The Huey Long Spending Program in Louisiana: Estimating Fiscal Multipliers during the Great Depression

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Abstract

What was the economic impact of expansionary fiscal policy during the Great Depression? We revisit this classic question using a unique state-level spending program to shed new light on the subject. Louisiana Governor Huey Long embarked on an ambitious public works and educational spending program on the eve of the Great Depression. We use the variation in state- and parish-level spending prevailing in the economy over the 1930s to estimate fiscal multipliers in the Great Depression. We find a multiplier of roughly 1 for the entire 1929-1939 period and about 1.25 for the 1929-1933 period. These estimates are similar to other studies in the Great Depression like Fishback and Kachanovskaya (2015), but lower than some modern studies at the zero lower bound that estimate the multiplier to be closer to 1.7-1.8 (Chodorow-Reich, 2019). We discuss factors that could explain the lower multipliers amidst record economic slack including a high share of imports, low level of human capital, small domestic production capacity, and corruption. We propose a corruption dismultiplier where corruption results in a lower fiscal multiplier due to measurement error and find this could plausibly bias our estimated multipliers downward.

Keywords: Fiscal Multipliers, Great Depression, State-level

JEL Codes: E24, E32, D24

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1 Introduction

How much did fiscal policy matter for the Great Depression? The literature has returned repeatedly to this question since the seminal work of Brown (1956) and Vernon (1994), who famously found that fiscal stimulus was ineffective during the Great Depression "not because it did not work, but because it was not tried" (Brown, 1956, pp. 863-6). However, the identification of fiscal multipliers is a challenging exercise for a variety of reasons. Most discretionary fiscal programs are often organized at a federal level and implemented across states, making it difficult to achieve a robust treatment-control framework. Additionally, most states have some requirement to maintain a balanced budget.[1] This implies, first, that many fiscal programs are relatively small, making it difficult to evaluate effects. Second, as Clemens and Miran (2012) note, this implies that significant state-driven spending programs are usually only undertaken during periods of low unemployment and economic slack, when state budgets are larger and safety-net spending is lower. This pattern of procyclical expenditure pushes the identified effect of fiscal policy further toward zero.[2]

In this study, we attempt to remedy these issues by evaluating the multiplier effects of a fiscal program in Louisiana that (a) was implemented at the state level, (b) comprised a significant share of state GDP, and (c) was executed during a period of record economic slack. Specifically, we evaluate the expansive public works program undertaken by Louisiana's Governor Huey Long on the eve of the Great Depression. Initiated by Long in 1929, the program coincided with the start of the economic downturn, and continued through the 1930s, overlapping with years of significant excess capacity during the Great Depression. The program was ambitious and centered around building a paved road network in every Parish (county) in the state, with new bridges being built over the Mississippi in Baton Rouge and New Orleans to better connect the state. While our study will focus on this road and highway building aspect of the program, the broader spending program included a new capitol in the Baton Rouge, a new, modern airport in New Orleans, new construction at Louisiana State University, and a new public hospital. In addition, there were planned outlays for educational programs, including adult literacy programs and a program to distribute free textbooks to

[1] According to the National Association of State Budget Officers (NASBO), all states except for Vermont have some stipulations to balance their operating budgets—but prohibitions and enforcements vary. For example, although Arizona requires the governor to propose a balanced budget, it does not require the legislature to pass one (Hou and Smith, 2006; of State Budget Officers, 2010) .

[2] While the cyclicality of the fiscal multiplier is not a settled question, our reading of the literature is that it is likely countercyclical. See Ramey and Zubairy (2018) for a recent survey and evidence of countercyclicality.

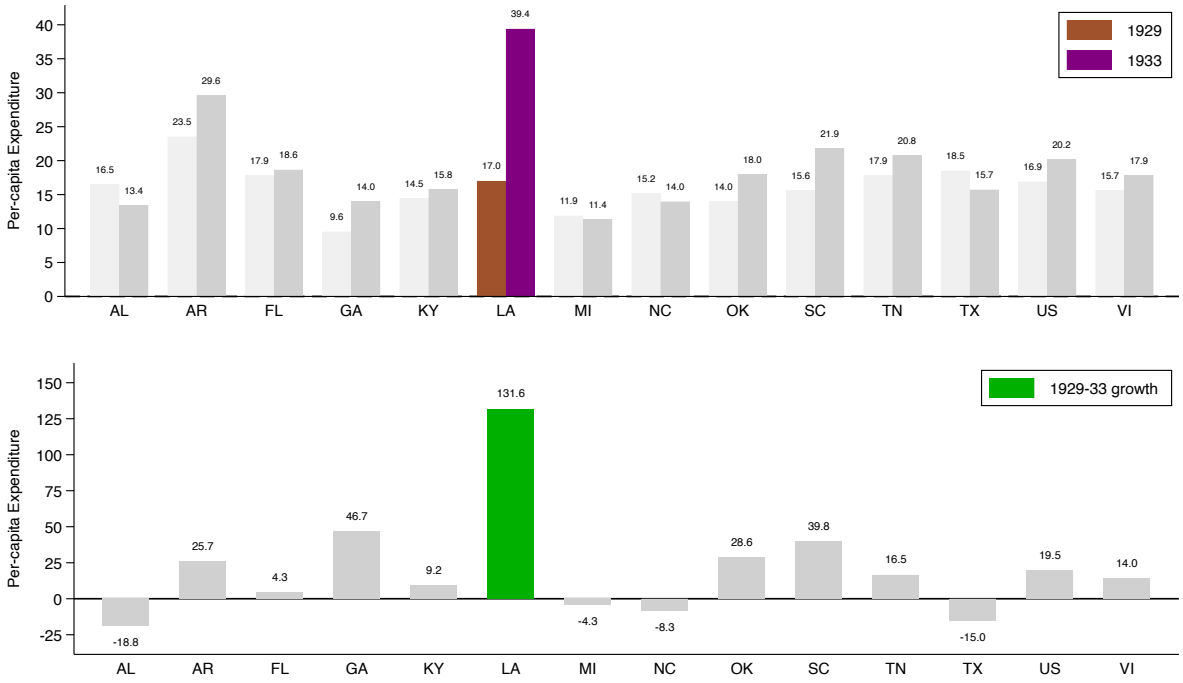


Figure 1: Per Capita Spending 1929–1931 (Dollars)

all school children. The scale of the road and highway program was significant and by itself accounted for two-thirds of Louisiana's state outlays for 1931, contributing to a 131% growth in total state government spending from 1929 to 1931. In 1931, Louisiana also employed more construction workers on roads than any other state in the union, exceeding even the total for populous states like New York or Pennsylvania with more larger and more developped economies (Williams, 1969, p. 546).

Long's spending program in Louisiana represents a useful episode to study fiscal multipliers for a number of reasons. First, the timing is of the program is highly fortuitous. Long was elected as Governor in 1928, before the start of the Great Depression, and did not implement his program as a countercyclical measure. The road and highway construction program had constituted a prominent aspect of his election campaign. The allocation of the financial resources of the state were therefore largely exogenous, and not need-based in response to the effects of the Great Depression.

Second, Long's undertaking in Louisiana was a particularly isolated spending program in the early years of the Great Depression. The first phase of the spending, which began in 1929, precedes the New Deal and other national level countercyclical measures by several

years. Neighboring states, which were also dominated politically by conservative Southern Democrats, did not embark on similar large fiscal stimulus programs during this period—indeed, Mississippi, Texas and other Southern states *cut* spending in the face of the economic contraction that began in 1929. Further, while the United States as a whole had a fixed exchange rate with gold and was increasingly closed after the 1930 Smoot-Hawley tariff, Louisiana itself was a small open economy in a currency union (Born et al., 2013; Nakamura and Steinsson, 2014). Louisiana represented just 1.6% of total US population, and $\frac{3}{4}$ of a percent of total national net income, so any local policies would have a negligible effect on overall economic activity. This allows us to study the effects of this fiscal spending episode without worrying about spillover effects—in either direction—related to local or national programs.

Third, the roll out of the program involved significant temporal variation. The first surge of spending occurred between 1929 and 1931 and was timed to coincide with Long's successful campaign for Senator in 1930—just two years after winning election as governor. Long remained in the governor's office until he could get his handpicked successor, O.K. Allen, elected as governor in 1931, and then began to focus on his national political ambitions. This shift in Long's attentions, combined with the adverse effects of the Depression on Louisiana's budget, led to fiscal retrenchment through 1933. New Deal spending began nationally in 1933, but spending in Louisiana did not recover (particularly relative to other states) due to a political row between Long and the president, Franklin Delano Roosevelt (FDR).[3] However, in September 1935, Long was assassinated and his political allies swiftly made peace with the FDR administration. Federal spending thereafter accelerated, following a political deal labeled the "Second Louisiana Purchase" (Sindler, 1956, p. 126-8). At this point, Louisiana spending was higher than in other, similar states. We use data from the post-Long era (1933–1939) and exploit the temporal variations in spending to estimate the multiplier in conditions of extreme slack at the height of the Depression, as well as in tighter economic conditions later in the 1930s.

