in Table A.5.

[10] Results hold with a North-East, South, West and Midwest zoning

Figure 4: Results for Cars Sales per capita and Deposits (log)



Note: The left panel of this figure shows the results of column (6) in Table A.5. The dependent variable of the regression is the sales of cars per capita, and the dots represents the point estimate of a year dummy interacted by the state share of radio ownership. The right panel of this figure shows the results of column (6) in Table A.6. The dependent variable of the log of deposits and the dots represent the point estimate of a year dummy interacted by the state share of radio ownership. The vertical black lines and gray lines represent confidence intervals at a 90 percent and 95 percent respectively in both panels. Standard errors are clustered at the state level.

For all the specifications reported in Appendix A.1, there is a positive and significant effect at the 99 percent level in 1935 compared with 1934, the year before the policy and the speeches. In particular shifting from no exposure (no households with radios) to full exposure, increases the number of cars sales per capita by approximately in two standard deviations (0.018 versus a standard deviation for cars of 0.009). However, considering the actual variation of radio ownership, one standard deviation increase in radio usage, increases per capita spending on cars by 0.37 standard deviations. This result is also persistent: the estimated impacts in 1936 are similar; impacts in 1937 are smaller, but significant.

In the following exercise, I run specification 2, but with y as log of deposits per capita. Data for deposits was obtained using Flood (1998) and considers all the deposits of the state, including commercial banks and national banks. I run the regression in logs to see the percentage change in the stock. I use the same controls than in the specification for cars. Table A.6 and the right panel of Figure 4 presents the results.

I find that deposits per capita fall in exposed states for all the periods after the speech. This

effect is small during the year of the event, (28.7 percent of a standard deviation in 1935), but grows over time. By 1938 the coefficient is higher than one standard deviation. This result is consistent with the expected impact of the policy. If individuals expect social protection against a negative state of the economy, saving for precautionary reasons should decrease. For these results there is some evidence of pre-trends: I fail to reject the null hypothesis that the coefficients before the treatment are zero in some specifications. This finding changes depending on the controls added. The coefficients after the speech are big compared with the effects found before the event, and they are consistently significant.

These results suggest an effect of communication on consumers' economic behavior. Regions that were more exposed to the speeches had higher levels of spending and reduced their deposits after the speech in states with a higher level share of households with radios. In addition to the state level results, I include more yearly evidence at a city level. I use information about new house building permits from Hausman (2016). This variable is related to spending of durable goods, and it is an indicator of economic activity. In that sense, this variable is related with results related to the purchase of cars. In this part, I use data 106 cities in 36 states.

I use specification 2. One of the problems of using city-level data is that there are not many controls available related to economic activity. Furthermore, I am controlling more precisely for specific regional shocks in a given year. As a result, I use state-time fixed effects to control more precisely for local policies and local shocks. I also add controls, including the one-year-lagged retail sales[11] and Federal financial aid, which are related to the level of economic activity and targeted federal policies. I also include city fixed effects, that control for systematic characteristics of the city. Table A.7 in Appendix A.1 show the results of the regressions with and without the controls.

There is also a positive effect of the speech in cities more exposed to it. There is a positive and significant effect at 90 percent confidence level in 1936. The fact that these are slow and big investments could explain why a significant effect surfaces only a year after the speech and

[11]This variable is measured every two or three years. As a result, I do not use it as a dependent variable. Nevertheless, it helps to control for changes in economic activity in the city.

policy. Moving from no radio to full exposure increases the building's permits per capita by more than one standard deviation two years after the speech. These results confirm the state level results, but at a lower level of aggregation and with more controls.

One concern that might influence the result is that Roosevelt may have targeted public expenditure to cities with more radios. Strömberg (2004) shows that cities with more radios received more federal funds during the 1930s. The results presented above do not contradict his findings as I am estimating the differential effect after 1935. So, if there is a systematic targeting to the regions with more radios, that should be captured by the city fixed effect. To see if the results are influenced by government expenditure, I run specification 2, but with federal aid as the independent variable. Table A.8 in Appendix A.1 presents the results. The results show that cities more exposed to the radio received lower federal aid after the event. This finding could be due to countercyclical expenditure from the federal government. These results do not say that regions with more radio shares received less help, but that, after the speech they received relatively less compared to cities with higher radio share.

6 Instrumental Variables

One of the concerns on the results presented above is the potential correlation of the measure of exposure - the share of radio ownership - with some specific economic characteristic that makes individuals of those states or counties spend more after the announcement of the reform. Because of this, I try to find a variable that is correlated with the usage of radio, but not with the variable of interest. I use as an instrument for radio usage the state percentage of woodland in 1930 as in Strömberg (2004). The reason for this choice is that transmission through the air is affected by physical obstacles. So, households in a states or counties with many obstacles (such as forests) should have fewer incentives or opportunities to use radio because the signal, if available, will be distorted or of the poor quality.

The data that I use to construct the woodland area and the total area for each state and county come from the Agricultural Census of 1930. To divide the total woodland area of the

state or county by the total area. County variables are used in the city level results, I obtain the share of woodland in the county, where the city is located. For cities that are independent from a county (some in Virginia, for example), I only consider the city data. This measure is not perfect because, the forests can be in places where there is no human population. However, it serves as a good approximation. Economic activity can affect the share of woodlands in a state or city, but part of the heterogeneity in woodlands area and some patterns should not be affected by the economic characteristics of the state or city. In particular, there are more woods in the east compared with the west, as this area has dryer weather. In addition, northern states and counties have more woods. States and counties along the Mississippi River also have in general a higher share of woodland.

I will run the change of the dependent variable in a cross-section regression, as in specification 1. I use two years changes in the case of the annual cars sales and deposits per capita (1936 versus 1934) and the sum four weeks after the speech, compared with the previous four months in the case of bank debits. The results for the first stage, OLS and IV regressions are presented in the following table. Standard errors are clustered at the city level.

Table 7: IV Regressions

	State-Year					City-Bi week		
	First Stage	Cars		Deposits			Bank Debits	
Woodland	-0.832***					-0.597***		
	(0.228)					(0.273)		
Radio		0.030***	0.048***	-0.277***	-0.368*		0.356***	0.523*
		(0.006)	(0.025)	(0.005)	(0.199)		(0.087)	(0.273)
F-Test	13.171					27.290		
		OLS	IV	OLS	IV		OLS	IV
Observations	49	49	49	49	49	266	266	266

Note: *** p<0.01, ** p<0.05, * p<0.1. This table shows the results of the instrumental variable regression at the state level. Share of radio ownership is instrumented by the share of woodlands. The first column displays the results for the first stage. The second column shows the OLS result for car sales per capita and the third column shows the IV regression. The fifth and sixth columns display results for the log of deposits.

The first stage shows in both cases, at state and city levels, that the instrument is good at predicting the share of radio ownership. The F-stats are also high in each specification.

The results of the regressions using instrumental variables are similar for the case of cars sales per capita. With the instrument the effect for cars is slightly higher. In the case of deposits, the results are bigger in absolute value, and significant at a 90 percent level of confidence. These findings confirm the previous results. I find a significant and causal effect of being exposed to the speeches through the radio on variables related to an increase in spending.

The city-level results tell a similar story. The coefficients in the previous table confirm the results found in the baseline specification. The IV results present a higher, but less significant result for the month after Roosevelt's speech. The effects are big. A city with complete exposure increases its change in debits nearly 50 percent more compared with a city with no exposure. This confirms the previous results. [12]

7 Other Variables

If President Roosevelt convinced people to consume more, effect should also emerge in the subsequent election result. Of course, Roosevelt went on to win reelection in 1936. I can then show how the change in votes for Roosevelt between the 1932 and 1936 elections correlate with the exposure to the speech. Even though the election happened a year after the announcement and many politicians had access to the radio, this treatment should have affected other variables as well. The following specification shows the regression estimated in this section:

$$\Delta DemShare_{z,1936-1932} = \alpha + \beta RadioShare_{z,1930} + \gamma_s + \delta X'_{s,1935} + \varepsilon_z \tag{3}$$

where z is state or county (or city if there is more than a city in a county), depending on the regression run. $\Delta DemogratsShare_{z,1936-1932}$ is the percentage change in the presidential election votes of the Democratic Party. $RadioShare_{z,1930}$ is the radio share according to the 1930 Population Census. $gamma_s$ are state-level fixed effects used in the city-level regressions, and $X'_{s,1935}$ is the income growth in 1935, the year before the election. I cluster standard errors at the county level in the case of the city level regressions. Table 8 shows the results for specification

[12] In table A.9 I also show another instrument for the city level that is the distance to the closest radio tower. In that case, the coefficient is significant at a 5 percent confidence level and the coefficient reaches a value of 0.758.

3 at state and city level.

Table 8: 1936 Election Results and Radio Share

	State		City	
Radio share	0.153**	0.214***	0.250***	0.218**
	(0.063)	(0.060)	(0.048)	(0.102)
State income per capita growth		0.636***		
		(0.120)		
Constant	-0.013	0.019	.000	
	(0.017)	(0.015)	(0.016)	
Observations	48	48	269	263
State Fixed Effect			No	Yes
R-squared	0.079	0.315	0.074	0.439

Note: *** p<0.01, ** p<0.05, * p<0.1. This table shows results for regressions, where the independent is the regional share of radio ownership. The dependent variable is the change in the percentage of the vote won by Roosevelt between the 1932 election and the 1936. State income per capita in 1935 growth comes from the BLS. City-level data include state fixed effect in the last specification. Standard errors are clustered at the state level for the first two columns and at the city level in columns 3 and 4.

The results at the state and city level are similar. Having full exposure to the speech increased the percentage of the vote won by Roosevelt in 1936 by more than 20 percent compared to the share of vote won in state or cities with no exposure. This evidence suggest that the use of the radio speeches by President Roosevelt could have influenced voters.

In Appendix A.4 I show the results for other macroeconomics variables: growth, employment and inflation. They are in line with the results shown above. There in an increase in economic activity, non-manufacturing employment and inflation, consistent with an aggregate demand shock.

8 Other Speeches

The Fireside Chat of April 28th, 1935 provides a logical point of analysis communication-based policies for a number of reasons. President Roosevelt used it to announce important

future expansionary fiscal policies and taxes to finance them.[13]. It also was an isolated event in a period during which other policies did not stress financial variables; this allows bank debits to be used as a proxy for consumer spending, which grew. Nonetheless, Roosevelt gave other speeches via radio. In this section, I explore the characteristics and the effects of other speeches.

On January 4th 1935, Roosevelt spoke to the Congress in the State of the Union Address, setting out the policy agenda that he expected to pursue, in particular the WPA and the SSA. Most of the details about the SSA followed in a written message to the Congress on January 17th, 1935. Some radio stations broadcast a reading of the written message on that same day. Both messages were broadcast at noon (ET) on a weekday. These messages didn't have the characteristics of the Fireside Chats. The main intented audience was the members of Congress. The broadcast of the message occurred on a business day during working hours, and, thus, was not scheduled to reach a big audience. As a result the message was much less salient[14]

FDR gave four Fireside Chats in 1933 and two in 1934. I disregarded those Fireside Chats from the main results for many reasons. The 1933 events were in the middle of uncertainty about the currency. Roosevelt was ending the gold standard, so the banking statistics had a lot of volatility at that time. In addition to this, the Mach, 1933 banking holiday means that there are no data on bank debits at that time. As a result, is not possible to evaluate the Fireside Chat of March 12, 1933 with these data. The other Fireside Chats of 1933 can be used in principle, but they have important limitations.

Two of the 1933 events that relate to the changes in the value of currency, and, therefore, to changes in bank debits. The speech of May 7th, 1933 preceded the end of the gold standard, therefore it is difficult to interpret changes of bank debits as a consequence of the speech and not from reactions regarding the value of the currency. The speech of October 22th, 1933

[13]Section A.5, describes more about the implications of that type of announcement

[14]I evaluate the effect of the State of the Union and the Message to the Congress using specification 2 as before, but taking a sample that goes from July 1934 to May 1935. I drop January 2th, that is the week before both speeches. The next week ends in January 16th, that is before the message to the Congress in January 17th 1935. Results are described in table. A.14. There is a positive effect after the events, but it is small and statistically significant only in some specifications.

announced some policies regarding the value of the dollar that were not subsequently implemented. Because of that, the interpretation of any potential change is also problematic. In his speech of July 24th, 1933, FDR talked about a code sent to employers to agree to reduce hours worked, and increase employment. The rest of the speech focused on the Farm Act and the Industrial Act, which had both been approved and implemented at that time. The press didn't highlight any particular policy. Thus, the chat largely described policies that were already in place (i.e., the speech was backward-looking). During that speech, Roosevelt admitted that he didn't want to talk on the radio before seeing "the first fruits of our careful planning."

In 1934 he gave two Fireside Chats, focusing on answering critics and defending the NRA. In June 28th, 1934, the Chicago Daily Tribune headline "President Hits at Critics," and the Los Angeles Times headline said "Roosevelt Raps Critics in Defending New Deal." On September 30th, 1934, he talked more about general ideas about the New Deal and continued defending the NRA. He illustrated with the case of England and how that country managed the Great Depression. He also called for a "truce," according to the Chicago Daily Tribune and the New York Times. The Los Angeles Times highlighted that Roosevelt's speech urged "harmony" between capital and labor. Those speeches also focused on past policies, rather than policies that were going to be implemented. Table 9 summarizes the characteristics of those speeches.