In this paper, we focus on the biggest element of Long's fiscal policy agenda, the road and highway building program. Our key expenditure variable, i.e., parish-level spending on roads and highways, is constructed from archival sources, namely biennial reports by the Louisiana highway department.

We also use the Louisiana Department of Education reports, Louisiana Treasurer Reports,

[3]Although Long had supported FDR's election in 1932, helping rally Southern votes at the Democratic convention, they soon fell out and Long tried to block New Deal spending in Louisiana to harm the President electorally.

as well as other state government sources for data on initiatives in the education department, prominent construction programs and adjustments to tax collection in the parishes. For our measures of economic outcomes, we use retail sales data at a parish-level compiled by Fishback et al. (2005) and Fishback and Kachanovskaya (2015) to evaluate the impact of Depression-era spending on economic outcomes.[4] Our baseline estimation exploits cross-sectional variation in spending and retail sales growth outcomes for all 64 parishes over the 1929–33 period to evaluate the effect of the road and highway building program. We convert the estimated effect on retail sales growth to a multiplier following the methodology in Fishback et al. (2005), which allows us to interpret the results more intuitively.

-*-*-DESCRIBE RESULTS HERE-*-*-

Our main results rely on estimating the effect of the road and highway program using cross-sectional variation in spending and recovery across parishes. However, there are key challenges in implementing this econometric strategy. In particular, we may worry that certain characteristics of the parishes may be systematically correlated with both the road spending programs and retail spending growth in the parish, giving rise to bias due to endogeneity. Our task is further complicated by the fact that archival data is often not rich enough to tackle concerns directly—for example, we only have data related to parish-level retail sales per capita for the years 1929, 1933, 1935 and 1939.

We address this issue in two ways. First, following Fishback et al. (2005), we consider a set of important covariates that may be related to per capita retail spending at the parish level, and include these covariates to our baseline specification. We find that they do not affect our baseline estimates very much. Second, we consider an extended model where we consider spending across our baseline variables, but over the entire Great Depression period (1929–39). The availability of data restricts us to evaluating the effect of road building expenditure for the periods 1929–33, 1933–35 and 1935–39. However, the panel structure implies that we are able to exploit variation in spending both across parishes as well as across periods. We include additional variables to control for the implementation of the New Deal, the economic recovery across the U.S., and parish-specific fixed effects. Once again, we find that the estimates we recover for the effect of the Long-era road-building program are very similar.

An additional concern with our estimation strategy is related to measurement error and *unobserved* spending. In our particular case, we worry that road spending was allocated, not based on constructing an optimal network, but as a vote-buying scheme by the Long

[4]We describe the data in more detail in Section 3.

administration. We attempt to address this concern by using the current road network in Louisiana, as well as controls at the parish level at the time, to show that the choices made regarding the allocation of road spending should not bias our results.

We also estimate the effects of fiscal policy regarding other public works projects, education spending, and changes in parish-level taxes, particularly property taxes. These multiplier estimates are less precise, but are broadly consistent with our results for road spending. In particular, the coefficient on changes in tax revenues at the parish level are similar in magnitude but have the opposite sign as the spending measures. We argue these point estimates are likely biased downward as the changes in property tax revenues is in large part due to changes in assessed value (a measure of wealth) and not due to changes in tax rates.

The fiscal multiplier effect comes from spending on roads generating new income flows, which are then spent on both traded and non-traded goods and services. Retail sales are non-traded and so are strongly responsive to local demand conditions. On the other hand, Louisiana's cotton production is all exported to buyers out of state, as there are no cotton mills in Louisiana. This provides a falsification test for our identification strategy, and we estimate a precise zero (with a negative coefficient) for the effect of road spending on cotton production at the parish level. We also show that the changes in retail sales are not driven by rebuilding after the 1927 Mississippi Flood.

We also discuss our estimated multiplier in the context of other estimated multipliers, especially in the modern era. Given that Louisiana was a small open economy with a low tax rate, we find that our multipliers are in line with multipliers estimated in the wake of the Great Recession, though on the low-end, given the extreme slack during the Great Depression. We discuss some potential reasons for this, including low human capital and illiteracy, and a small manufacturing base in the state. In an online appendix we discuss the possibility that corruption diverted road spending from its intended destination by parish, instead being diverted and spent in the parishes of corrupt state officials. We speculate that coruption would have biased our estimates downward and increased our standard errors.

Related Literature Our strategy of using cross-sectional variation at a sub-national micro-level to estimate the effect of a fiscal program has been used previously to obtain better identification (Clemens and Miran, 2012; Chodorow-Reich, 2019). COMPLETE THE LIT REVIEW In general, we expect a counter-cyclical fiscal multiplier: when the unemployment rate is high, we expect fiscal spending to raise as output and income as the formerly

employed are hired on new projects.[5] By contrast, when the unemployment rate is low, the multiplier would be low, due to the lack of new workers to employ, and so new spending would tend to reallocate workers from existing employment. We expect this to be true of spending during the Great Depression as well. Several papers have looked at fiscal multipliers using cross-sectional evidence in the Great Depression, finding that fiscal policy was effective in the 1930s (Hausman, 2016; Hausman et al., 2019). Likewise, Romer (1992) and Gordon and Krenn (2010) find that while monetary policy was the primary driver of recovery in the 1930s, fiscal policy played an important role even before the direct involvement of the U.S. in the Second World War in 1941.

2 Description of Major Fiscal Programs

Long ran his 1928 gubernatorial campaign on his signature bold, populist promises to bring a state with aging or insuffient public infrastrcture out of the mud (Daniell, 1934, p. 172). For our empirical analysis, we focus on the most prominent program during the Long administration, the road and bridge construction program. For completeness and to avoid any omitted variable bias, we also include the other salient programs during his administration into our analysis. Below, we describe each of these programs in detail.

2.1 Road and Bridge Construction

Long promised to build and purchase toll roads, and to create a free, public highway and bridge system in Louisiana. This involved a large outlay to build a paved road network essentially from scratch. When Long was elected governor in 1928, the state had 31 miles of concrete roads, 65 miles of asphalt roads, with 25 miles of either type under construction (Williams, 1969, p. 303). This was for a state which is over 52,000 square miles in size. By 1936, about $140 million had been spent on the road program, which resulted in the construction of 9,800 miles of roads. By 1940, when the Long faction of the Louisiana Democratic Party was defeated at the polls, 4,160 miles of paved highways and 10,175 miles of gravel roads were present in the state (Abbey, 1941, p.84). As can be seen in Figure 3, the total mileage (including both paved and unpaved roads) per capita in Louisiana surged in the 1929–1931 period as Long's road-building program was quickly implemented. The contrast

[5]See Michaillat (2011); Parker (2011); Auerbach and Gorodnichenko (2012); Mittnik and Semmler (2012); Owyang et al. (2013); Canzoneri et al. (2016); Ramey and Zubairy (2018) for evidence and discussion on the cyclicality of the multiplier.

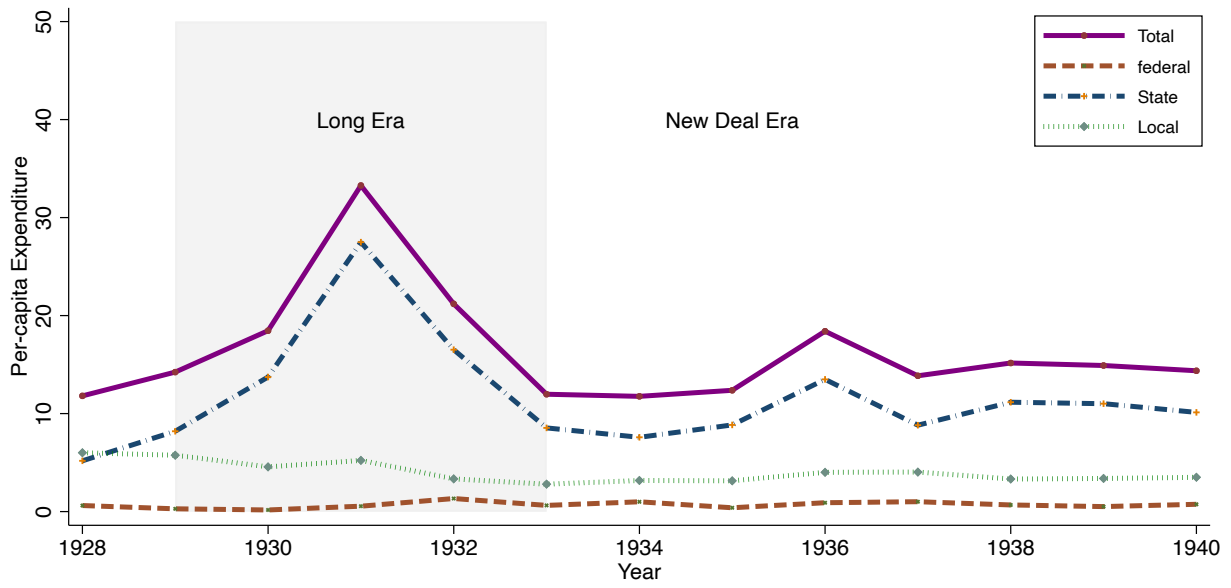


Figure 2: Louisiana Highway Spending 1928–1940. Source: Ross (1955, p. 187), Bureau of Public Roads (1942), Bureau of Public Roads (1955, p. 66, 70), U.S. Census Bureau

with Mississippi, a similar Southern State, is instructive. In response to the Depression, Mississippi went from having similar roads per capita as Louisiana to having fewer, due to the budget constraints of the Depression.

As we can see in Figure 2, state and local spending on highway construction surged in Louisiana from 1929–1931 before returning to lower levels by 1933. Spending in Louisiana rose from $35.5 million in 1929 to $83.7 million in 1931, causing the gap between spending and revenue to be more than ten times larger in 1931 than it was in 1929 (Sharp, 1956, p.266). There is also an increase in road spending from 1934–1936, related to the increased disbursement of New Deal matching funds, but this is smaller in magnitude than for 1928–1931. Federal highway spending wanes slightly during the Depression, and other states on average see a slight increase when Louisiana spending surges, as can be seen in Figure **??**.

The road spending program was the primary driver of Louisiana's fiscal position during the early years. Total state spending from 1929-1931 (see Figure **??**) shows that the surge in road spending driving state spending during the period. Per capita spending rose in Louisiana from $17.01 to $39.40, spending almost twice the state average across all states of $20.21 in 1931.[6] The Louisiana State Treasurer's Reports for this period show a decline in

[6]Unfortunately, due to budget cuts at the federal level, the "Financial Statistics of the States" reports were suspended from 1932–1935, leaving a lacuna in our understanding of state finances during this period.

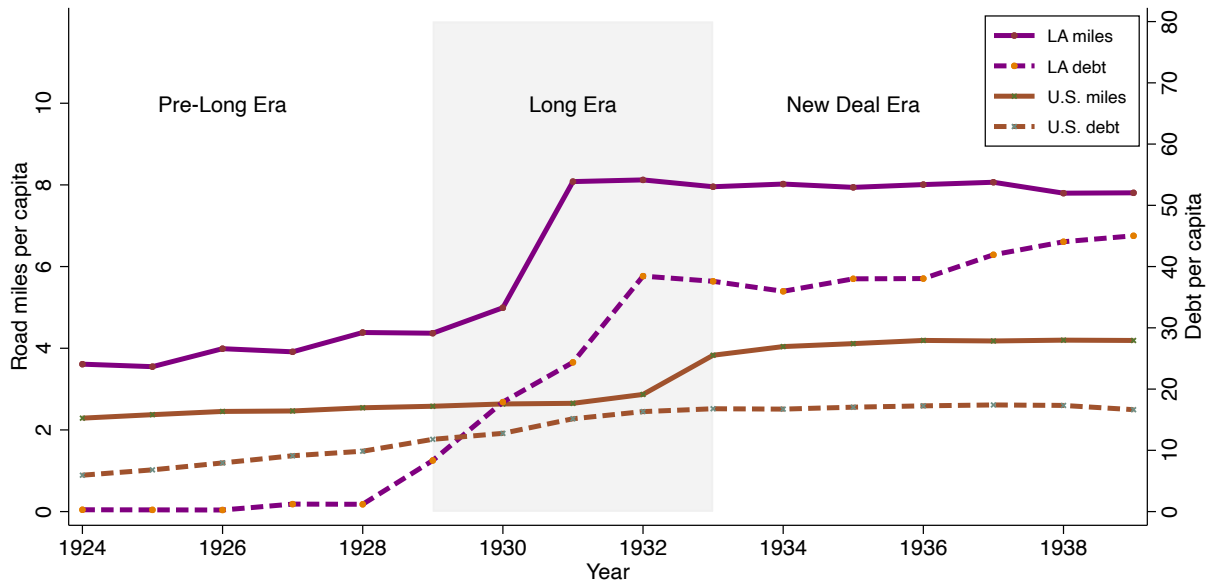


Figure 3: Total state mileage and highway debt per capita. Source: Bureau of Public Roads (1955, pp. 66, 70, 90, 101), U.S. Census Bureau

overall spending from 1931-1933, consistent with the decline in road spending. The program also led to a sharp increase in Louisiana's debt burden during the 1929–1932 period when the road spending program peaked. To service this surge in debt, gas taxes rose rapidly, from 2 to 5 cents per gallon to service this debt. We plot these values in **??**, Figure 4.

There is also a small increase in spending after Long's assassination in 1935. This is related to the end of the row between the Long political faction in Louisiana with FDR and national Democrats, which led to an increase in New Deal spending and grants for the state. In this period, as the choropleths in Figure 5 indicate, the road and bridge projects were largely focused on the cities, particularly Baton Rouge. By contrast, the road building activity in the Long Era was much more broadly distributed across the parishes.

2.2 Free Textbook and Adult Literacy Program

Education was another spending priority that featured prominently in the Long campaign of 1928. This included two signature basic education programs—the Free Textbook program and the Adult Literacy program—and higher education spending.

The Free Textbook program was a plan to distribute free textbooks to all school children in the state, to ensure that cost was not a barrier to attending school. Importantly, the

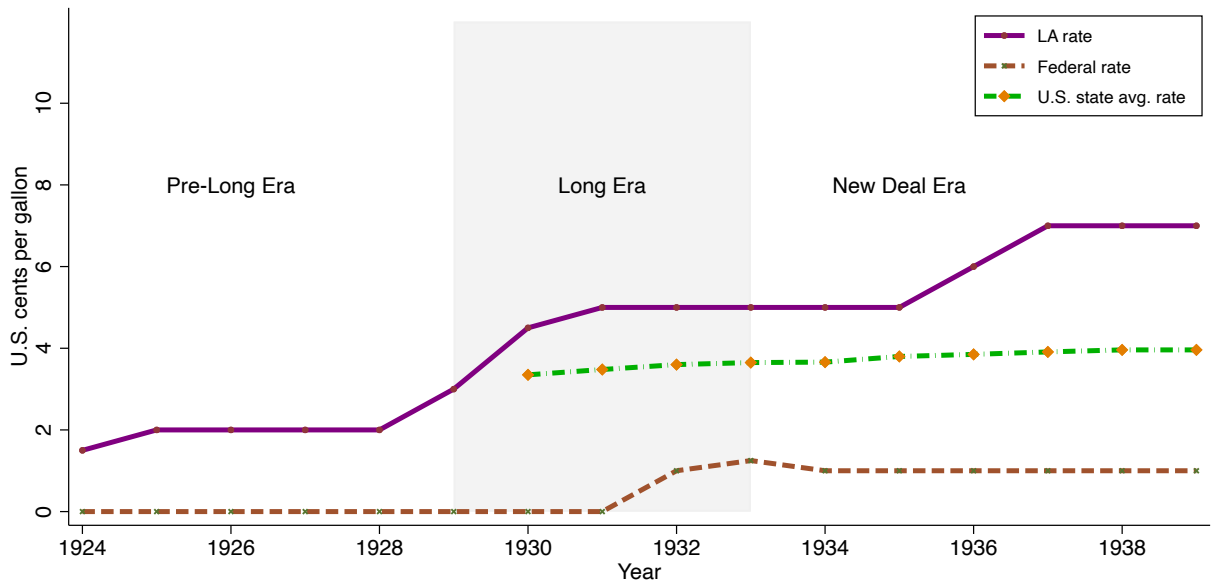


Figure 4: Gas Tax Rates. Source: Bureau of Public Roads (1955, p. 13).

textbook program was designed as an in-kind transfer—households that previously purchased the textbooks were now relieved of doing so.[7] The textbooks were printed in New Orleans, so the main effect of the program on the parishes was not through textbook production, but through household income freed up from access to the state-sponsored textbooks.