Table 9: List of Fireside Chats and Speeches Before April 1935

Speech	Main Topic	Other Topics
12-Mar-33	Banking Crisis	End of bank holiday
07-May-33	New Deal Program	Gold Standard
24-Jul-33	Workers & employers code	Farm act and Industrial Acts
10-Oct-33	Currency control	Defend NRA
28-Jun-34	Legislative achievements	Policies approved
30-Sep-34	Defend the NRA	Comparison with England
04-Jan-35	State of the Union	WPA

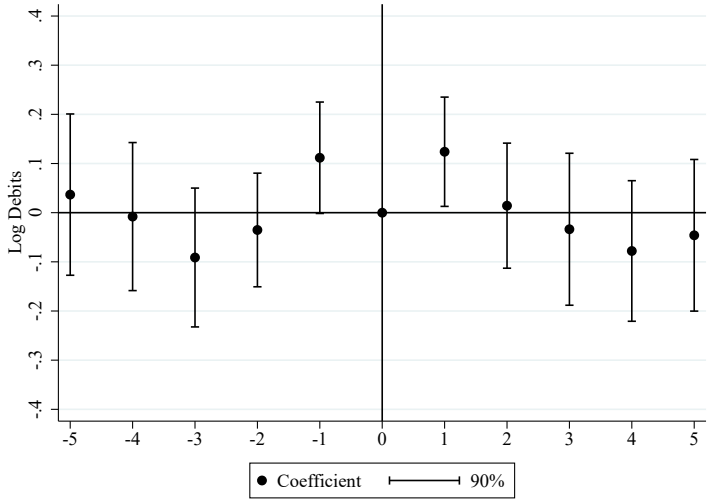
Note: The table shows the main speeches that Roosevelt gave prior the 1935 speech. It includes the date that the speech was made, the main topic and other topics that were included in the speech.

The results for each speech are presented in Appendix A.3. There effects are mixed, depending on which speech is analyzed. In order to make my analysis of other speeches more comparable to the analysis of the 1935 Fireside Chat, I conduct an events study with speeches that focused on some type of announcement. These events are the State of the Union Address of January 4, 1935, were President Roosevelt announced to the Congress the WPA. The speech of July 1933 and the announcement of currency measures in the Fireside Chat of October 22, 1933. The State of the Union was not salient because of how it was broadcast as explained before, so I do not expect big effects from it. Though Fireside Chat of 1933 did not include policy announcements, the fact that FDR promoted the labor-employers code to increase wages and reduce working hours could have an expansionary effect, given it was voluntary. Finally, the currency policies could have various effects. From one side, it could give confidence on the storage value of the currency and reduce withdraws, preventing a bank run, but also that confidence could have increased spending and the use of financial instrument. Therefore, the expected effect and its interpretation is not clear. Despite of all these caveats, I run the following events study pooling all these events:

$$y_{s,c,t} = \delta_{s,c} + \kappa_{s,t} + \sum_{i=-F}^{F} \beta_i \times 1(t = i) \times RadioShare_{c,1930} + \varepsilon_{s,c,t} \tag{4}$$

where s is a given speech, c is a city and t is the time around the speech. $\delta_{s,c}$ are city-event fixed effects, $\kappa_{s,t}$ is a week fixed effect and $Radio_share_c$ is the radio share ownership in a city c. I pick $F = 5$. The results are presented in figure 5.

Figure 5: Event Study Around Other FDR Speeches



Note: The graph shows the results of specification 4 with $F = 5$. Standard errors are clustered at the city-event level.

The figure shows a significant effect after the communication events. Effects are smaller than those following the speech of 1935, and they are less persistent. Two weeks after these events, bank debits increase by 10 percent. This finding confirms that the speeches in which Roosevelt announced policies had, in general, relatively expansionary effects in regions more exposed to the speeches. These events are, however, noisier: in the period before the speech bank debits are higher than the baseline, which could indicate other confounding factors. With all these differences, the effect is smaller. This indicates the importance of the effect of 1935. That announcement had a high and persistent effect. In the next section, I explore in greater detail some features of the event that can explain that big effect.

9 Discussion

The empirical results indicate that cities more exposed to the speech reacted by spending more on durable goods. Roosevelt's speech had several features that could have produced a similar effect. In this section I evaluate different mechanism that can be behind the results found.

One of them is the effect on confidence. Barsky and Sims (2012) define two different type of confidence shock. One is related with *animal spirits* it produces a temporary effect on consumption. The second is related with news about future positive productivity shock. In terms of the animal spirit shock, it could be associated by the oratory skills that Roosevelt (Kennedy (1999)). If this is a main driver, a similar effect should have happened in all the speeches that Roosevelt gave. In Section 8, I document that this effect is not present in all the speeches that Roosevelt gave and that it is associated with the announcement of policies. In particular, the big effect found in the speech of April 1935 should be related with the policy announcement, related with the WPA and the SSA. Because of that, it is not likely that the speech would be associated with a productivity shock. As the main message was related with transfers from the government, financed with an taxes.

A boost in confidence can still be related with the listening to the President announcing a fiscal instrument to boost aggregate demand in a recessive environment. Eggertsson (2008) shows, in the context of the recovery of 1933, that a shift in expectation related with the election of FDR and his economic plan, can explain the recovery of the U.S. economy. In particular, he shows that the elimination of the policy dogmas of the Hoover administration, shifted expectations and, because of that mechanism, increased economic activity. The speech of April 1935 could have the same effect, as it increased the probability that the WPA and the SSA would passed, and then created a increase in consumption in areas more exposed to the speech. The convergence of the cities occur when there are more certainty about those policies, as in August 1935, the SSA is signed as law. If that is the case, the announcement could have created an expansionary effect in the direction of the results of this paper through an increase in confidence, in this case, confidence that the government would perform expansionary policies.

Also on the fiscal side. The WPA and SSA represented future increases in government expenditures that were financed with a future permanent income tax. This policy mix, which has recent incarnations in the United States and other countries, has been the subject of examination in the economics literature. For example, D'Acunto, Hoang, and Weber (2018) examine how announcements of future increases in consumption taxes stimulate spending through

inter-temporal substitution without increasing government debt. D'Acunto, Hoang, and Weber (2016), find that an increase in spending on durable goods accounts for one the mechanism underpinning the increase in spending after a VAT announcement in Germany. Their measure in comparison to the measure used in this paper, is less direct; it relies on a binary survey question about specific durable goods. Johnson, Parker, and Souleles (2006), Parker, Souleles, Johnson, and McClelland (2013) and Sahm, Shapiro, and Slemrod (2012) document increases in non-durable spending after tax rebates in 2001 and 2008 in the United States. Parker (1999) and Kueng (2014) find increases in non-durable spending after announcements of decreases in income taxes. Hence, my analysis of the 1935 Fireside Chat has the potential to inform us not only about a particular episode, but also about recent experience.

In section A.5, I introduce a model to explore the reaction of an announcement of a payroll tax on spending in durable goods. I build a general equilibrium model, where consumers live in a multi-region monetary union. Households consume non-durable and durable goods, as in Barsky, House, and Kimball (2007) and Engel and Wang (2011). The only friction in the model is that households adjust their information set infrequently. Households' consumption decision depends on the probability of adjusting information as in Reis (2006a), Coibion (2006) and Mankiw and Reis (2007). The model seeks to incorporate the cost of information acquisition, and to show more radios usage reduce that cost (by having the opportunity to listen to the speech).

The model shows that, because of intertemporal substitution, the announcement of an increase in payroll tax increase spending of durable goods today. The model highlights the importance of durable goods in explaining the empirical results. With only non-durable goods, consumers react similarly to the announcement of the policy across regions. When the model incorporates the durable goods, differences emerge as more attentive consumers can anticipate the shock sooner. They increase their purchases of durable goods to have a higher stock of durable at the moment at the shock, where they decrease their spending on durable goods. This allows them smooth consumption of non-durable goods. The model shows that the main mechanism that consumers have to anticipate the shock is the adjustment in the stock of durable goods.

In this case, even if it would be the announcement of a contractionary policy, the expected effect would be similar. One way to test this effect is to show that at the moment of the implementation of the policy, we should see a reduction in durable spending, measured as bank debits. One of the problems is that there is not a good counterfactual, as at that point everybody got the information about the policy, but Figure A.1 shows that there is a decline in bank debits in January 1937, exactly when the payroll tax was implemented. This finding suggests that the empirical result found might have been driven by a reaction about an increase in the future cost of labor. Overall, there is not clear test to disentangle the particular driver of the effect and probably was a combination of confidence and information about the actual policy. There is no evidence of characteristics of local populations that creates a bigger effect after the announcement. The model shows that even the contractionary part of the policy should produce an effect in lines with the empirical results.

10 Conclusions

Blinder, Ehrmann, Fratzscher, De Haan, and Jansen (2008) observed that "It may be time to pay some attention to communication with the general public." This paper explores the effects that communication to the general public can have. Using a quasi natural experiment and historical data from the Great Depression, I show that regions with better access to the source of information increased their spending substantially compared with regions less exposed to the information treatment. Using weekly data on bank debits at a city level. I find an increase spending the week after the event. I also show that this effect is not permanent: there is convergence at the state level after approximately six months.

This result is relevant considering the increase interest on the use of "unconventional" policies by economic authorities: in a world with constraint fiscal and monetary instruments, the use of communication-based policies could be an effective alternative. Nevertheless, there is little evidence on the use of this type of policies, in particular exploring variation on individuals treated or not by the communication event. This paper shows that communication from economic authorities can produce a reaction on consumers behavior, even if no policy is being

implemented at the moment of the speech. This result shows that expectations are important and they could be influenced by economic authorities.

These results are in a context that should be analyzed. Roosevelt conducted fireside chats at times intended to draw large audiences, following popular programs, at times when most people might be at home, and with advanced notice. He innovated by using a very simple language, which was not common from authorities at that period of time, to explain complex policies. He also used a new technology, the radio, to receive more attention and being more approachable. This strategy is different, for example, from the one that has been used by many central banks, such as the U.S. Federal Reserve, in the last decade.

Historians have described how Americans were impressed by the speeches. Having the President explaining directly important issues opened a new way of communication that took people's attention. This paper also provides evidence that they reacted to the speech spending more. The lessons from this particular event could help to develop effective communication strategies from economic authorities. This paper is not conclusive about the use of these particular strategies. Further studies could try to understand better how this type of innovation could help in terms of having a bigger reaction from economic agents. This paper shows that communication can be used as a policy tool.

The main driver of the results might come from confidence or information about the particular policy. There is evidence from the Great Depression that the confidence channel might play a role. I also show that even the contractionary part of the policy, i.e. the increase in taxed, can produce a similar results, as consumers intertemporal substitute. I also show that the role of durable goods in that case is key, as they work as a saving mechanism. In that sense, better measure of durable goods could be useful to measure the effect of shocks related with expectations.

Overall, this paper shows the importance of communication for consumer behavior. The empirical results show that it is possible to effectively communicate to consumers and expect a reaction from them. The paper also shows the mechanism behind this reaction. Finally, it

opens the discussion if communication should be used as a policy tool, especially in context of recessions, where usual fiscal and monetary tools can be restricted.

References

BARSKY, R. B., C. L. HOUSE, AND M. S. KIMBALL (2007): "Sticky-Price Models and Durable Goods," *American Economic Review*, 97(3), 984–998.

BARSKY, R. B., AND E. R. SIMS (2012): "Information, animal spirits, and the meaning of innovations in consumer confidence," *American Economic Review*, 102(4), 1343–77.

BLINDER, A. S., M. EHRMANN, M. FRATZSCHER, J. DE HAAN, AND D.-J. JANSEN (2008): "Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence," *Journal of Economic Literature*, 46(4), 910–45.

CHESTER, E. W. (1969): *Radio, television, and American politics*. Burns & Oates.

COIBION, O. (2006): "Inflation inertia in sticky information models," *Contributions In Macroeconomics*, 6(1), 1–29.

COIBION, O., Y. GORODNICHENKO, AND S. KUMAR (2018): "How do firms form their expectations? new survey evidence," *American Economic Review*, 108(9), 2671–2713.

COIBION, O., Y. GORODNICHENKO, S. KUMAR, AND M. PEDEMONTE (2018): "Inflation Expectations as a Policy Tool?," Discussion paper, National Bureau of Economic Research.

COIBION, O., Y. GORODNICHENKO, AND M. WEBER (2019): "Monetary policy communications and their effects on household inflation expectations," Discussion paper, National Bureau of Economic Research.

COSTA, D. L. (1998): *The Evolution of Retirement*pp. 6–31. University of Chicago Press.

D'ACUNTO, F., D. HOANG, AND M. WEBER (2016): "The effect of unconventional fiscal policy on consumption expenditure," Discussion paper, National Bureau of Economic Research.

——— (2018): "Unconventional Fiscal Policy," *AEA Papers and Proceedings*, 108, 519–23.

DEL NEGRO, M., M. P. GIANNONI, AND C. PATTERSON (2012): "The forward guidance puzzle," *FRB of New York Staff Report*, (574).

DELLAVIGNA, S., R. ENIKOLOPOV, V. MIRONOVA, M. PETROVA, AND E. ZHURAVSKAYA (2014): "Cross-border media and nationalism: Evidence from Serbian radio in Croatia," *American Economic Journal: Applied Economics*, 6(3), 103–32.

DELLAVIGNA, S., AND E. KAPLAN (2007): "The Fox News effect: Media bias and voting," *The Quarterly Journal of Economics*, 122(3), 1187–1234.