Long was not the first governor to implement a free textbook program. Similar textbook programs were passed in other states as an inexpensive, pro-education policy. The initial appropriation was $750,000 per year for the first two years (Williams, 1969, p. 308). Total spending on the textbook program from 1928–1932 was $2.8 million which was less than $1.50 per pupil per annum. In comparison, spending on school transportation in 1931–1932 was over $20 per student, so this was not a large outlay (Louisiana Department of Education Reports, 1931–1932). Total outlays by the state on education were $25.6 million in 1931–1932, so the program constituted only a small fraction of aggregate spending.

The other signature education program was literacy classes for adults. Louisiana had long suffered from high levels of illiteracy. In 1920, Louisiana had the highest illiteracy rate

[7]The program was so designed partly to avoid a constitutional challenge. Many Catholics in southern Louisiana sent their children to private, parochial schools. Public provisioning of textbooks to private schools posed a constitutional problem, and excluding this demographic from the free textbook program would have been politically detrimental. Long averted the challenge by arguing that the textbooks were going to the children, and not the schools, making all children eligible to receive the transfer.

of any state in the country—23.4% of the population over 14 years of age were illiterate. This was significantly higher than the state with the next-highest illiteracy rate, South Carolina, 20.9%. Literacy among elderly black Louisianans who had grown up under slavery was low. Long argued that the large planters used this lack of education to exploit African-Americans in Louisiana (Williams, 1969, p. 706).

In response, the Long administration implemented literacy courses in each parish in 1929, in anticipation of the 1930 Census which asked about literacy. While participation was not well documented, the Long administration claimed 80,000 black and 20,000 white adults participated (Kincheloe, 1985). Just like younger students, these adults received free textbooks, and some parishes provided free writing implements and tablets. Again, however, the fiscal outlay on the illiteracy program was modest (Kincheloe, 1985). Total spending through 1931 was slightly less than $300,000 (Williams, 1969, p. 523-4) Thus, while valuable, the program did not constitute a large fiscal stimulus. Indeed, due to the revenue shortfalls of the Depression, education funding came in well below expectations, and had to be cut in some years (Williams, 1969, p. 523).

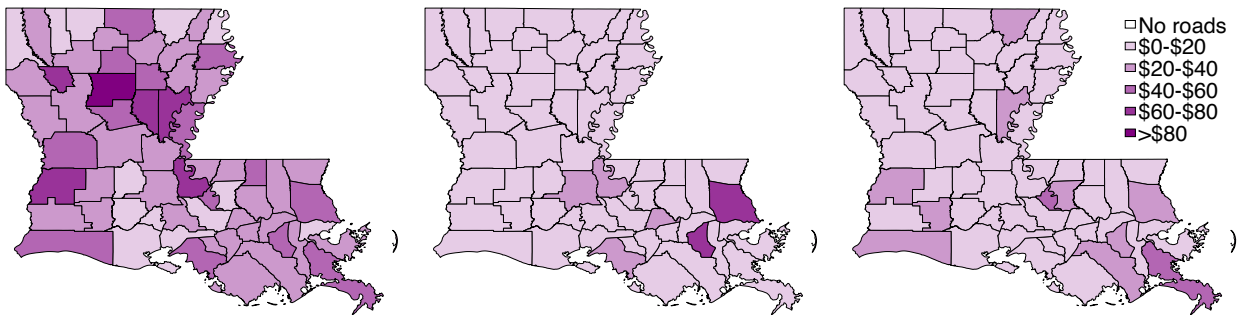
The efforts over 1929-1930 resulted in Louisiana improving its position to second worst for illiteracy in the 1930 Census. The percent illiterate (above 10 years of age) dropped from 10.5% among whites in 1920 to 7.3% among whites in 1930, while the corresponding number for blacks was 38.5% illiterate in 1920, falling to 23.3% in 1930. The overall illiteracy rate was cut by more than a third from 21.9% to 13.5%. However, once the 1930 Census had passed, Long's enthusiasm for fighting illiteracy waned.[8] Progress on this front was not maintained, and Louisiana returned to being the state with the highest illiteracy rate in the 1950 and 1960 Censuses.

3 Parish-level Fiscal Variables

3.1 Road Spending Data

We start by describing the road and bridge construction expenditure program. Expenditure data for Governor Long's highway construction program is taken from Biennial Reports of the Louisiana Highway Commission. Raw data relating to highway construction expenditure

[8]The Department of Education Reports suggest that Long's literacy programs were aimed at reducing illiteracy for the 1930 Census (Louisiana Department of Education Reports, 1931, 1940). The literacy program is not mentioned in any Department of Education report after that of 1930–1931, and funding was cut significantly, though one could claim that plunging state revenues in the midst of the Depression also played an in important role in the program withering on the vine (Kincheloe, 1985)



(a) 1929–33 (b) 1933–35 (c) 1935–39

Figure 5: Annual Road Spending per capita (in 1967 dollars), across periods

were obtained by scanning the reports and extracting the relevant tables using Optical Character Recognition (OCR) software for the biennial periods 1920–22 to 1940–41.[9]

Road construction details are listed by project, where each project corresponds to a contract for the construction of a section of a highway or bridge. Projects are identified by a unique Project ID that allows us to track projects over multiple years. The start date for each project was chosen as the date that the contract for the project was finalized, while the completion date was chosen as the date of final payment. The cost was assumed to be disbursed at a constant daily rate over this period; thus, for multi-year projects, the cost of the project assigned to each year is weighted based on the number of workdays in that year. A small number of Project IDs had start dates but no end dates (or vice-versa) either because the project was canceled/re-negotiated or due to clerical entry error or due to poor scan quality. In these cases, projects were linked across reports manually on a best-effort basis using other information provided in the reports.

The reports include information on the parishes through which the highway/bridge passed, but does not indicate how many of the total miles of the project was constructed in each parish. The cost is therefore allocated to the parishes involved on a population-weighted basis. Over 90% of projects involved just one parish (see Table 1), and less than 0.6% involved more than two parishes, so we expect the distortion caused by this assumption to be minimal.

Table 1 and Figure 5 provides some descriptive details from the finalized, cleaned road

[9]The first seven biennial reports of the Commission (1920–22 to 1932–34) covered highway construction activity from April 20th of the first year to April 20th of the second year. Starting with the Ninth Biennial Report (1936–37), the reports covered January 1st to December 31st for the period. The Eighth report (1934–36) covered the period April 20, 1934 and January 1, 1936. All documents processed with OCR were then checked by the authors.

	1920–28	1929–33	1933–35	1935–39	Total
Total projects	581	1,349	357	1,192	3,479
Projects covering > 2 parishes	31	181	30	94	336
Projects with duration > 1 yr	490	461	52	177	1,180
Avg. projects per year	73	337	179	298	174
Avg. workdays per project	1,358	380	266	203	472
Avg. workdays per year	98,627	128,447	47,613	60,602	82,022
Total workdays	789,015	513,788	95,225	242,408	1,640,436

Table 1: Road projects over the 1930s

building dataset. The details are partitioned into the Pre-Long era (1920–1928), which covers the period from the start of the Louisiana Highway Commission to the eve of Governor Long's election; the Long era (1929–1933), covering the years when he was in office, as well as his first year as US Senator; the First New Deal era (1933–1935), marked by Long's feud with President Roosevelt; and the Second New Deal era (1935–1939), which saw renewed road building under New Deal programs.

3.2 Education Spending Data

Data related to the education spending programs are obtained from the Annual Reports of the State Department of Education of Louisiana for the periods 1924–25 to 1939–40 (Louisiana Department of Education Reports, 1940). This includes K–12 education spending and all payments towards the state universities.[10] Total education spending is calculated as the sum of all expenditures, less debt servicing, at the parish level. Since the reports cover the period May 31st through July 1st, we assign half of the spending reported to the previous year, and half to the current year.[11]

3.3 Tax Collection Data

Total taxes collected at the parish level, for the years 1920 to 1939, were taken from Annual Reports of the Louisiana Tax Commission.

[10]The universities receiving funding in this period are Louisiana State University, Louisiana State Normal College, Louisiana Polytechnic Institute, Southwestern Louisiana Institute, Southern University (negro), Southeastern Louisiana College, Lousiana Normal Negro, New Orleans City Normal, Louisiana State School for the Deaf, Louisiana State School for the Blind, Lousiana State School for Negro Blind and Tulane University of Louisiana.

[11]The end-point years, 1924 and 1940 do not figure in our main analyses, and were therefore disregarded.

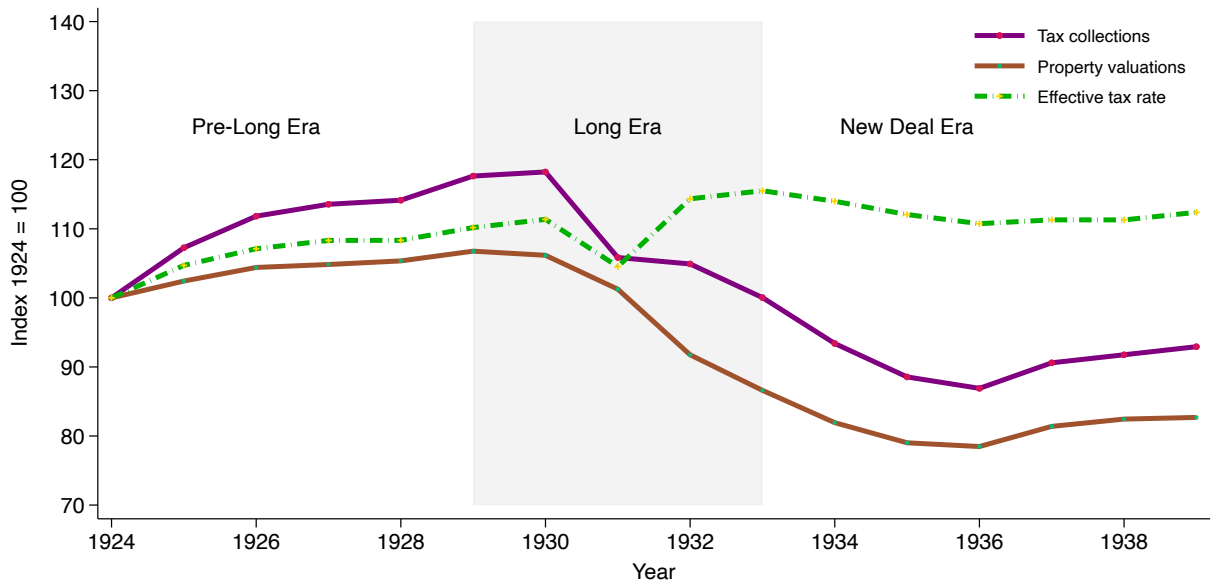


Figure 6: Total tax collections, total property valuations and the effective tax rate in Louisiana. All values indexed to 1924 = 100. Shaded region shows the Long era, from 1929 to 1933.

The data only measure taxes collected at the local level, and do not include taxes like gasoline taxes, which were levied to fund the road program and were not allocated at the parish level. This measure of taxes is primarily composed of property taxes.[12] The overall level of road, educational spending, as well as property tax collection, can be seen in Figure 7. These are the three main variables we consider as fiscal policy variables at the state level. We can see there is more variability in road spending than in educational spending or parish tax revenues, with a large rise in road spending from 1928 to 1931, and then a fall through 1934. This allows better identification of the effect of road spending, though we estimate a similar multiplier for educational spending, and a similar magnitude but with opposite sign for local tax collections.

[12]The reported value does not include any municipal taxes, other than those levied in Orleans Parish.

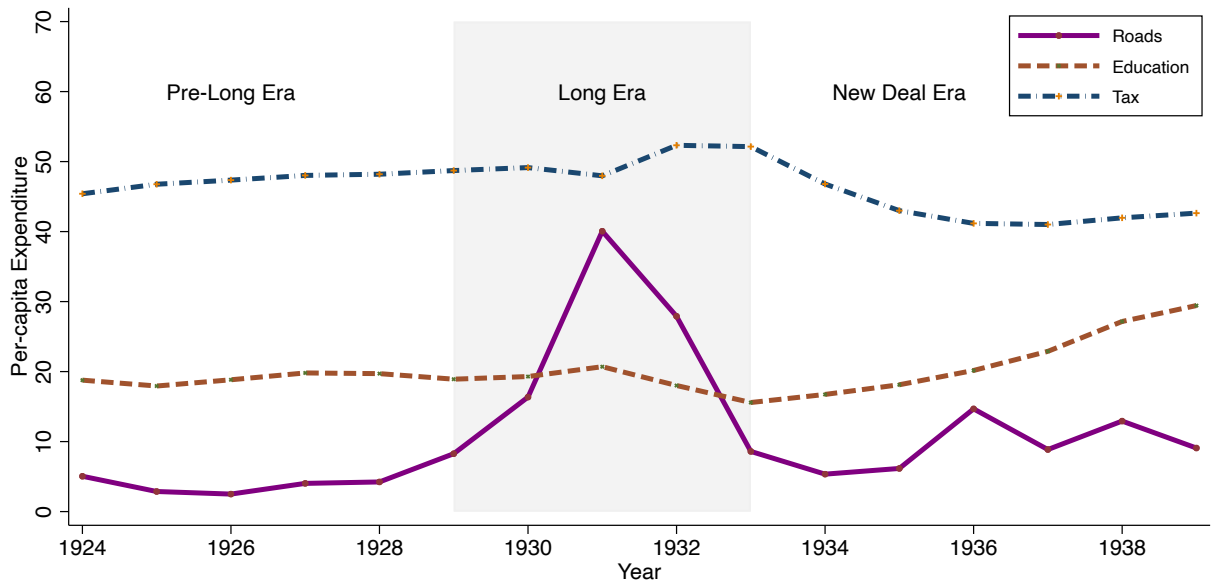


Figure 7: Aggregated parish-level taxes and spending in real per capita terms. Shaded region shows the Long era, from 1929 to 1933.

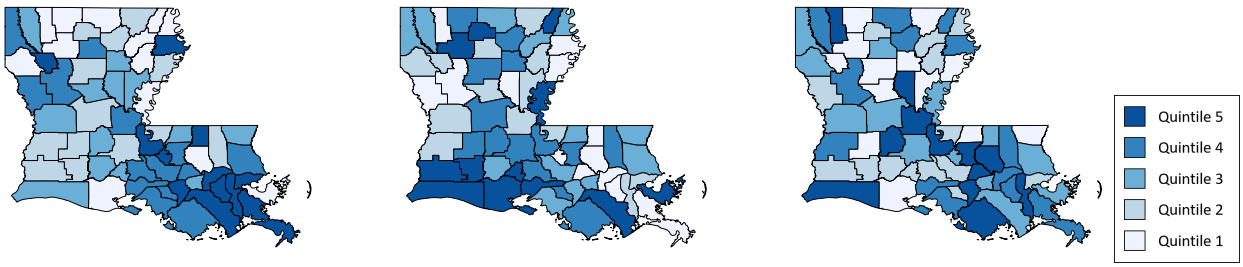
3.4 Retail Sales and Controls

In the absence of parish-level total income/output data for our period of interest, following Fishback et al. (2005) (FHK), we use retail sales as our baseline measure of economic activity. FHK note that retail sales serve as a strong proxy for personal consumption of durable and nondurable goods, and is a variable strongly correlated with personal income. However, the data are considerably restricted as the U.S. Census Bureau only began collecting annual retail sales information at the county level in 1929 and performed retail censuses only in the years 1933, 1935, and 1939. We obtain per capita retail sales data from the dataset made generously available online by the authors of this study. The retail sales growth for Louisiana, by period, can be seen in Figure 8. We also use the same set of controls as this study, described in the next section, which were also taken from this same dataset.

3.4.1 Baseline Specification

Our baseline model investigates the effect of these the flagship road building program on retail spending at the parish level.

For each model specification described below, therefore, we perform our analysis first on



(a) 1929–33 (b) 1933–35 (c) 1935–39

Figure 8: Retail growth, by quintile, across periods

a restricted sample that covers the period when Huey Long was most active (1929 to 1933), and then the entire dataset spanning the entire Depression era, including the New Deal era (1929 to 1939). Our empirical strategy exploits inter-Parish variation in the expenditure on each program over the periods for which we have data. For the first program, we hypothesize that spending on road-building in a given Parish will directly result in higher incomes for households living in that parish, since labor for the construction projects was primarily supplied locally. Parishes with higher program expenditure should therefore experience a faster household income recovery, which we should observe in faster growth in retail spending. For the Free Textbook program, households could spend of other things, like retail sales, as they did not need to spend money on textbooks.