EGGERTSSON, G. B. (2008): "Great Expectations and the End of the Depression," *American Economic Review*, 98(4), 1476–1516.

EGGERTSSON, G. B., AND B. PUGSLEY (2006): "The mistake of 1937: A general equilibrium analysis," *Monetary and Economic Studies*, 24(S-1).

ENGEL, C., AND J. WANG (2011): "International trade in durable goods: Understanding volatility, cyclicality, and elasticities," *Journal of International Economics*, 83(1), 37–52.

ENIKOLOPOV, R., M. PETROVA, AND E. ZHURAVSKAYA (2011): "Media and political persuasion: Evidence from Russia," *American Economic Review*, 101(7), 3253–85.

FISHBACK, P. V., W. C. HORRACE, AND S. KANTOR (2005): "Did New Deal grant programs stimulate local economies? A study of Federal grants and retail sales during the Great Depression," *The Journal of Economic History*, 65(1), 36–71.

FLOOD, M. D. (1998): "US historical data on bank market structure, 1896-1955," *Ann Arbor, MI: Inter-university Consortium for Political and Social Research*.

GENTZKOW, M., J. M. SHAPIRO, AND M. SINKINSON (2011): "The effect of newspaper entry and exit on electoral politics," *American Economic Review*, 101(7), 2980–3018.

GONZÁLEZ, F., AND M. PREM (2018): "Can television bring down a dictator? Evidence from Chile's "No" campaign," *Journal of Comparative Economics*, 46(1), 349–361.

HABER, C., AND B. GRATTON (1993): *Old age and the search for security: An American social history*. Indiana University Press.

HAUSMAN, J. K. (2016): "Fiscal policy and economic recovery: The case of the 1936 veterans' bonus," *American Economic Review*, 106(4), 1100–1143.

HERNÁNDEZ-MURILLO, R., AND H. SHELL (2014): "The rising complexity of the FOMC statement," *Economic Synopses*, (23).

JOHNSON, D. S., J. A. PARKER, AND N. S. SOULELES (2006): "Household expenditure and the income tax rebates of 2001," *American Economic Review*, 96(5), 1589–1610.

KENNEDY, D. M. (1999): *Freedom from fear: The American people in depression and war, 1929-1945*. Oxford University Press.

KUENG, L. (2014): "Tax news: The response of household spending to changes in expected taxes," Discussion paper, National Bureau of Economic Research.

LENTHALL, B. (2008): *Radio's America: The Great Depression and the Rise of Modern Mass Culture*. University of Chicago Press.

MANKIW, N. G., AND R. REIS (2002): "Sticky information versus sticky prices: a proposal to replace the New Keynesian Phillips curve," *The Quarterly Journal of Economics*, 117(4), 1295–1328.

——— (2007): "Sticky information in general equilibrium," *Journal of the European Economic Association*, 5(2-3), 603–613.

MERTENS, K., AND M. O. RAVN (2011): "Understanding the aggregate effects of anticipated and unanticipated tax policy shocks," *Review of Economic Dynamics*, 14(1), 27 – 54, Special issue: Sources of Business Cycles.

NAKAMURA, E., AND J. STEINSSON (2014): "Fiscal stimulus in a monetary union: Evidence from US regions," *American Economic Review*, 104(3), 753–92.

PARKER, J. A. (1999): "The reaction of household consumption to predictable changes in social security taxes," *American Economic Review*, 89(4), 959–973.

PARKER, J. A., N. S. SOULELES, D. S. JOHNSON, AND R. MCCLELLAND (2013): "Consumer spending and the economic stimulus payments of 2008," *American Economic Review*, 103(6), 2530–53.

REIS, R. (2006a): "Inattentive consumers," *Journal of monetary Economics*, 53(8), 1761–1800.

——— (2006b): "Inattentive producers," *The Review of Economic Studies*, 73(3), 793–821.

ROMER, C. D. (1990): "The great crash and the onset of the great depression," *The Quarterly Journal of Economics*, 105(3), 597–624.

SAHM, C. R., M. D. SHAPIRO, AND J. SLEMROD (2012): "Check in the mail or more in the paycheck: does the effectiveness of fiscal stimulus depend on how it is delivered?," *American Economic Journal: Economic Policy*, 4(3), 216–50.

STRÖMBERG, D. (2004): "Radio's impact on public spending," *The Quarterly Journal of Economics*, 119(1), 189–221.

WALLIS, J. J. (1989): "Employment in the Great Depression: New data and hypotheses," *Explorations in Economic History*, 26(1), 45–72.

YANAGIZAWA-DROTT, D. (2014): "Propaganda and conflict: Evidence from the Rwandan genocide," *The Quarterly Journal of Economics*, 129(4), 1947–1994.

YANG, S.-C. S. (2005): "Quantifying tax effects under policy foresight," *Journal of Monetary Economics*, 52(8), 1557 – 1568.

A Online Appendix

A.1 Additional Tables

Table A.1: Share of Households with Radio by State

State	% Radio	State	% Radio	State	% Radio
Alabama	9.3%	Maine	37.8%	Oklahoma	20.3%
Arizona	17.6%	Maryland	42.9%	Oregon	43.8%
Arkansas	9.0%	Massachusetts	56.8%	Pennsylvania	47.1%
California	50.5%	Michigan	49.9%	Rhode Island	55.9%
Colorado	36.9%	Minnesota	47.5%	South Carolina	8.0%
Connecticut	53.1%	Mississippi	5.3%	South Dakota	47.3%
Delaware	45.1%	Missouri	36.6%	Tennessee	13.5%
DC	52.3%	Montana	32.1%	Texas	17.7%
Florida	15.3%	Nebraska	48.0%	Utah	41.1%
Georgia	9.3%	Nevada	33.1%	Vermont	43.0%
Idaho	31.3%	New Hampshire	44.2%	Virginia	17.6%
Illinois	55.4%	New Jersey	62.5%	Washington	42.1%
Indiana	42.0%	New Mexico	11.3%	West Virginia	22.5%
Iowa	50.0%	New York	57.3%	Wisconsin	50.8%
Kansas	38.8%	North Carolina	10.4%	Wyoming	35.2%
Kentucky	17.2%	North Dakota	42.1%	Average	35.0%
Louisiana	10.9%	Ohio	47.4%		

Note: The Table shows the share of households with a radio in 1930 at the state level, according to the 1930 Census of Population.

Table A.2: Percentage Change in Department Store Sales over Change in Debits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Change in Debits	0.627***	0.630***	0.495***	0.499***	0.246***	0.249***	0.158***	0.160***
	(0.057)	(0.056)	(0.067)	(0.069)	(0.033)	(0.033)	(0.038)	(0.040)
Change in Debits (-1)					0.354***	0.354***	0.265***	0.264***
					(0.035)	(0.035)	(0.038)	(0.038)
Change in Debits (-2)								
Change in Debits (-3)								
Zone FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	754	754	754	754	715	715	715	715
R-squared	0.628	0.634	0.705	0.710	0.659	0.666	0.727	0.732

Note:*** p<0.01, ** p<0.05, * p<0.1. This table shows results of regressions with annual change monthly in department store sales over annual changes in debits for Federal Reserve districts. I include up to three lags, time fixed effect and district fixed effect depending on the specification. Standard errors are clustered at a Federal Reserve district level.

Table A.3: Bi-weekly city level regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
17-Jan-35	-0.173	-0.212	-0.144	-0.197	-0.233*	-0.179	-0.202
	(0.129)	(0.129)	(0.128)	(0.127)	(0.135)	(0.145)	(0.128)
2-Feb-35	0.090	0.057	0.090	0.044	0.008	0.057	0.039
	(0.115)	(0.114)	(0.117)	(0.117)	(0.127)	(0.129)	(0.118)
16-Feb-35	-0.076	-0.104	-0.092	-0.130	-0.126	-0.036	-0.126
	(0.105)	(0.105)	(0.107)	(0.108)	(0.119)	(0.121)	(0.109)
2-Mar-35	-0.044	-0.066	-0.047	-0.077	-0.101	-0.039	-0.076
	(0.085)	(0.085)	(0.086)	(0.087)	(0.096)	(0.093)	(0.088)
16-Mar-35	-0.018	-0.035	-0.027	-0.050	-0.083	-0.021	-0.059
	(0.098)	(0.098)	(0.098)	(0.099)	(0.109)	(0.112)	(0.100)
30-Mar-35	0.056	0.045	0.063	0.047	0.002	0.006	0.038
	(0.080)	(0.080)	(0.078)	(0.079)	(0.081)	(0.089)	(0.079)
13-Apr-35	-0.078	-0.083	-0.050	-0.058	-0.074	-0.032	-0.065
	(0.094)	(0.094)	(0.091)	(0.091)	(0.097)	(0.102)	(0.091)
11-May-35	0.217**	0.223**	0.225**	0.232**	0.202*	0.229**	0.218**
	(0.105)	(0.106)	(0.106)	(0.106)	(0.108)	(0.115)	(0.105)
25-May-35	0.153*	0.164**	0.154*	0.170**	0.212**	0.217**	0.177**
	(0.083)	(0.083)	(0.084)	(0.084)	(0.087)	(0.091)	(0.084)
8-Jun-35	-0.076	-0.059	-0.075	-0.052	-0.069	-0.041	-0.051
	(0.118)	(0.119)	(0.118)	(0.119)	(0.122)	(0.122)	(0.119)
22-Jun-35	-0.002	0.020	-0.007	0.023	0.026	0.069	0.018
	(0.110)	(0.111)	(0.109)	(0.111)	(0.119)	(0.125)	(0.111)
8-Jul-35	0.158	0.185	0.161	0.199	0.129	0.191	0.195
	(0.124)	(0.127)	(0.124)	(0.127)	(0.139)	(0.134)	(0.128)
20-Jul-35	0.003	0.036	-0.008	0.038	0.045	0.097	0.031
	(0.123)	(0.125)	(0.124)	(0.127)	(0.138)	(0.145)	(0.128)
3-Aug-35	0.145	0.184	0.123	0.176	0.121	0.156	0.171
	(0.131)	(0.134)	(0.129)	(0.134)	(0.141)	(0.141)	(0.134)
17-Aug-35	-0.150	-0.106	-0.072	-0.011	-0.026	0.024	-0.013
	(0.142)	(0.144)	(0.120)	(0.124)	(0.134)	(0.140)	(0.125)
31-Aug-35	-0.022	0.028	0.036	0.104	0.062	0.178	0.103
	(0.135)	(0.138)	(0.119)	(0.125)	(0.135)	(0.134)	(0.126)
14-Sep-35	-0.209	-0.154	-0.188	-0.111	-0.122	-0.077	-0.108
	(0.149)	(0.149)	(0.146)	(0.148)	(0.158)	(0.164)	(0.149)
28-Sep-35	-0.085	-0.024	-0.095	-0.011	-0.088	0.016	-0.013
	(0.147)	(0.150)	(0.148)	(0.153)	(0.161)	(0.174)	(0.154)
14-Oct-35	-0.235	-0.169	-0.229	-0.137	-0.206	-0.130	-0.141
	(0.169)	(0.175)	(0.170)	(0.179)	(0.186)	(0.203)	(0.180)
26-Oct-35	-0.325**	-0.253	-0.336**	-0.237	-0.280*	-0.186	-0.238
	(0.154)	(0.162)	(0.153)	(0.164)	(0.169)	(0.185)	(0.165)
9-Nov-35	-0.402**	-0.324	-0.396**	-0.289	-0.359*	-0.230	-0.293
	(0.192)	(0.198)	(0.192)	(0.200)	(0.208)	(0.231)	(0.201)
No Outliers	No	No	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes
Cities	261	261	257	257	244	230	256
Observations	6,525	6,525	6,425	6,425	6,100	5,750	6,400

Week ending the on April 28th is omitted. (1) unrestricted. (2) adds controls. (3) drops outliers. (4) drops outliers and includes controls. (5) drops cities with a Federal Reserve. (6) drops 10% of the cities with the highest and lowest average debits. (7) drops New York City. Controls are trends interacted with the share of urban population, African Americans and population older than 55 years old. Outliers are cities with changes in log bigger than 1 in absolute value. Standard errors are clustered at city level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A.4: Cumulative Bi-weekly city level regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
17-Jan-35	-0.051	-0.052	-0.022	-0.024	-0.062	-0.063	-0.024
	(0.091)	(0.090)	(0.090)	(0.088)	(0.092)	(0.099)	(0.089)
2-Feb-35	0.009	0.008	0.024	0.022	-0.003	-0.006	0.021
	(0.067)	(0.067)	(0.067)	(0.066)	(0.070)	(0.075)	(0.067)
16-Feb-35	-0.004	-0.005	-0.000	-0.002	-0.011	-0.003	-0.001
	(0.050)	(0.049)	(0.050)	(0.049)	(0.053)	(0.056)	(0.050)
2-Mar-35	-0.006	-0.006	-0.005	-0.006	-0.011	-0.004	-0.004
	(0.035)	(0.035)	(0.036)	(0.035)	(0.038)	(0.040)	(0.035)
16-Mar-35	-0.007	-0.008	-0.009	-0.011	-0.015	-0.007	-0.010
	(0.023)	(0.023)	(0.024)	(0.023)	(0.025)	(0.027)	(0.023)
30-Mar-35	0.005	0.005	0.003	0.002	-0.005	-0.002	0.002
	(0.017)	(0.016)	(0.017)	(0.017)	(0.018)	(0.019)	(0.017)
13-Apr-35	-0.001	-0.001	0.000	-0.000	-0.004	-0.003	-0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.012)	(0.010)
11-May-35	0.027***	0.027***	0.027***	0.027***	0.027***	0.026**	0.026***
	(0.009)	(0.009)	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)
25-May-35	0.040***	0.040***	0.040***	0.041***	0.047***	0.044***	0.041***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)
8-Jun-35	0.031	0.032	0.031	0.032	0.038*	0.036*	0.032
	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)	(0.021)	(0.020)
22-Jun-35	0.032	0.032	0.030	0.032	0.039	0.040	0.032
	(0.024)	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)	(0.025)
8-Jul-35	0.045	0.045	0.043	0.045	0.049*	0.054*	0.045
	(0.027)	(0.028)	(0.028)	(0.028)	(0.029)	(0.029)	(0.028)
20-Jul-35	0.045	0.046	0.043	0.045	0.051	0.059*	0.045
	(0.030)	(0.032)	(0.031)	(0.032)	(0.032)	(0.033)	(0.032)
3-Aug-35	0.056*	0.056	0.051	0.054	0.057	0.065*	0.054
	(0.033)	(0.035)	(0.034)	(0.035)	(0.036)	(0.036)	(0.035)
17-Aug-35	0.041	0.042	0.047	0.050	0.054	0.062	0.050
	(0.037)	(0.038)	(0.036)	(0.038)	(0.039)	(0.040)	(0.038)
31-Aug-35	0.035	0.037	0.046	0.050	0.052	0.068	0.050
	(0.041)	(0.042)	(0.039)	(0.040)	(0.042)	(0.043)	(0.041)
14-Sep-35	0.022	0.023	0.033	0.037	0.040	0.057	0.038
	(0.043)	(0.044)	(0.040)	(0.042)	(0.044)	(0.045)	(0.042)
28-Sep-35	0.016	0.017	0.026	0.030	0.029	0.051	0.031
	(0.046)	(0.047)	(0.043)	(0.045)	(0.048)	(0.049)	(0.046)
14-Oct-35	0.003	0.004	0.012	0.017	0.014	0.036	0.018
	(0.048)	(0.050)	(0.046)	(0.048)	(0.051)	(0.052)	(0.048)
26-Oct-35	-0.013	-0.012	-0.005	0.000	-0.004	0.019	0.001
	(0.049)	(0.051)	(0.047)	(0.050)	(0.052)	(0.054)	(0.050)
9-Nov-35	-0.032	-0.030	-0.024	-0.018	-0.025	0.002	-0.018
	(0.051)	(0.053)	(0.049)	(0.052)	(0.055)	(0.057)	(0.053)
No Outliers	No	No	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes
Cities	261	261	257	257	244	230	256
Observations	6,375	6,375	6,275	6,275	5,950	5,725	6,250

Week ending the on April 28th is omitted. (1) unrestricted. (2) adds controls. (3) drops outliers. (4) drops outliers and includes controls. (5) drops cities with a Federal Reserve. (6) drops 10% of the cities with the highest and lowest average debits. (7) drops New York City. Controls are trends interacted with the share of urban population, African Americans and population older than 55 years old. Outliers are cities with changes in log bigger than 1 in absolute value. Standard errors are clustered at city level. *** p<0.01, ** p<0.05, * p<0.1

Table A.5: Results for Cars per capita

	(1)	(2)	(3)	(4)	(5)	(6)
I(year=1930)	0.019***	0.022***	0.001	0.006	0.002	0.007
	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
I(year=1931)	0.015***	0.019***	0.004	0.007	0.005	0.008
	(0.002)	(0.005)	(0.004)	(0.005)	(0.004)	(0.006)
I(year=1932)	0.002	0.000	-0.000	-0.006	0.000	-0.005
	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)
I(year=1933)	0.002	-0.000	0.004**	-0.000	0.004***	0.000
	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
I(year=1935)	0.014***	0.023***	0.009***	0.019***	0.009***	0.018***
	(0.003)	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)
I(year=1936)	0.023***	0.030***	0.016***	0.022***	0.015***	0.020***
	(0.004)	(0.007)	(0.003)	(0.006)	(0.003)	(0.006)
I(year=1937)	0.024***	0.022***	0.014***	0.011***	0.012***	0.009**
	(0.003)	(0.005)	(0.002)	(0.003)	(0.003)	(0.004)
I(year=1938)	0.005***	0.005	-0.000	-0.003	-0.003	-0.005
	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)
Controls	No	No	Yes	Yes	Yes	Yes
Trend x Controls	No	No	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Zone-year FE	No	Yes	No	Yes	No	Yes
Observations	490	490	490	480	490	490

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.6: Results for Deposits (logs)

	(1)	(2)	(3)	(4)	(5)	(6)
I(year=1930)	-0.200	-0.229	-0.514**	-0.548*	-0.423*	-0.396
	(0.158)	(0.288)	(0.222)	(0.311)	(0.228)	(0.354)
I(year=1931)	0.066	0.057	-0.179	-0.182	-0.120	-0.078
	(0.135)	(0.241)	(0.179)	(0.257)	(0.184)	(0.282)
I(year=1932)	0.258**	0.362**	0.121	0.215	0.161	0.278
	(0.103)	(0.179)	(0.116)	(0.182)	(0.123)	(0.189)
I(year=1933)	0.234**	0.431**	0.198*	0.378*	0.221*	0.409*
	(0.095)	(0.188)	(0.108)	(0.203)	(0.112)	(0.212)
I(year=1935)	-0.086	-0.169*	-0.124**	-0.142*	-0.166***	-0.204**
	(0.055)	(0.094)	(0.057)	(0.071)	(0.059)	(0.085)
I(year=1936)	-0.263***	-0.395***	-0.357***	-0.345***	-0.450***	-0.489***
	(0.076)	(0.128)	(0.089)	(0.095)	(0.087)	(0.106)
I(year=1937)	-0.366***	-0.540***	-0.501***	-0.453***	-0.640***	-0.682***
	(0.090)	(0.197)	(0.110)	(0.143)	(0.108)	(0.142)
I(year=1938)	-0.380***	-0.574**	-0.515***	-0.410**	-0.701***	-0.712***
	(0.094)	(0.230)	(0.117)	(0.164)	(0.118)	(0.180)
Controls	No	No	Yes	Yes	Yes	Yes
Trend x Controls	No	No	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Zone-year FE	No	Yes	No	Yes	No	Yes
Observations	490	490	490	480	490	490

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.7: Building Permits by City

	(1)	(2)	(3)	(4)	(5)
I(year=1930)*radio	4.974	4.961	4.915	4.910	2.781
	(5.432)	(5.436)	(5.441)	(5.449)	(5.618)
I(year=1931)*radio	5.630*	5.620*	5.603*	5.599*	4.090
	(3.141)	(3.140)	(3.152)	(3.155)	(3.333)
I(year=1932)*radio	-0.617	-0.623	-0.683	-0.684	-1.782
	(0.814)	(0.816)	(0.818)	(0.819)	(1.183)
I(year=1933)*radio	-0.317	-0.319	-0.207	-0.211	-0.933
	(0.567)	(0.566)	(0.620)	(0.618)	(0.944)
I(year=1935)*radio	2.355	2.354	2.118	2.123	1.824
	(1.694)	(1.705)	(1.809)	(1.809)	(1.830)
I(year=1936)*radio	8.377**	8.402**	7.995**	8.015**	6.935*
	(3.449)	(3.462)	(3.629)	(3.626)	(3.981)
I(year=1937)*radio	7.511**	7.530**	7.242*	7.257**	5.782
	(3.476)	(3.470)	(3.661)	(3.641)	(3.796)
I(year=1938)*radio	9.964**	9.973**	9.335*	9.354*	8.297
	(4.904)	(4.905)	(5.510)	(5.472)	(5.613)
Log Sales per capita		0.734		0.347	-5.523
		(4.644)		(4.436)	(5.286)
Federal Aid			-0.012	-0.011	-0.011
			(0.024)	(0.023)	(0.024)
City FE	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes
Control trends	-	No	No	No	Yes
Observations	838	838	838	838	838
R-squared	0.843	0.843	0.844	0.844	0.845

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.8: Federal Aid and Radio

	(1)	(2)	(3)	(4)	(5)
I(year=1930)*radio	-4.086	1.887	-7.807	-1.856	-6.006
	(13.060)	(13.164)	(13.335)	(13.098)	(14.013)
I(year=1931)*radio	-0.960	3.281	-4.680	-0.450	-3.506
	(12.075)	(12.219)	(12.268)	(12.147)	(12.600)
I(year=1932)*radio	-3.328	-0.085	-3.328	-0.107	-0.868
	(11.707)	(11.820)	(11.715)	(11.798)	(11.742)
I(year=1933)*radio	11.903	14.020	11.903	14.006	13.569
	(9.945)	(10.001)	(9.951)	(9.994)	(9.965)
I(year=1935)*radio	-16.996	-15.934	-16.996	-15.941	-15.869
	(10.751)	(10.532)	(10.758)	(10.538)	(10.635)
I(year=1936)*radio	-31.577**	-29.434**	-33.718**	-31.579**	-30.571**
	(12.728)	(12.693)	(12.876)	(12.838)	(12.726)
I(year=1937)*radio	-23.854	-20.291	-25.994*	-22.446	-21.003
	(15.208)	(15.423)	(15.527)	(15.713)	(15.691)
I(year=1938)*radio	-51.391**	-48.786**	-53.531**	-50.934**	-48.786**
	(20.721)	(20.901)	(20.508)	(20.679)	(20.842)
Lag sales per capita		-28.903		-28.709	-4.157
		(20.749)		(20.509)	(3,127.488)
Democrats votes			-0.316*	-0.315*	-115.001
			(0.177)	(0.178)	(73.327)
City FE	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes
Control trends	-	No	No	No	Yes
Observations	1000	1000	1000	1000	1000
R-squared	0.939	0.940	0.941	0.942	0.943

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

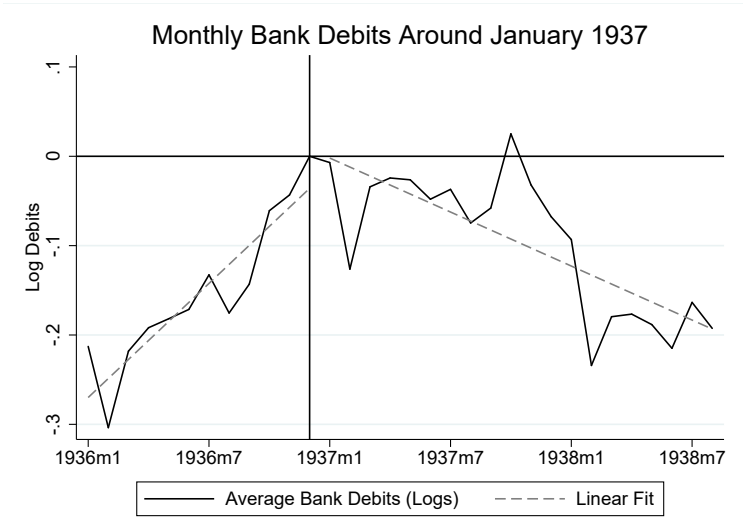
Table A.9: IV Regressions, bi-weekly Data

		Distance	
	OLS	First Stage	IV
Coefficient	0.356***	-0.001***	0.758**
	(0.087)	(0.000)	(0.323)
F-Test	27.290		17.779
Observations	266	268	268

Note: *** p<0.01, ** p<0.05, * p<0.1. This table shows the results of the instrumental variable regression for the bi-weekly debit regression. The dependent variables is the log of the bi-weekly sum of debits. The independent variable is the county share of radios. The share of radio is instrumented by the city distance to the closest radio station. I use the information provided by the Seventh Annual Report of the Federal Radio Commission to the Congress of the United States of 1933. They show there the radio station locations in a map with the name of the city. I calculate the distance in miles of those stations with the city from which I have debits. There are 113 stations. Standard errors are clustered at the city level

A.2 Additional Figures

Figure A.1: Decline in Economic Activity when Payroll Tax is Implemented



Note: The figure shows the results for regressions, where the dependent variable is the log of the sum of bi-weekly debits. In the left panel the dots represent the point estimate of a bi-weekly dummy interacted by the county share of radio. In the right panel the dots represent the point estimate of a bi-weekly dummy interacted by the county share of house ownership. The vertical red lines represent confidence intervals at a 90%. Standard errors are clustered at the county level.