As a first pass, we estimate the following model:

$$\mathrm{g}_{i,t} = \beta_1 \mathrm{Road}_{i,t} + \beta_2 \mathrm{Educ}_{i,t} + \beta_3 \mathrm{Tax}_{i,t} + \beta_4 \mathrm{ND}_{i,t} + \beta_5 \mathrm{Z}_{i,1920} + \beta_6 \mathrm{T} + \varepsilon_{i,t} \tag{1}$$

where $\mathrm{g}_{i,t}$ represents the growth rate in retail sales per capita over period t in Parish i; $\mathrm{Road}_{i,t}$, $\mathrm{Educ}_{i,t}$, and $\mathrm{Tax}_{i,t}$ are the sums of all road spending, education spending and tax collected (for all purposes) respectively over period t in Parish i; $\mathrm{ND}_{i,t}$ is the New Deal spending on public works and through the AAA (Agricultural Adjustment Administration) program; $\mathrm{Z}_{i,1920}$, a vector of structural correlates, measured in the 1920s, that might have determined the growth in economic activity over the 1930s; T is a vector of time-period dummy variables to capture time-period specific effects that are invariant across parishes; and $\varepsilon_{i,t}$ is the error term and assumed to be independent and identically distributed and uncorrelated with each other and over time.

We follow FHK closely in our choice of the structural correlates in $Z_{i,1920}$, both due to the strong theoretical foundations for these variables, as well as to maintain comparability with the findings of that study. We depart from them in one respect: FHK use correlates

that were measured in 1929 or 1930, which is appropriate given that they focus on the period 1933–39 for their analysis. For us, however, using these years invites a simultaneity bias. We therefore use similar correlates measured in the 1920 census instead. We consider an alternate specification with parish fixed effects in the Robustness section, but find these correlates to be more compelling since they group like parishes together, rather than treat them as separate with idiosyncratic effects.

Although the fiscal variables (road spending, education spending and tax collected) are all available on an annual basis at the parish level, our choice of time periods t is constrained by the availability of retail sales data. As discussed above, this data was only collected in 1929, 1933, 1935 and 1939. Accordingly, we define the periods as 1929–33, 1933-35 and 1935-39.

3.5 Addressing Endogeneity

One might be concerned that the Long administration chose to locate roads in parishes in a way which would maximize his electoral chances. If this was done in a way which was correlated with retail sales, this might bias our results. Given the numerous issues involving instrumental variable analysis which have been identified in recent years, we address these endogenity issues more directly (Jiang, 2017; Bastardoz et al., 2023). The first piece of evidence regarding this issue is that Long discussed how he allocated road spending. He was primarily concerned with the popularity of the road program itself, and encouraging the Louisiana electorate to fund further expansions of the road network. For that reason, Long made sure to build a few miles in every parish so that the residents of every parish would see the benefits of the road building program (Williams, 1969). This resulting in mileage being built in locations in Acadia in the Southwest and in Northeastern Louisiana in parishes which were not between major cities and which had small populations, as can be seen in Figure 9b. Spending on vote-poor areas like this was not electorally optimal. We can see the correlates of road spending with various controls in Table include reference to that Table here, and indeed more urban areas saw less road construction.

However, road construction was still largely done in locations where roads should be built. We can see that the current interstate system connects the major cities. The modern state road network also has had many decades to reverse any misallocation of road investments by the Long administration in the 1930s. For this reason we regress road spending by parish on Louisiana state highway network miles in 2019, as well as an indicator variable for parishes with some interstate highway mileage present in that parish, and a constant. As we can

see in Table 2, these two variables are statistically significant, and this regression explains more than 50% of the variation, despite being indicator of miles, and not direct measures of spending, and representing a road network three quarters of a century later.

3.6 Additional Controls

3.6.1 Flood of 1927

Immediately preceding Long's election in 1928 was the Great Mississippi Flood of 1927. This particularly affected parishes south of the Mississippi River and those in Saint Bernard parish where the levees were intentionally destroyed to reduce the risk that New Orleans would be inundated. Often roads were constructed near levees, especially in the pre-Long period, and so one could imagine that rebuilding these roads could affect spending just a few years later. However, rebuilding occurred fairly quickly, especially since the Federal government took a larger role in rebuilding with the Flood Control Act of 1928. Indeed, we find that controlling for both damage and extent of flooding affects out coefficients little (Hornbeck and Naidu, 2014; Barry, 2007).[13]

After the failures of the "levee only" flood control strategy in mitigating the effects of the 1927 Flood, a change in flood control strategy occurred as well. Rather than hoping the the levees would hold, and then relying on breaks in the levees (whether intentional or not) to relieve pressure on the levees, a spillway was constructed to allow Mississippi river water to be released into Lake Pontchartrain. The Bonnet Carré Spillway was constructed by the Army Corps of Engineers at a cost of approximately $14.2 million (USACE, 2014).[14] We include this spending with the federal road spending in our controls .

3.6.2 Miscellaneous Spending Projects

Beyond road and bridge building, there were also miscellaneous public works undertaken by the Long administration. Long built a new State Capitol building , an Art Deco masterpiece that is still in use today (Jolly and Calhoun, 1999). Work on an airport in New Orleans began in the year of Long's first inauguration, which is also still in use as Lakefront Airport.

[13]Many thanks to Matthew Jaremski for suggesting this control.

[14]The construction of the spillway structure itself occurred from 1929–1931 at a cost of $3 million, with guide levees being completed in 1932 and highway and railroad crossings in 1936 (Science, 1931). The entire project cost $14.1 million, so we allocate $3 million from 1929–1931 and the remaining $11.1 million for the entire periods from 1929–1936.

	Coef.	Std.Err.	R-sq.	N
Per capita education spending	0.74**	0.38	0.06	64.00
Per capita tax collection	0.08	0.15	0.01	64.00
Per capita spending, other projects	-0.61***	0.18	0.05	64.00
1927 flood intensity	11.14	25.67	0.00	64.00
% black in 1920	-0.35	0.46	0.01	64.00
% urban in 1920	-1.38***	0.34	0.13	64.00
% of land on farms in 1929	-1.31***	0.47	0.12	64.00
% foreign born	-5.49**	2.36	0.05	64.00
Population growth rate, 1920-30	-127.77***	42.73	0.13	64.00
% population aged 10-19, 1930	7.66**	4.53	0.04	64.00
% population aged 20-29, 1930	-11.10**	5.33	0.07	64.00
% population aged 30-34, 1930	-18.01	11.19	0.04	64.00
% population aged 35-44, 1930	-9.31	7.52	0.02	64.00
% population aged 45-54, 1930	1.51	8.03	0.00	64.00
% population aged 55-64, 1930	6.57	11.05	0.00	64.00
% population aged 65, 1930	7.98	12.66	0.01	64.00
Number of bays	0.28**	0.15	0.01	64.00
Number of beaches	14.26	11.05	0.01	64.00
Number of lakes	0.65**	0.34	0.05	64.00
Number of swamps	1.14	1.37	0.01	64.00
Max elevation	0.00	0.06	0.00	64.00
On Gulf of Mexico	-14.36	20.24	0.01	64.00
# of rivers passing through 11-20 counties	18.45	22.68	0.01	64.00
# of rivers passing through 21-50 counties	30.25	33.18	0.02	64.00
# of rivers passing through 50 counties	-10.08	19.40	0.00	64.00
# of manuf. Employees, 1929	0.29	0.86	0.00	64.00
Elevation range	-0.02	0.07	0.00	64.00

Table 2: Correlation of Road Spending with Other Political and Economic Determinants

Public hospitals in Louisiana date to the French colonial period, and Long would build a new Charity Hospital in New Orleans. There were also major expansion of plant at LSU's Baton Rouge campus, including the iconic Field House and an expansion of Tiger Stadium (Williams, 1969, p. 546-7). We add in these projects, in addition to the Bonnet Carré Spillway discussed above, to our analysis, as they could have a similar effect as fiscal stimulus as road and bridge spending.

**********Add in write-up**********

3.7 Empirical Strategy

3.7.1 Baseline approach

Long ran on a platform that was centered on vastly expanding Louisiana's road network. Our analysis seeks to understand the impact of this fiscal spending program on the growth rate of economic activity across parishes in Depression-era Louisiana. As described above, studying this program over 1929–33 has the advantage of not being contaminated by broader national level efforts to revive the economy. To achieve our end, we collect data from archival sources on the dollar value of all road building expenditure by parish for each year between 1924 and 1939. The inflation-adjusted sum of this spending per capita over 1929-33 constitutes our main independent variable. Following Fishback et al. (2005), we use retail sales data at the parish level from the U.S. Census Bureau as our baseline measure of economic activity. The growth rate in retail sales expenditure per capita between 1929 and 1933 constitutes our main dependent variable. We describe these and other data in greater detail below.