A.3 Other Speeches

Since Roosevelt's inauguration until the event described in this paper, there were six other Fireside chats. I considered the Fireside chat of April 1935 because it involved a policy that affected the consumption-saving decision of individuals and also because it was an isolated event. But other speeches could also affect expectations and improve consumers' mood as is described by many historians. The following tables show the effect of the other speeches:

Table A.10: Bi-weekly city level regression: Fireside chat of July 24th, 1933

	(1)	(2)	(3)	(4)	(5)	(6)
12-Apr-33	-0.284	-0.193	-0.477**	-0.170	-0.350	-0.388
	(0.191)	(0.170)	(0.201)	(0.181)	(0.435)	(0.452)
26-Apr-33	-0.159	-0.047	-0.325*	-0.036	-0.242	-0.139
	(0.182)	(0.171)	(0.189)	(0.184)	(0.444)	(0.492)
10-May-33	-0.128	-0.077	-0.266	-0.029	-0.037	-0.090
	(0.177)	(0.160)	(0.183)	(0.171)	(0.334)	(0.343)
24-May-33	-0.221	-0.217	-0.331**	-0.178	-0.304	-0.292
	(0.148)	(0.151)	(0.150)	(0.161)	(0.309)	(0.338)
7-Jun-33	-0.121	-0.065	-0.204	-0.028	-0.300	-0.146
	(0.133)	(0.124)	(0.137)	(0.129)	(0.347)	(0.311)
21-Jun-33	-0.057	-0.052	-0.112	-0.061	0.158	0.142
	(0.112)	(0.111)	(0.113)	(0.117)	(0.239)	(0.243)
5-Jul-33	0.070	0.062	0.042	0.037	0.346	0.374
	(0.101)	(0.103)	(0.101)	(0.110)	(0.244)	(0.247)
2-Aug-33	0.236**	0.236**	0.264***	0.181*	0.186	0.210
	(0.095)	(0.098)	(0.097)	(0.101)	(0.262)	(0.278)
16-Aug-33	-0.147	-0.141	-0.091	-0.123	-0.204	-0.176
	(0.135)	(0.140)	(0.134)	(0.137)	(0.290)	(0.316)
30-Aug-33	-0.198	-0.194	-0.116	-0.207	-0.213	-0.173
	(0.155)	(0.157)	(0.157)	(0.161)	(0.458)	(0.470)
13-Sep-33	-0.418***	-0.441***	-0.308**	-0.378***	-0.252	-0.272
	(0.131)	(0.134)	(0.139)	(0.140)	(0.343)	(0.371)
27-Sep-33	-0.333**	-0.335**	-0.194	-0.359**	-0.515	-0.487
	(0.155)	(0.148)	(0.161)	(0.157)	(0.402)	(0.408)
11-Oct-33	-0.559***	-0.591***	-0.393**	-0.613***	-0.773*	-0.925**
	(0.157)	(0.158)	(0.157)	(0.165)	(0.439)	(0.457)
25-Oct-33	-3.475**	-3.454**	-3.281**	-2.554	-2.171	-1.970
	(1.554)	(1.610)	(1.555)	(1.655)	(3.237)	(3.541)
8-Nov-33	-0.339*	-0.396**	-0.118	-0.421**	-0.485	-0.596
	(0.187)	(0.193)	(0.190)	(0.210)	(0.472)	(0.515)
22-Nov-33	-0.595**	-0.475**	-0.347	-0.510**	-0.981**	-0.932*
	(0.231)	(0.203)	(0.243)	(0.224)	(0.493)	(0.516)
No Outliers	No	Yes	No	Yes	No	Yes
Controls	No	No	Yes	No	No	No
Observations	4,161	3,990	4,161	3,743	1,729	1,596
Cities	219	210	219	197	91	84

Results for the week ending the on July 19th are omitted. (1) Represent the full-unrestricted sample. (2) eliminates outliers. (3) Adds controls. (4) eliminates cities with a Federal Reserve. (6) includes counties that are more rural than the median. The controls are trends interacted with the share of urban population and the share of black population. Outliers are cities with changes in bigger than 1 and smaller than -1 in logs. Clusters are at city level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A.11: Bi-weekly city level regression: Fireside chat of May 7th, 1933 and October 22th, 1933

	May 7th, 1933						October 22th, 1933					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
19-Apr-33	-0.236**	-0.210**	-0.247**	-0.192*	-0.008	0.050	0.256	0.339**	0.122	0.407**	0.589*	0.685**
	(0.118)	(0.105)	(0.117)	(0.111)	(0.216)	(0.207)	(0.180)	(0.163)	(0.173)	(0.179)	(0.354)	(0.328)
3-May-33	0.000	0.000	0.000	0.000	0.000	0.000	0.492**	0.549***	0.369*	0.599***	0.597	0.635*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.190)	(0.167)	(0.188)	(0.182)	(0.387)	(0.340)
17-May-33	-0.250**	-0.311***	-0.240**	-0.288***	-0.219	-0.261	0.242	0.239	0.129	0.310*	0.378	0.374
	(0.105)	(0.092)	(0.105)	(0.096)	(0.208)	(0.196)	(0.173)	(0.162)	(0.172)	(0.179)	(0.385)	(0.359)
31-May-33	-0.113	-0.170	-0.092	-0.209*	-0.133	-0.125	0.380**	0.380***	0.277*	0.390**	0.464	0.510
	(0.125)	(0.106)	(0.124)	(0.109)	(0.185)	(0.186)	(0.155)	(0.145)	(0.157)	(0.159)	(0.368)	(0.347)
14-Jun-33	-0.132	-0.144	-0.101	-0.118	-0.154	-0.007	0.361*	0.405**	0.268	0.481***	0.444	0.628
	(0.159)	(0.139)	(0.159)	(0.146)	(0.315)	(0.305)	(0.186)	(0.163)	(0.185)	(0.173)	(0.504)	(0.428)
28-Jun-33	0.136	0.053	0.177	-0.005	0.281	0.232	0.628***	0.603***	0.546***	0.594***	0.879**	0.867*
	(0.152)	(0.134)	(0.152)	(0.143)	(0.314)	(0.278)	(0.160)	(0.155)	(0.158)	(0.168)	(0.437)	(0.449)
12-Jul-33	0.039	-0.043	0.090	-0.037	0.370	0.307	0.531***	0.507***	0.459***	0.561***	0.968**	0.942**
	(0.161)	(0.141)	(0.161)	(0.153)	(0.324)	(0.314)	(0.156)	(0.150)	(0.154)	(0.160)	(0.416)	(0.409)
26-Jul-33	0.224	0.189	0.286	0.115	0.217	0.286	0.717***	0.739***	0.655***	0.714***	0.815*	0.922**
	(0.175)	(0.152)	(0.177)	(0.161)	(0.352)	(0.323)	(0.158)	(0.151)	(0.153)	(0.161)	(0.454)	(0.458)
9-Aug-33	0.042	-0.014	0.114	-0.022	0.066	0.098	0.535***	0.536***	0.483***	0.576***	0.663*	0.734**
	(0.174)	(0.154)	(0.174)	(0.163)	(0.295)	(0.295)	(0.147)	(0.142)	(0.146)	(0.151)	(0.359)	(0.368)
23-Aug-33	-0.112	-0.156	-0.030	-0.191	-0.028	0.048	0.380***	0.393**	0.339**	0.408**	0.570	0.683
	(0.185)	(0.164)	(0.189)	(0.175)	(0.383)	(0.347)	(0.146)	(0.154)	(0.142)	(0.161)	(0.383)	(0.424)
6-Sep-33	-0.185	-0.249	-0.093	-0.232	0.092	0.127	0.307**	0.301**	0.276**	0.367**	0.690*	0.763*
	(0.177)	(0.157)	(0.179)	(0.165)	(0.378)	(0.361)	(0.136)	(0.136)	(0.134)	(0.146)	(0.363)	(0.389)
20-Sep-33	-0.364*	-0.432**	-0.261	-0.435**	-0.222	-0.206	0.129	0.117	0.108	0.163	0.375	0.429
	(0.193)	(0.168)	(0.192)	(0.179)	(0.395)	(0.353)	(0.110)	(0.112)	(0.109)	(0.123)	(0.325)	(0.358)
4-Oct-33	-0.184	-0.260	-0.071	-0.296*	-0.419	-0.463	0.308***	0.289**	0.298***	0.303**	0.178	0.173
	(0.183)	(0.161)	(0.182)	(0.174)	(0.381)	(0.372)	(0.111)	(0.112)	(0.111)	(0.123)	(0.322)	(0.334)
18-Oct-33	-0.492**	-0.549***	-0.369*	-0.599***	-0.597	-0.635*	0.000	0.000	0.000	0.000	0.000	0.000
	(0.190)	(0.167)	(0.188)	(0.182)	(0.387)	(0.340)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1-Nov-33	-0.221	-0.324*	-0.087	-0.396**	-0.448	-0.534	0.271**	0.225**	0.282**	0.202	0.149	0.101
	(0.202)	(0.182)	(0.199)	(0.197)	(0.355)	(0.323)	(0.112)	(0.111)	(0.112)	(0.123)	(0.253)	(0.267)
15-Nov-33	-0.485**	-0.478**	-0.341	-0.499**	-0.742**	-0.735**	0.007	0.071	0.028	0.100	-0.145	-0.100
	(0.213)	(0.189)	(0.212)	(0.209)	(0.331)	(0.294)	(0.129)	(0.121)	(0.130)	(0.133)	(0.242)	(0.259)
29-Nov-33	-0.437*	-0.440**	-0.283	-0.502**	-0.753**	-0.746***	0.055	0.109	0.086	0.096	-0.156	-0.111
	(0.224)	(0.198)	(0.225)	(0.223)	(0.321)	(0.272)	(0.169)	(0.167)	(0.170)	(0.186)	(0.333)	(0.362)
13-Dec-33	-0.374*	-0.461**	-0.209	-0.449**	-0.809**	-0.896***	0.119	0.088	0.160	0.149	-0.211	-0.261
	(0.217)	(0.207)	(0.210)	(0.226)	(0.320)	(0.315)	(0.151)	(0.152)	(0.150)	(0.162)	(0.339)	(0.337)
27-Dec-33	-0.436**	-0.456***	-0.261	-0.478***	-0.798**	-0.652***	0.057	0.094	0.108	0.121	-0.201	-0.017
	(0.194)	(0.157)	(0.201)	(0.173)	(0.334)	(0.222)	(0.123)	(0.128)	(0.129)	(0.139)	(0.306)	(0.318)
No Outliers	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Controls	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Observations	4,674	4,484	4,674	4,237	1,976	1,824	4,674	4,484	4,674	4,237	1,976	1,824
Cities	246	236	246	223	104	96	246	236	246	223	104	96

Results for the week ending the on July 19th are omitted. (1) Represent the full-unrestricted sample. (2) eliminates outliers. (3) Adds controls. (4) eliminates cities with a Federal Reserve. (6) includes counties that are more rural than the median. The controls are trends interacted with the share of urban population and the share of black population. Outliers are cities with changes in bigger than 1 and smaller than -1 in logs. Clusters are at city level. *** p<0.01, ** p<0.05, * p<0.1

Table A.12: Bi-weekly city level regression: Fireside chat of June 28th, 1934

	(1)	(2)	(3)	(4)	(5)	(6)
10-Jan-34	-0.200	-0.206	-0.286	-0.230	-0.748*	-0.780*
	(0.174)	(0.177)	(0.176)	(0.195)	(0.447)	(0.444)
24-Jan-34	-0.087	-0.078	-0.166	-0.026	-0.470	-0.376
	(0.162)	(0.163)	(0.162)	(0.182)	(0.361)	(0.374)
7-Feb-34	0.122	0.051	0.050	0.054	-0.183	-0.270
	(0.155)	(0.152)	(0.153)	(0.167)	(0.335)	(0.315)
21-Feb-34	-0.063	-0.101	-0.128	-0.086	-0.232	-0.304
	(0.125)	(0.126)	(0.126)	(0.138)	(0.264)	(0.256)
7-Mar-34	-0.002	-0.021	-0.059	0.028	-0.047	-0.149
	(0.145)	(0.144)	(0.143)	(0.155)	(0.362)	(0.357)
21-Mar-34	-0.024	-0.035	-0.074	-0.023	-0.131	-0.162
	(0.128)	(0.130)	(0.128)	(0.143)	(0.336)	(0.345)
4-Apr-34	-0.026	-0.087	-0.069	-0.097	-0.415	-0.538
	(0.155)	(0.151)	(0.153)	(0.167)	(0.365)	(0.344)
18-Apr-34	-0.042	-0.045	-0.078	-0.062	0.009	-0.028
	(0.115)	(0.110)	(0.114)	(0.121)	(0.279)	(0.279)
2-May-34	0.052	0.032	0.023	0.008	-0.144	-0.191
	(0.112)	(0.110)	(0.112)	(0.121)	(0.330)	(0.334)
16-May-34	-0.056	-0.130	-0.077	-0.118	-0.034	-0.147
	(0.110)	(0.100)	(0.109)	(0.109)	(0.307)	(0.287)
30-May-34	-0.082	-0.117	-0.096	-0.105	-0.248	-0.309
	(0.107)	(0.105)	(0.107)	(0.114)	(0.308)	(0.306)
13-Jun-34	-0.161	-0.234**	-0.168	-0.214*	0.029	-0.130
	(0.114)	(0.104)	(0.114)	(0.111)	(0.258)	(0.200)
11-Jul-34	-0.122	-0.173	-0.115	-0.134	-0.021	-0.134
	(0.120)	(0.112)	(0.120)	(0.119)	(0.241)	(0.214)
25-Jul-34	-0.025	-0.016	-0.010	-0.006	0.034	0.122
	(0.093)	(0.087)	(0.093)	(0.094)	(0.169)	(0.163)
8-Aug-34	-0.132	-0.198*	-0.110	-0.152	-0.106	-0.218
	(0.124)	(0.113)	(0.125)	(0.118)	(0.245)	(0.213)
22-Aug-34	-0.236*	-0.252*	-0.207	-0.246*	-0.520*	-0.527*
	(0.130)	(0.129)	(0.131)	(0.136)	(0.296)	(0.305)
5-Sep-34	-0.323**	-0.407***	-0.287*	-0.418***	-0.196	-0.395
	(0.154)	(0.142)	(0.154)	(0.153)	(0.345)	(0.297)
19-Sep-34	-0.415***	-0.476***	-0.372***	-0.458***	-0.423	-0.513*
	(0.142)	(0.135)	(0.140)	(0.147)	(0.271)	(0.262)
3-Oct-34	-0.313*	-0.395**	-0.263	-0.403**	-0.373	-0.489
	(0.162)	(0.156)	(0.161)	(0.173)	(0.345)	(0.326)
17-Oct-34	-0.452**	-0.530***	-0.395*	-0.497**	-0.680*	-0.788**
	(0.205)	(0.202)	(0.202)	(0.228)	(0.362)	(0.343)
31-Oct-34	-0.286	-0.363*	-0.222	-0.371	-0.573	-0.658*
	(0.204)	(0.203)	(0.200)	(0.231)	(0.370)	(0.371)
14-Nov-34	-0.409**	-0.489**	-0.338*	-0.450**	-0.564	-0.698*
	(0.198)	(0.191)	(0.195)	(0.215)	(0.390)	(0.363)
28-Nov-34	-0.384**	-0.356*	-0.306*	-0.351*	-0.608*	-0.634**
	(0.182)	(0.184)	(0.178)	(0.205)	(0.307)	(0.317)
No Outliers	No	Yes	No	Yes	No	Yes
Controls	No	No	Yes	No	No	No
Observations	6,760	6,578	6,760	6,240	2,990	2,938
Cities	260	253	260	240	115	113

Results for the week ending the on July 19th are omitted. (1) Represent the full-unrestricted sample. (2) eliminates outliers. (3) Adds controls. (4) eliminates cities with a Federal Reserve. (6) includes counties that are more rural than the median. The controls are trends interacted with the share of urban population and the share of black population. Outliers are cities with changes in bigger than 1 and smaller than -1 in logs. Clusters are at city level. *** p<0.01, ** p<0.05, * p<0.1

Table A.13: Bi-weekly city level regression: Fireside chat of September 30, 1934

	(1)	(2)	(3)	(4)	(5)	(6)
17-Jan-34	0.148	0.223	0.008	0.308*	-0.190	-0.133
	(0.173)	(0.168)	(0.172)	(0.181)	(0.289)	(0.291)
31-Jan-34	0.411**	0.469**	0.279	0.462**	0.044	0.134
	(0.181)	(0.181)	(0.174)	(0.200)	(0.331)	(0.337)
14-Feb-34	0.398**	0.374**	0.274*	0.429***	0.419	0.262
	(0.158)	(0.152)	(0.155)	(0.163)	(0.286)	(0.245)
28-Feb-34	0.363**	0.441***	0.246	0.469***	0.315	0.288
	(0.164)	(0.152)	(0.160)	(0.163)	(0.247)	(0.254)
14-Mar-34	0.311*	0.321*	0.202	0.357**	0.304	0.183
	(0.168)	(0.164)	(0.165)	(0.175)	(0.314)	(0.296)
28-Mar-34	0.332**	0.390**	0.231	0.410**	0.142	0.171
	(0.163)	(0.159)	(0.158)	(0.171)	(0.264)	(0.273)
11-Apr-34	0.342**	0.351**	0.249	0.350**	0.292	0.142
	(0.161)	(0.152)	(0.155)	(0.164)	(0.299)	(0.263)
25-Apr-34	0.413***	0.501***	0.328**	0.493***	0.352	0.411
	(0.143)	(0.140)	(0.140)	(0.151)	(0.262)	(0.271)
9-May-34	0.370**	0.361**	0.292**	0.353**	0.347	0.230
	(0.149)	(0.145)	(0.146)	(0.158)	(0.296)	(0.278)
23-May-34	0.246	0.290*	0.175	0.311*	0.228	0.207
	(0.150)	(0.148)	(0.146)	(0.161)	(0.282)	(0.286)
6-Jun-34	0.293*	0.302**	0.231	0.306**	0.425	0.289
	(0.151)	(0.141)	(0.148)	(0.152)	(0.289)	(0.263)
20-Jun-34	0.263**	0.313**	0.208	0.344**	0.377	0.394
	(0.129)	(0.123)	(0.129)	(0.133)	(0.233)	(0.240)
4-Jul-34	0.340**	0.358**	0.294*	0.375**	0.542*	0.451
	(0.157)	(0.151)	(0.152)	(0.164)	(0.309)	(0.312)
18-Jul-34	0.212	0.286**	0.173	0.329**	0.340	0.417
	(0.148)	(0.139)	(0.146)	(0.149)	(0.312)	(0.302)
1-Aug-34	0.413***	0.434***	0.382***	0.468***	0.536*	0.505*
	(0.146)	(0.147)	(0.143)	(0.158)	(0.281)	(0.285)
15-Aug-34	0.115	0.144	0.092	0.187	0.131	0.099
	(0.146)	(0.144)	(0.145)	(0.153)	(0.333)	(0.338)
29-Aug-34	0.011	0.048	-0.005	0.055	-0.107	-0.176
	(0.117)	(0.115)	(0.116)	(0.126)	(0.231)	(0.229)
12-Sep-34	-0.003	-0.032	-0.011	-0.010	0.205	0.011
	(0.117)	(0.102)	(0.117)	(0.111)	(0.253)	(0.198)
10-Oct-34	0.017	0.001	0.025	0.038	0.007	-0.144
	(0.142)	(0.126)	(0.142)	(0.142)	(0.235)	(0.177)
24-Oct-34	-0.041	-0.025	-0.025	0.001	-0.251	-0.271
	(0.160)	(0.162)	(0.159)	(0.183)	(0.204)	(0.209)
7-Nov-34	0.103	0.070	0.126	0.091	0.040	-0.097
	(0.160)	(0.152)	(0.160)	(0.170)	(0.273)	(0.230)
21-Nov-34	-0.102	-0.024	-0.071	0.027	-0.218	-0.207
	(0.166)	(0.155)	(0.165)	(0.172)	(0.226)	(0.232)
5-Dec-34	0.105	0.129	0.144	0.117	-0.042	-0.185
	(0.165)	(0.155)	(0.166)	(0.163)	(0.311)	(0.282)
No Outliers	No	Yes	No	Yes	No	Yes
Controls	No	No	Yes	No	No	No
Observations	6,240	6,072	6,240	5,760	2,760	2,712
Cities	260	253	260	240	115	113

Results for the week ending the on July 19th are omitted. (1) Represent the full-unrestricted sample. (2) eliminates outliers. (3) Adds controls. (4) eliminates cities with a Federal Reserve. (6) includes counties that are more rural than the median. The controls are trends interacted with the share of urban population and the share of black population. Outliers are cities with changes in bigger than 1 and smaller than -1 in logs. Clusters are at city level. *** p<0.01, ** p<0.05, * p<0.1

The tables show that there is heterogeneity on the effect of different Fireside Chats. In May 1933, Roosevelt gave a speech about the New Deal. In that speech Roosevelt explained how the New Deal was going. During the speech, Roosevelt recognized some mistakes[15] and also explained some challenges for the policies that he was pursuing. Also this speech, according to some sentiment analysis, is considered pessimistic. That can explain that there is a negative reaction of bank debits after the speech. Nevertheless, this speech was pronounced in a period of a lot of changes. It was in the middle of the "Hundred Years" and end of the Gold Standard.

The speech of July 1933 is followed by a big and short lived positive increase in bank debits. This speech was more optimistic and presented results from the hundred years. This speech was after the congress passed the farm and industrial recovery acts, so he could explain the effects of its policies, giving practical examples. The speech of October 1933 also presents a positive and short lived effect.

The other speeches in 1934 don't have a significant effect. This could be because no big announcement were made or because of the topics. The analysis of why a speech works or not goes beyond the purpose of this paper, but it seems that the fact of announcing a relevant policy can make a difference. In particular, the speech of April 1935 talked about future policies, which can explain the big economic effect of that announcement. The rest mostly described short run policies, without changes in future benefits or taxes, which can explain the small effect. The effect could be stronger in more benefit groups.

In addition to those Fireside Chats, President Roosevelt had another speech in 1935, where he announced some of the characteristics of the policies announced in the Fireside Chat of April 28th, 1935. This was the State of the Union of January 4th, 1935. This speech was on a week day at noon. This means that my measure of exposure could not be a good proxy of the share of the population that listened to the speech; if people were not at their houses, then they could listen in other places, also they might not be able to hear the speech if they were working. I run specification 2 around that event. Results are presented in table A.14:

[15] "I do not deny that we may make mistakes of procedure as we carry out the policy."

Table A.14: Bi-weekly city level regression: State of the Union and Message to the Congress

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-Aug-34	0.354**	0.406**	0.306**	0.367**	0.441**	0.383**	0.370**
	(0.150)	(0.157)	(0.151)	(0.158)	(0.170)	(0.176)	(0.159)
15-Aug-34	0.104	0.151	0.064	0.120	0.206	0.225	0.124
	(0.195)	(0.196)	(0.198)	(0.199)	(0.209)	(0.226)	(0.200)
29-Aug-34	0.012	0.054	-0.038	0.013	0.048	0.061	0.012
	(0.191)	(0.192)	(0.187)	(0.186)	(0.198)	(0.214)	(0.188)
12-Sep-34	-0.061	-0.023	-0.175	-0.131	-0.078	-0.001	-0.124
	(0.187)	(0.184)	(0.184)	(0.182)	(0.196)	(0.201)	(0.183)
26-Sep-34	-0.054	-0.021	-0.127	-0.088	-0.068	0.061	-0.084
	(0.179)	(0.178)	(0.169)	(0.167)	(0.180)	(0.176)	(0.168)
10-Oct-34	-0.229	-0.201	-0.314*	-0.281	-0.230	-0.161	-0.268
	(0.173)	(0.172)	(0.172)	(0.171)	(0.184)	(0.191)	(0.172)
24-Oct-34	-0.355**	-0.331*	-0.408**	-0.380**	-0.348*	-0.333*	-0.372**
	(0.180)	(0.181)	(0.174)	(0.174)	(0.188)	(0.196)	(0.175)
7-Nov-34	-0.157	-0.139	-0.256	-0.233	-0.189	-0.159	-0.231
	(0.172)	(0.171)	(0.167)	(0.167)	(0.180)	(0.192)	(0.168)
21-Nov-34	-0.427***	-0.413***	-0.416***	-0.399***	-0.339**	-0.322**	-0.390***
	(0.147)	(0.148)	(0.141)	(0.140)	(0.149)	(0.157)	(0.141)
5-Dec-34	-0.167	-0.157	-0.240*	-0.229*	-0.218	-0.271*	-0.229*
	(0.134)	(0.134)	(0.131)	(0.131)	(0.132)	(0.141)	(0.132)
19-Dec-34	-0.083	-0.078	-0.100	-0.095	-0.033	-0.035	-0.106
	(0.126)	(0.126)	(0.123)	(0.123)	(0.130)	(0.140)	(0.123)
16-Jan-35	0.029	0.025	-0.029	-0.035	0.020	0.043	-0.038
	(0.123)	(0.124)	(0.121)	(0.121)	(0.129)	(0.138)	(0.122)
30-Jan-35	0.270**	0.260**	0.159	0.148	0.198	0.169	0.143
	(0.129)	(0.130)	(0.117)	(0.117)	(0.128)	(0.136)	(0.118)
13-Feb-35	0.111	0.097	-0.002	-0.018	0.072	0.116	-0.014
	(0.146)	(0.148)	(0.135)	(0.136)	(0.145)	(0.157)	(0.137)
27-Feb-35	0.147	0.128	0.043	0.021	0.084	0.115	0.023
	(0.141)	(0.144)	(0.132)	(0.133)	(0.143)	(0.155)	(0.134)
13-Mar-35	0.154	0.130	0.024	-0.004	0.048	0.077	-0.012
	(0.160)	(0.163)	(0.146)	(0.147)	(0.158)	(0.174)	(0.148)
27-Mar-35	0.234*	0.206	0.129	0.096	0.141	0.113	0.088
	(0.139)	(0.143)	(0.127)	(0.129)	(0.138)	(0.151)	(0.130)
10-Apr-35	0.115	0.082	0.022	-0.017	0.056	0.074	-0.024
	(0.146)	(0.151)	(0.138)	(0.140)	(0.147)	(0.162)	(0.141)
24-Apr-35	0.194	0.156	0.076	0.031	0.122	0.116	0.033
	(0.162)	(0.168)	(0.150)	(0.154)	(0.163)	(0.175)	(0.155)
8-May-35	0.393***	0.351**	0.286**	0.236	0.301**	0.308*	0.223
	(0.150)	(0.157)	(0.141)	(0.146)	(0.152)	(0.165)	(0.146)
22-May-35	0.338**	0.291*	0.228	0.172	0.310*	0.304*	0.181
	(0.161)	(0.169)	(0.154)	(0.160)	(0.164)	(0.179)	(0.160)
5-Jun-35	0.110	0.058	0.014	-0.048	0.031	-0.006	-0.045
	(0.161)	(0.167)	(0.156)	(0.160)	(0.162)	(0.178)	(0.161)
19-Jun-35	0.205	0.149	0.087	0.021	0.119	0.134	0.017
	(0.159)	(0.168)	(0.150)	(0.156)	(0.165)	(0.176)	(0.157)
No Outliers	No	No	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	Yes	Yes	Yes
Cities	259	259	255	255	242	228	254
Observations	6,475	6,475	6,375	6,375	6,050	5,700	6,350