While the road-building program was by far the largest component of Long's spending program, retail sales in the parish was likely affected by other elements of Long's fiscal policy. To control for the effect of this on our coefficient of interest, we collect expenditure data on the the most prominent elements of Long's fiscal agenda over the 1929–33 period, and include them as controls in our main specification. These elements include programs in the education department (Free Textbook program, Adult literacy night schools), enhancements to Louisiana State University (the Field House, Tiger stadium etc.), and other construction projects (the Bonnet Carre spillway, the new capitol, the new airport etc.). Additionally, Long amended aspects of the tax code in the state, including altering the property base on which tax was collected. We control for these fiscal actions by including the total tax collections estimation procedure.

	Coef	t-stat
LA highway miles (2019)	4,315***	6.952
Interstate presence (2019)	-26.19*	-1.997
Constant	32.47	1.553
Observations	64	
R-squared	0.515	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Correlation of Road Spending with Current-Day Roads and Interstate Highways

3.7.2 Extended approach

A concern related to our baseline specification is that the parishes we study are heterogeneous along characteristics in important ways, and that these might be responsible for the differential per capita retail sales response to the road building program. Additionally, there may be other unobserved differences in spending patterns in the parish level (beyond the state-level fiscal programs we explicitly consider above) that may be correlated with both the road-building program as well as growth in per capita retail sales spending. The resulting endogeneity may bias the coefficients we obtain from our baseline estimation. We address these concerns in three ways. First, we consider a set of important covariates that may be related to per capita retail spending at the parish level. For each of these covariates, we follow Mian and Sufi (2012) and regress our measure of road building expenditure on each of the covariates. This allows us to consider the extent and direction of the bias resulting from omitting these variables. We then add these covariates to our baseline specification and find that they do not affect our baseline estimates very much.

Second, we consider an extended model where we consider spending across our baseline variables, but over the entire Great Depression period (1929–39). The availability of data restricts us to evaluating the effect of road building expenditure for the periods 1929–33, 1933–35 and 1935–39. However, the panel structure implies that we are able to exploit variation in spending both across parishes as well as across times. We include additional variables to control for the implementation of the New Deal, as well as the general recovery across the U.S.. Once again, we find that the estimates we recover for the effect of the Long-era road-building program are very similar.

4 Empirical Results

The results from the estimation of Equation **??** are given in the first column of Table **??**. To provide additional insight into the role of Long's programs, we present the results both for the full sample period (1929–1939) as well as just for the period were Long was politically active in Louisiana (1929–1933). We present two additional specifications in Table **??**. First, we present results for a specification where only the New Deal variables (Public Works and Relief Spending, and AAA spending) are instrumented.[15] This allows us to compare our results more directly with the results in FHK, although the dependent variable is slightly different from the decadal growth rate considered in that study.[16]

[15]Note that we do not have a 2SLS estimate for the 1929-33 period for the New Deal instrument specification as there was no New Deal spending in that period.

[16]We present results that allow a direct comparison to FHK in Appendix XX, where the sum of all spending from 1929–1939 is regressed on the decadal growth rate.

Table 4: OLS Estimates of the Impact of Road Building on Retail Sales Growth

	Baseline		**With Controls**		**Panel**	
	Coef	t-stat	Coef	t-stat	Coef	t-stat
Main fiscal variable						
Per capita road spending, 1929-33[17]	0.00141*	1.661	0.00193*	1.512	0.00176**	0.001
Per capita road spending	– " –	– " –	– " –	– " –	0.00060	1.009
Other fiscal variables						
Per capita education spending	-0.00436**	-1.960	-0.00101	-0.309	0.00215***	2.257
Per capita tax collection	-0.00029	-0.298	-0.00084	-0.215	-0.00187***	-2.149
Per capita spending, other projects	0.00031***	2.986	-0.00010	-0.337	-0.00002	-0.106
Parish covariates						
Avg. road spending, 1924-28			-0.00142	-0.423	0.00107	0.871
Avg. education spending, 1924-28			0.00018	0.045	-0.00329***	-2.234
Avg. tax collection, 1924-28			-0.00048	-0.117	0.00148**	1.826
% black in 1920			-0.00055	-0.467	0.00005	0.147
% urban in 1920			0.00023	0.197	-0.00013	-0.304
% of land on farms in 1929			-0.00079	-0.797	-0.02955*	-1.578
% foreign born			-0.00326	-0.730	0.00075	0.370
Population growth rate, 1920-30			-0.03268	-0.323	0.05654*	1.524
% population aged 10-19, 1930			-0.03115	-1.416	0.00111	0.103
% population aged 20-29, 1930			0.00584	0.279	-0.00038	-0.051
% population aged 30-34, 1930			-0.09580**	-1.900	-0.02351	-1.029
% population aged 35-44, 1930			0.06446**	1.778	0.04278***	2.289

[17]Indicates the coefficient associated with per-capita road spending for the 1929-33 period only. The subsequent line indicates the general coefficient across all periods, and controls for the interaction of the road spending variable with retail sales in the rest of the US.

	Baseline		With Controls		Panel	
	Coef	t-stat	Coef	t-stat	Coef	t-stat
% population aged 45-54, 1930			-0.13069***	-2.968	-0.04986***	-2.661
% population aged 55-64, 1930			0.04997	1.076	0.00014	0.007
% population aged 65, 1930			0.02233	0.597	0.03513**	1.778
Number of bays			-0.00017	-0.442	-0.00032*	-1.658
Number of beaches			-0.00643	-0.203	0.00652	0.388
Number of lakes			0.00014	0.204	-0.00000	-0.010
Number of swamps			0.00110	0.567	0.00087	1.366
Max elevation			-0.00057*	-1.491	-0.00004	-0.323
On Gulf of Mexico			0.01495	0.305	0.04043**	1.990
# of rivers passing through 11-20 counties			-0.01052	-0.250	-0.02127*	-1.654
# of rivers passing through 21-50 counties			-0.00652	-0.180	0.01519	1.346
# of rivers passing through 50 counties			0.06596*	1.495	-0.00292	-0.178
# of manuf. Employees, 1929			-0.00122	-0.755	-0.00040	-0.645
Elevation range			0.00062*	1.542	0.00004	0.259
1927 flood intensity			-0.04184	-0.813	0.00440	0.180
Area per capita in 1930			-0.12023	-0.222	0.09805	0.471
Additional Covariates						
Avg. temperature, 1930s					0.00554	0.354
Avg. precipitation, 1930s					-0.03575	-0.370
Mths extreme wetness, 1930s					-0.01118	-1.226
Mths extreme drought, 1930s					0.00572	0.899
Avg. temp. $\times$ % of land on farms					0.00051	1.194
Avg. precip. $\times$ % of land on farms					-0.00086	-0.309
Mths severe drought $\times$ % farmland					-0.00020	-1.165

	Baseline		With Controls		Panel	
	Coef	t-stat	Coef	t-stat	Coef	t-stat
Mths extreme wetness × % farmland					0.00031	1.425
Per capita AAA spending					-0.00009	-0.263
Per capita public works & relief spending					-0.00003	-0.561
Road spending × Rest-of-US retail sales					-0.01082***	-2.070
Period = 3335					0.27968***	6.636
Period = 3539					0.22911***	6.389
Constant	-0.06550***	-2.353	1.25470	1.400	-0.44192	-0.498
Observations	64		64		192	
R-squared	0.178		0.645		0.737	

*** p<0.01, ** p<0.05, * p<0.1

For the road building variable, our first specification, which is a simple OLS regression, anticipates the results of the later, more detailed analysis quite well. This is particularly true for the results for the restricted sample period (1929–1933). While the instrumental variable analysis causes some changes in size and significance in the coefficients (particularly for the full sample period), the sign and magnitude remain largely the same. In general, we find that road spending is positively and significantly associated with the growth rates over the periods in consideration.

One interesting finding is related to the impact of New Deal spending in the period. Unlike FHK, we find that public works and relief spending is negatively associated with retail sales. AAA spending is also negatively related, but this conforms with the results of FHK, who also found a negative relationship.

4.1 Falsification Test: Cotton

We use retails sales as they are nontraded, and so strongly affected by local demand shocks. We want to show that fiscal changes did not affect economic activity through some other channel. To do this, we need a product which would not be affected by local demand shocks. These products would be tradeable, so that much of demand was not local to the parish. Cotton in Louisiana will present a perfect example of a completely traded product which is not affected by local demand shocks.

Cotton was a major export crop for Louisiana, as it was for most states in the Deep South. Between 1924 and 1933, cotton was the crop which generated the most revenue in Louisiana, accounting for 46% of all agricultural cash receipts (Montgomery, 1949, p. 4). However, the entire cotton crop in Louisiana was exported to textile mills in other states or other nations. There were no cotton mills in Louisiana, as confirmed by the records of the Censuses of Manufactures from 1927-1939. This made it unique, in that there was no direct effect of local demand on cotton production, as all direct demand came from out-of-state.