Week ending the on January 2th is omitted. (1) unrestricted. (2) adds controls. (3) drops outliers. (4) drops outliers and includes controls. (5) drops cities with a Federal Reserve. (6) drops 10% of the cities with the highest and lowest average debits. (7) drops New York City. Controls are trends interacted with the share of urban population, black population and population older than 55 years old. Outliers are cities with changes in log bigger than 1 in absolute value. Standard errors are clustered at city level. *** p<0.01, ** p<0.05, * p<0.1

A.4 Other Macroeconomic Aggregate

In this section, I explore what happened with income, inflation, and employment. For income, I use personal income per capita at the state level from the BLS. For employment, I use manufacturing employment and non-manufacturing employment from Wallis (1989). He had an index for each of the 49 continental states. In the case of the inflation data, CPI was obtained at a city level at that time. The BLS collected data in Chicago, Boston, New York City, Philadelphia, Pittsburgh, Saint Louis, Detroit, Cincinnati, Cleveland, Kansas City, Atlanta, Dallas, San Francisco, Los Angeles, and Seattle. I run that regression controlling by state income and Federal Aid. The following table presents the results for income, employment, and inflation:

Table A.15: Macro Variables and Radio

	(State Level)				(City Level)	
	Income pc growth	Income pc	Man Empl	Non-Man Empl	Inflation	Inflation
I(year=1930)*radio	0.448***	505.522***	42.1**	0.10	0.088***	0.032
	(0.146)	(77.953)	(17.23)	(18.35)	(0.024)	(0.034)
I(year=1931)*radio	0.368**	380.485***	38.5**	-1.02	0.069**	0.029
	(0.155)	(99.330)	(17.04)	(19.63)	(0.034)	(0.042)
I(year=1932)*radio	0.503***	200.322*	28.7**	-11.02	0.075	0.063
	(0.130)	(100.505)	(10.56)	(14.26)	(0.056)	(0.048)
I(year=1933)*radio	-0.000	2.651	12.5	11.3	-0.040*	-0.035
	(0.125)	(37.653)	(10.07)	(9.61)	(0.021)	(0.027)
I(year=1935)*radio	0.451***	123.186***	4.94	18.8*	0.088**	0.087**
	(0.135)	(21.500)	(7.76)	(10.71)	(0.041)	(0.040)
I(year=1936)*radio	0.271**	270.369***	-0.71	- 16.4	0.075***	0.076**
	(0.120)	(53.608)	(11.50)	(11.90)	(0.028)	(0.030)
I(year=1937)*radio	0.350***	353.841***	-7.32	-1.68	0.107***	0.101***
	(0.121)	(75.076)	(12.46)	(11.77)	(0.033)	(0.035)
I(year=1938)*radio	0.349***	250.773***	-18.2*	12.8	0.034	0.051**
	(0.125)	(32.057)	(9.70)	(19.75)	(0.021)	(0.025)
I(year=1939)*radio	0.270***	307.016***	-2.53	11.7	0.078***	0.079***
	(0.089)	(56.463)	(12.3)	(18.48)	(0.019)	(0.028)
Federal aid						-0.000**
						(0.000)
State income						0.000
						(0.000)
Observations	490	490	480	480	140	140
R-squared	0.877	0.991	0.904	0.862	0.945	0.951

Note: *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is presented on the top of the column. Income per capita growth and income per capita are at the state level and comes from the BLS. Manufacturing and non-manufacturing employment comes from Wallis (1989) and are at the state level. Inflation data comes from the BLS are are at the city level for 14 cities. Standard errors are clustered at the state or city level depending on the specification.

We can see a positive effect after the reform. For income per capita at a state level we can see that the effect is significant for income per capita in levels and growth. We see also that these regions were growing faster at the beginning of the period, which indicate some cyclical difference between the states.

In the case of employment, we can see that in the case of manufacturing employment there is no effect in the period after the speech. The effect is small and not statistically significant. In the case of non-manufacturing employment, we can see a high and significant impact. These results are consistent with a local increase in economic activity. If the effect is local, the increase in the demand for tradable goods should be similar in every region, as the rise in the demand comes from everywhere.In the case of inflation there are not significant pre-trends. We see a positive and significant effect after the speech.

A.5 Model the Tax Announcement

The empirical results indicate that cities more exposed to the speech reacted by spending more on durable goods. Though Roosevelt's speech had several features but, , I now turn to focus solely on the fiscal side. The WPA and SSA represented future increases in government expenditures that were financed with a future permanent payroll tax. This policy mix, which has recent incarnations in the United States and other countries, has been the subject of examination in the economics literature. For example, D'Acunto, Hoang, and Weber (2018) examine how announcements of future increases in consumption taxes stimulate spending through inter-temporal substitution without increasing government debt. D'Acunto, Hoang, and Weber (2016), find that an increase in spending on durable goods accounts for one the mechanism underpinning the increase in spending after a VAT announcement in Germany. Their measure in comparison to the measure used in this paper, is less direct; it relies on a binary survey question about specific durable goods. Johnson, Parker, and Souleles (2006), Parker, Souleles, Johnson, and McClelland (2013) and Sahm, Shapiro, and Slemrod (2012) document increases in non-durable spending after tax rebates in 2001 and 2008 in the United States. Parker (1999) and Kueng (2014) find increases in non-durable spending after announcements of decreases in income taxes. Hence, my analysis of the 1935 Fireside Chat has

the potential to inform us not only about a particular episode, but also about recent experience.

To rationalize the empirical findings through the lens of theory and incorporate the evidence of other academic works, I develop a multi-region sticky information model (e.g. Mankiw and Reis (2002), Reis (2006b), Reis (2006a), Coibion (2006)), in which regions have different level of information stickiness. My framework also builds on models of durable goods (as in Barsky, House, and Kimball (2007) and Engel and Wang (2011)). The model also tries to understand the level inattention in the data and how radio usage helped to reduce inattention with the announcement.

Having consumers with sticky information implies that in each period there is a constant probability of updating information. Roosevelt's speech can be interpreted as an increase of the perceived probability that the WPA and SSA will be implemented. Therefore, consumers who listened to the speech would adjust their expectations given this announcement, while consumers who did not listen to the speech would maintain the same expected consumption path. In that sense, a higher probability of updating information could be associated with listening to the speech, hence with a higher share of radio ownership. Later in this section, I relate radio usage and the speed of information updating in the model.

In this version of the model, only consumers have sticky information. They live in one of many symmetric regions in the economy. In each region, there is a tradable durable and non-durable sector with perfectly competitive firms. There is no labor mobility between regions, but there is perfect labor mobility across sectors in a region. There is a single monetary policy that targets aggregate variables. Goods can be traded across regions with no trade costs, and consumers have preferences for varieties of goods produced everywhere.

A.6 Setting

I start with a version of the model in which there are only two regions $r = \{A, B\}$. Each region has a representative agent i that, given her information in time t, consumes a final good bundle

$X_{r,t}$ and supplies labor $N_{r,t}$. The consumption bundle is composed of the flow of a non-durable good (C) and the stock of a durable good (D) that depreciates at rate δ. The representative consumer maximizes:

$$\max E_{t-k} \sum_{z=0}^{\infty} \beta^z \left[\log X_{r,t+z} - \frac{\nu}{1+\psi} N_{r,t+z}^{1+\psi} \right]$$

subject to

$$P_{r,C,t+z} C_{r,t+z} + P_{r,D,t+z} I_{r,t+z} + B_{r,t+z} \leq (1-\tau_{r,t}) W_{r,t+z} N_{r,t+z} + B_{t+z-1} R_{r,t+z-1} + T_{r,t+z}$$

with

$$X_{r,t+z} = \left[(1-\alpha)^{\frac{1}{\eta}} C_{r,t+z}^{\frac{\eta-1}{\eta}} + \alpha^{\frac{1}{\eta}} D_{r,t+z}^{\frac{\eta-1}{\eta}} \right]^{\frac{\eta}{\eta-1}} \tag{5}$$

and

$$I_{r,t} = D_{r,t} - (1-\delta) D_{r,t-1}$$

$N_{r,t}$ is the labor supply, which can be provided to both sectors D and C with $N_{r,t} = N_{C,r,t} + N_{D,r,t}$. $W_{r,t}$ the wage earned in region $r = A, B$, as there is free labor mobility within a region, wages across sectors are equalized, therefore $W_{r,t} = W_{D,r,t} = W_{C,r,t}$. $B_{r,t}$ is the holding risk-less bond, that costs R_t. $C_{r,t}$ is the consumption of non-durables and $D_{r,t}$ is the stock of durables. Both of them aggregate to $X_{r,t}$ given by equation 5. Finally, $T_{r,t}$ are transfers from the government and $\tau_{r,t}$ payroll taxes charged to the consumers to finance those transfers. As firms are competitive, profits are zero. The non-durable consumption bundle consists of one good produced locally (H) and another produced abroad (F) with a common elasticity of substitution between both goods ω_c. ϕ_c represents a preference shifter that is between zero and one. If $\phi \in (0.5, 1]$ the local consumer has home bias. The non-durable consumption bundle is given by:

$$C_{r,t} = \left[\phi_c^{\frac{1}{\omega_c}} C_{H,r,t}^{\frac{\omega_c-1}{\omega_c}} + (1-\phi_c)^{\frac{1}{\omega_c}} C_{F,r,t}^{\frac{\omega_c-1}{\omega_c}} \right]^{\frac{\omega_c}{\omega_c-1}}$$

The corresponding price index of the non-durable consumption bundle is:

$$P_{r,C,t} = \left[\phi_c P_{C,H,r,t}^{1-\omega_c} + (1-\phi_c) P_{C,H,r',t}^{1-\omega_c}\right]^{\frac{1}{1-\omega_c}}$$

where r' is B when $r = A$ and vice versa. $P_{C,H,r,t}$ is the price of the non-durable good produced in r and $P_{C,H,r',t}$ is the price of the non-durable good produced in $r' \neq r$. The durable good is also tradable, and given by:

$$D_{r,t} = \left[\phi_d^{\frac{1}{\omega_d}} D_{H,r,t}^{\frac{\omega_d-1}{\omega_d}} + (1-\phi_d)^{\frac{1}{\omega_d}} D_{F,r,t}^{\frac{\omega_d-1}{\omega_d}}\right]^{\frac{\omega_d}{\omega_d-1}}$$

and its price index is defined as:

$$P_{r,D,t} = \left[\phi_d P_{D,H,r,t}^{1-\omega_d} + (1-\phi_d) P_{D,H,r',t}^{1-\omega_d}\right]^{\frac{1}{1-\omega_d}}$$

with $P_{D,H,r,t}$ the price of the durable good produced in r and $P_{D,H,r',t}$ the price of the durable good produced in $r' \neq r$.

I introduce inattentive consumers as in Coibion (2006), Mankiw and Reis (2007), and Reis (2006a). Consumers in region $r = A, B$ adjust their information with an exogenous probability $(1-\mu_r)$. Then, the representative consumer in each region decides her consumption path depending on whether she has updated information. Consumers who do not adjust information at the moment of the announcement will act as if the announcement was not made. They will continue following the path of consumption previously decided. Consumers who heard the announcement adjust information and revise their consumption plans accordingly. Therefore, $1-\mu_r$ represents the fraction of consumers who update information in a given region (i.e. that listened to the announcement). I relate $1-\mu_r$ to the measure of exposure used in the empirical part of this paper. Specifically, listening to the speech increased the perceived probability that the WPA and SSA will be implemented in policy, leading consumers who listened to the speech to react according to those anticipated policies. In an extreme case, if nobody listens to the speech, nothing new happens.

Given this setting, the log-linearized level of desire consumption is defined by $\check{c}^*$ in the case

of the non-durable good and $\check{d}^*$ for the durable good. Then, time t log-linearized consumption of the non-durable good in region r and produced in region s, $\check{c}_{s,r,t}$ is given by:

$$\check{c}_{s,r,t} = (1-\mu_r)\sum_{i=0}^{\infty}\mu_r^i E_{t-i}\check{c}^*_{s,r,t}$$

and in the case of the durable good:

$$\check{d}_{s,r,t} = (1-\mu_r)\sum_{i=0}^{\infty}\mu_r^i E_{t-i}\check{d}^*_{s,r,t}$$

Expectations about future will be particularly important for the consumption of the durable good, as consumers will not want to over-or under-consume in case a particular shock happens in the future.

Firms produce with labor, and have constant returns to scale in a perfectly competitive market. They don't face any rigidity in pricing or information. Hence, price is equal to the marginal cost. Production function is linear in labor; therefore the firms' optimization problem gives the following price equation:

$$P_{H,s,r,t} = \frac{W_{r,t}}{A_{r,s,t}}$$

for sector $s = c, d$ in region r. $A_{r,s,t}$ is the total factor productivity of the firm that is normalized to one in steady state. The market clearing condition is:

$$Y_{r,C,t} = C_{H,r,t} + C_{F,r',t}$$

and

$$Y_{r,D,t} = I_{H,r,t} + I_{F,r',t}$$

Finally, the monetary authority targets the national nominal GDP. There is no monetary shock, therefore

$$M_t = \sum_{r=1}^{2} \left(P_{C,H,r,T} Y_{r,C,t} + P_{D,H,r,T} Y_{r,D,t} \right)$$

with $M_t = \bar{M}$.

A.7 Calibration

Following Barsky, House, and Kimball (2007), I set the substitution between durable and non-durable $\eta = 1$ and preferences for durables $\alpha = 0.25$. From Nakamura and Steinsson (2014) I get the preference for local for local goods $\phi_s = 0.7$ and the Frisch elasticity $\psi^{-1} = 1$. Engel and Wang (2011) provided the elasticity of substitution between local and foreign goods $\omega_s = 7$ and the quarterly depreciation rate of durable $\delta = 0.05$. The intertemporal discount factor is $\beta = 0.995$.

A.8 Policy Announcement

The objective of this section is to show how the model behaves with an announcement similar to the one explored in the empirical part. I simulate the effect of the announcement of an increase in payroll taxes. To simplify the effect of the tax, the revenues of the tax will be transferred completely to consumers according to their contribution in each region. This shock aims to mimic some features of the SSA. The act explicitly included an increase in payroll tax and Roosevelt mentioned it in the speech.[16]

Eventually, this shock will produce an increase in the cost of labor, affecting the consumption-leisure optimality condition. As the shock is permanent, it should produce a decrease in consumption of both goods. In a model with symmetric regions, only non-durable goods, and no frictions, the shock will produce a decrease of spending at the moment that it happens, rather than at the time when the shock is announced. Regions will not borrow from each other as they have the same information, and they do not have any other instrument to smooth the shock.

[16] As he said "It is obvious that we cannot continue to create governmental deficits for that purpose year after year. We must begin now to make provision for the future. That is why our social security program is an important part of the complete picture."

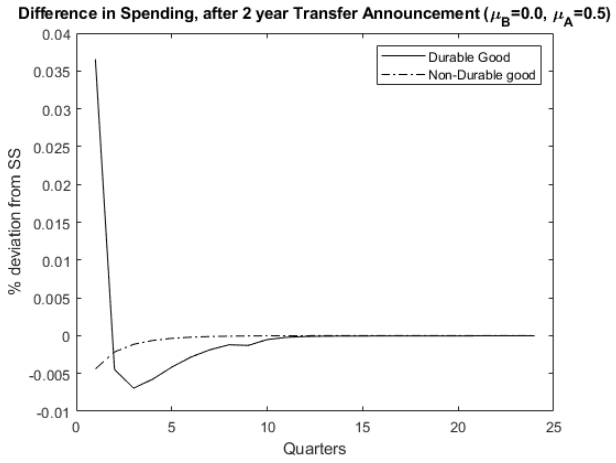
This result changes with a durable good. Durable goods allow consumers to have intertemporal substitution. Therefore, regions can change their spending on durable good today to smooth the shock. This will allow them to have a bigger stock of durables at the moment of the shock. With this higher stock, they can decrease the spending on durable $I_{r,t}$ strongly at the moment when the policy is implemented. With this adjustment, households can smooth both the consumption of durables, which will depreciate slowly, and the consumption of non-durable goods, as the adjustment is produced by the flow durable goods. That is why, with full information, both regions should increase their consumption of durable good at the moment of the announcement. A similar result is found in Yang (2005) for tax announcements. Mertens and Ravn (2011) reports similar results with more general preferences.

With heterogeneity in the information adjustment parameter μ_r between regions r, consumers in the more informed region receive the announcement earlier, in the same way that listening to Roosevelt's speech can produce an increase in the perceived probability that the policy will occur. Therefore, we should expect an increase in spending on durables in the more informed region in anticipation to an announcement of a payroll tax. Prices also play a role here. The announcement increases the demand for durables goods. As durable goods are tradable, the change in price will be a function of how many households know about the announcement. This will produce a relatively low price of durable good for the more informed region compared with the less informed region, which will perceive the price as relatively high. This difference in the perceived price of durable good and the value that each region gives to the durable good will increase even more the difference in the spending on durable goods.

To simulate the effect of being exposed to the speech, region B will be relatively more attentive compared to region A. In the following simulation I will assume that region B is always fully informed, and region A is partially adapting to information each period ($\mu_A = 0.5$, $\mu_B = 0$). Then, I shock the economy with an announcement of a direct transfer $T_{r,t}$ completely financed by a 1 percent permanent increase in taxes τ_r, t for both regions. The following fig-

ure shows the differential effect on spending in region B compared with region A on durable and non-durables goods expenditure after the announcement ($P_{D,B,t}I_{B,t} - P_{C,B,t}I_{A,t}$ for durable goods and $P_{C,B,t}C_{B,t} - P_{C,A,t}C_{A,t}$ for non-durable goods).

Figure A.2: Simulations of the Effects of Announcing a Payroll Tax and Transfer Two Years in Advance

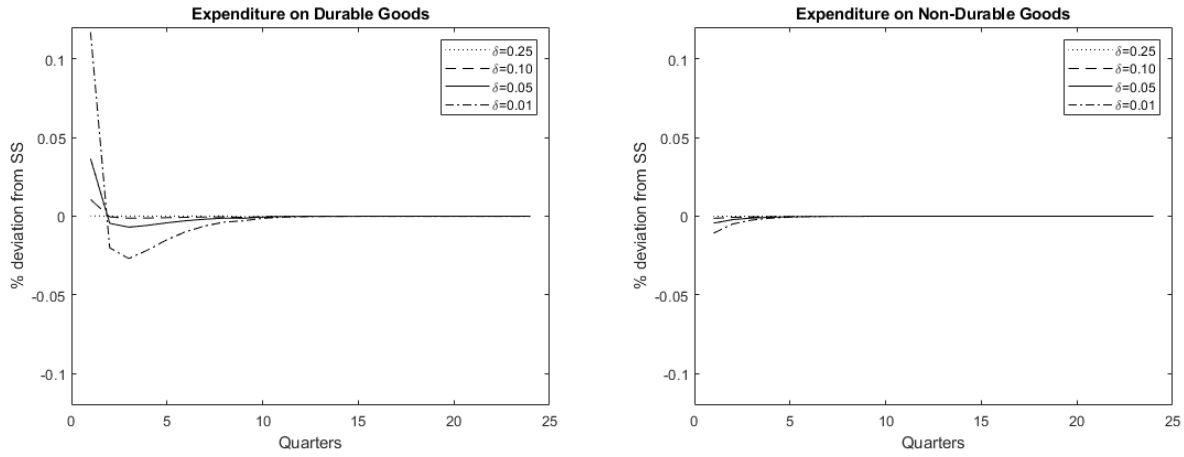


Note: The figure displays the quarterly difference in spending between two regions after an announcement made two years before a 1 percent increase in payroll taxes returned as a transfer to consumers. The difference is computed as the spending of the more attentive region (B) minus the spending of the less attentive region.

After the announcement, expenditures on non-durable good does not react very differently across regions. There is a small relative increase in expenditure in the less attentive region, but the difference is not persistent. In the case of the durable good, the more informed region strongly increases its expenditures relative to the other. The reaction of the difference in durable goods expenditures is strong in the first period, but it rapidly goes to small negative numbers before it converges to zero. Intuitively consumers in the more informed region anticipate the shock and want to smooth their consumption, anticipating the increase in the cost of labor as discussed before. Because today's spending will affect future consumption of the stock of durable goods, more attentive consumers react strongly to the announcement today. The more attentive region reacts strongly only for one period. The effect is not very persistent because in region B all the consumers adjust their information at the moment of the shock ($\mu_B = 0$). In the following periods, more consumers in region A adjust, which creates the relative increase in the stock of durable.

To show the importance of durable good, I run the same simulation, but now the durable good will depreciate at different rates. This simulation aims to show that the effect found in the last figure comes from the durable component of the good. Figure A.3 shows the results:

Figure A.3: Simulations for Different δ



Note: The figure displays the quarterly difference in expenditure between two regions after an announcement made two years before of a transfer financed with a one percent permanent increase in payroll taxes when there are only non-durable goods. The difference is computed as the spending of the more attentive region (B) minus the spending of the less attentive region. The left panel shows the difference in expenditure on durable goods, and the right panel shows the difference in expenditure of non-durable good. The figure the simulation of the same shocks but changing the value of the durable depreciation rate δ

The left panel of Figure A.3 shows that as the durable good depreciates faster, the effect of the announcement in the more attentive region becomes smaller relative to the other region. For low values of depreciation, the differential effect is big, with a high reaction in the more attentive region. The graph shows that for a value of 0.25, meaning that the good depreciates completely in a year, the effect is very small. In an extreme case of $\delta = 1$, the difference between regions is zero until the announcement, when the more attentive region react differentially, but in a very small magnitude compared with the reaction with low depreciation rates. In the case of the non-durable good, there is a small reaction to accommodate the change in durable spending. Those differences disappear when there is no durable good.

These results underscore the importance of durable goods in the empirical analysis. The consumption of durable goods is key to anticipate the policy announcement and thus explains

an early differential reaction in expenditure in the more attentive region. This shows that announcements of future policies that are well communicated can lead to consumer behavior change, and can lead to effects that take place more quickly largely through expenditures on durable goods. This result is in line with other papers that explore the role of expectations on spending on durable goods. Romer (1990), for example, shows that the Great Crash increased uncertainty, which led to a decline in spending on durable goods. This model confirms the role of durables goods when information about the future changes.

A.9 From Radio Usage to Sticky Information

In the empirical analysis, I estimate an annual increase of roughly 2.0 percent on car expenditure of full exposed regions compared with non-exposed regions the year after the announcement.[17] The objective here is to get a sense in the model of those changes, and tp see if the model can replicate those results and, if so, under which parameters. One of the problems is that in the model I have a measure of information stickiness μ, whereas in the empirical part I have a measure of exposure to the speech given by the radio usage. I assume that there is a relationship between the level of information stickiness and radio usage. I try to get a sense of the level of the relationship between both and the level of information stickiness in my empirical setting.

I first assume a linear relationship between the radio usage and the level of information stickiness. Intuitively consumers are inattentive because information is costly. Having a radio should decrease that cost. With a radio, consumers will have access to the announcement easily; therefore they will have a lower level of inattention. I postulate that the true relationship between radio usage and the level of sticky information is:

$$1 - \mu_r = \Psi + \Theta \times RadioShare_r \tag{6}$$

Where $1 - \mu_r$ is the frequency that a consumer in r updates information and $RadioShare_r$ is the share of households with radio in a region r. To establish parameters Ψ and Θ I increase the

[17] Column (6) in table A.5

size of the model from two to include 49 regions (the 48 states plus DC data used in Section 5), and simulate a similar shock to the one described in the empirical setting. Hence, I modify the non-durable good aggregator in the utility function. Now the consumption of foreign variety has the following form:

$$C_{F,r,t} = \left[\sum_{i \neq r}^{49} C_{F,r,i,t}^{\frac{\omega_V - 1}{\omega_V}} \right]^{\frac{\omega_V}{\omega_V - 1}}$$

in the case of the durable good it takes a similar form:

$$D_{F,r,t} = \left[\sum_{i \neq r}^{49} D_{F,r,i,t}^{\frac{\omega_V - 1}{\omega_V}} \right]^{\frac{\omega_V}{\omega_V - 1}}$$

$C_{F,r,i,t}$ is the consumption of non-durable of region r of products produced in region i and $D_{F,r,i,t}$ is the stock of durable of region r produced in region i. Then, I simulate an announcement of a 6 percent increase in payroll taxes that is fully paid through a transfer T_r, as the SSA announcement. Then, I compute the one-year increase in the consumption of durable goods. I do this experiment for μ varying from 0.05 to 0.95 across the 49 regions.

From this simulation I determine changes in terms of durable goods expenditures for each region that depends on the level of inattention μ_r. Once I simulate the model, I run the following regression:

$$\Delta(P_{d,r} \times I, r) = \Gamma + \Lambda \times (1 - \mu_r) + \varepsilon_r \tag{7}$$

where $\Delta(P_{d,r} \times I, r)$ is the change in spending on durable goods in a region r. The result is a value of $\Lambda = 5.6\%$ and $\Gamma = 0.005$. To create an empirical counterpart of equation 7, I run a similar regression with data on car sales per capita and radio usage. I run the difference between 1935 and 1934 in spending on cars:

$$\Delta(P_{d,r} \times I, r, 1935) = \xi + \Phi \times RadioShare_r + \epsilon_r \tag{8}$$

Now, I match the coefficient in equations 7 and 8 with the true coefficients of the relationship between information stickiness and radio usage assumed in equation 6. Assuming errors terms equal to zero in expectations, I set the following expression:

$$1 - \mu_r = \left(\frac{\xi - \Gamma}{\Lambda} \right) + \frac{\Phi}{\Lambda} RadioShare_r$$

Thus, $\Psi = \left(\frac{\xi - \Gamma}{\Lambda} \right)$ and $\Theta = \frac{\Phi}{\Lambda}$. From the empirical part we have that $\Phi = 0.02$ and $\xi = 0.002$. From the model $\Lambda = 0.056$ and $\Gamma = 0.005$. With these parameters $\Psi = -0.088$ and $\Theta = 0.36$. This result means than an increase of 10 percent in the amount of radios in a county in 1935, increases the number of consumers that updated information by 3.6 percent according to the model.

This information provides an indication of the level of inattention of people at that time. According to the Census, the average households' radio usage in the United States was 34 percent in 1930 with a standard deviation of 17 percent. That means that the level of information stickiness μ was on average 87 percent, moving from 80 percent to 93 percent. Mankiw and Reis (2007) find a value of 92% for consumers. This value is relatively similar to the one found in this paper.