To investigate these effects, we run the OLS regression in Equation 2. First, we run the regression in levels, i.e., regressing the *level* of cotton production on the *level* of total parish spending (rather than in *per-capita* terms). Second, we include cotton-growing area fixed effects, to reflect the 11 distinct cotton growing areas in the state.[18] Formally,

$$C_{i,t} = \beta_1 \text{Road}_{i,t} + \beta_2 \text{Educ}_{i,t} + \beta_3 \text{Tax}_{i,t} + \beta_4 \text{Z}_{i,1920} + \beta_5 \text{CG}_i + \varepsilon_{i,t} \tag{2}$$

where the new variables $\text{C}_{i,t}$ and CG_i are the level of cotton production in time t and the cotton growing area of parish i. The results of this and some alternate specifications are provided in Table

[18]Data are derived from Montgomery (1949). We thank Paul Rhode for suggesting the use of agricultural commodity production for Louisiana in this period.

	1929-39		1929-33	
	Coef	tstat	Coef	tstat
Total road spend	-0.000875**	-1.986	-0.00253***	-2.624
Total education spend	0.00294*	1.929	0.0130***	3.596
Total tax collected	0.00347***	4.012	-0.00159	-1.009
Total AAA grants	0.00321***	10.76		
Total PBRE spend	-0.00115***	-6.249		
Constant	6,023***	4.640	14,081***	8.209
Observations	521		214	
R-squared	0.775		0.655	
Year FE	✓		✓	
Cotton Area FE	✓		✓	

Table 5: Impact on Cotton Production

5.

We find very precisely estimated zeroes for cotton production in response to fiscal policy, consistent with this theory. This has some additional implications for multiplier estimation more generally. Given the agricultural orientation of the Louisiana economy of the 1930s, the lack of an effect on local demand in the agricultural sector would tend to reduce the overall fiscal multiplier effect relative to modern economies which are more reliant on nontraded economic activity like services and which have a small share of economic activity in agriculture. Even crops like corn, which are consumed locally, are highly tradeable.

5 Multiplier Estimation

5.1 Parish multiplier

We attempt to estimate the fiscal multiplier implied by our regression results above. In particular, we seek the program-specific multiplier, that is to say, the effect of the road spending and education spending programs on income in Louisiana. As before, we are handicapped by the absence of actual income figures, and will therefore rely once again on retail sales as a proxy. Following FHK, we first calculate the retail expenditure to income ratio for Louisiana, which we find to be approximately 55%.[19] We first estimate the multiplier effect on retail sales, and then use this rule-of-thumb to arrive at indicative estimates for the multiplier on Louisiana income. We define the multiplier of

[19]FHK find the nationwide average to be approximately 53%, so the figures for Louisiana alone are not too different.

a program as the effect of an additional dollar of program spending on Louisiana income, which should be equivalent to Louisiana GDP. Given our many specifications, the first column of Table 6 provides the range of multipliers implied by the foregoing analysis.

Multiplier	Baseline	Controls	Panel
Retail sales	0.53	0.73	0.66
Personal income	0.97	1.32	1.20

Table 6: Implied Multipliers for Road Spending Program

Several interesting points emerge. First, across both programs and most specifications, we see that the multiplier for the 1929-33 period (i.e., the Long era) is higher than that for the full sample period of 1929-39. This makes intuitive sense as the Long era spanned the periods of highest slack during the recession, when the multiplier can be expected to be the highest. Additionally, as Figure 1 shows, state spending per capita was the highest during this period as Long implemented the programs promised in his election campaign. Second, across all specifications, we find that the multiplier on road spending is higher than that of education spending. We interpret this as a reflection of the higher proportion of transfers in the education spending (such as in the case of the textbook program). Further, while both road and educational multipliers see a reduced sample size from 1929–1933, the variation in spending is more useful for roads in this period than for education.

For the full sample (1929-1939), the road spending multiplier is between 0.85 and 1.05 for other specifications. For the shorter sample, likewise, the multiplier is about 1.32 for all other specifications.

We find that the effects of the 1927 flood do not affect our results much, suggesting that the Federal spending in its aftermath and the effect associated with it likely occurred prior to Long's spending program. We also find that when our education spending variable includes spending on higher education institutions, the associated multiplier is a bit higher from 1929–1933, while it's a bit lower for the whole 1929–1939 period. These diminsishing returns are perhaps unsurprising given the big push for educational spending in larger cities which already had large projects underway in the later period (like the bridges across the Mississippi at Baton Rouge and New Orleans).

The values we find for the multiplier over the Long era fall between the results in Chodorow-Reich (2019), who obtain a point estimate of 1.8 and Fishback and Kachanovskaya (2015) who estimate it to be between 0.4 and 0.96 at the state-level for New Deal spending. However, over the longer sample period, our estimate of the multiplier is closer to the latter study.

5.2 State Multipliers

If we just look at the aggregate spending by state, we find similar estimates on Louisiana state indicators from the Huey Long spending program, even using this very disaggregated data. These changes can be found in Table 7. We can look at the 1929 to 1931 period when there was a surge in spending in Louisiana, particularly on roads. Highway spending in Louisiana surged by $1.3 million over that period, while spending was cut in Tennessee by $2.1 million, cut by $1.5 million in Texas, and increased by merely $0.3 million in Mississippi. Per capita spending rose in Louisiana from $17.01 to $39.40, spending almost twice the state average across all states in 1931 of $20.21. Meanwhile, state per capita spending in Mississippi fell from $11.88 to $11.37 over those two years, with corresponding figures for Texas of $18.50 to $15.72 and of $23.54 to $29.59 for Arkansas over those two years. Louisiana personal per capita income fell from $409 to $315 over those two years, a decline of 23%, while declines in surrounding states were larger: 39% decline for Mississippi, 32% for Arkansas, and 27% for Texas. In real terms, Louisiana real personal income per capita fell by 13%, lower than Texas with an 18% decline, Arkansas with a 23 % decline, and Mississippi with a 31% real decline.

	Per-capita Spending		**Per-capita Income**			**Real Income**
State	1929	1931	1929	1931	1929–1931	1929–1931
Louisiana	$17.01	**$39.04**	$409	$315	-23%	-13%
Mississippi	$11.88	$11.37	$277	$169	-39%	-31%
Texas	$18.50	$15.72	$474	$345	-27%	-18%
Arkansas	$23.54	$29.59	$303	$207	-32%	-23%

Table 7: State Spending and Income Per Capita Declines

We can comparing Louisiana to the most similar state in the Union, Mississippi. Louisiana spent $23 more on total per capita from 1929 to 1931, and Louisiana saw a decline of $94 in personal income per capita while Mississippi saw a decline of $108 per capita, a $14 improvement. Louisiana spent $26 more per capita than Texas and saw its income per capita decline by $35 less than Texas. Even here with these rough estimates, we see a multiplier of roughly 1.

5.3 Discussion of Multiplier Magnitude

Overall, we are finding relatively low multipliers relative to modern estimates from Chodorow-Reich (2019), who estimated a multiplier at the zero-lower bound (without monetary offset) of about 1.7-1.8. This might seem surprising given that the US economy of the 1930s was extremely depressed, with average unemployment rates in the double-digits and peak unemployment rates about 25%.

With so much more slack than in the postwar period, theory would predict that multipliers should be larger, not smaller. However, this is not the only factor to consider, as the degree of openness to trade and relative tax rates would also affect the multiplier. Moreover, other authors like Barro and Redlick (2011) have found that multiplier in the mid-century USA were much lower, about 0.4-0.7. In this section we use a simple model to think about what multiplier we might expect for this period. In a preview of results, we find that the multiplier we estimate is not implausible given economic conditions of the time.

5.3.1 How much smaller would the multiplier in 1930s Louisiana be?

When we think about fiscal multipliers, we need to be cognizant of the many reason that the multiplier may vary in both the cross-section and the time-series. These factors affecting the multiplier can be found in Kahn (1931) and in Chapter 10 of Keynes (1937). As discussed above, a high degree of openness is important for reducing the multiplier. Given the small size of Louisiana and it's lower than average income, much of its purchases would be made outside of the state, whether within the rest of the United States or an import from abroad. The lower level of taxation in Louisiana at the time would also tend to increase the multiplier, as would the smaller size of government at the time, which meant more expenditure passed through household consumption. To fix ideas, we will compute a relative multiplier given these factors, to give a ballpark estimate of how much we might expect the multiplier to differ simply due to different economic conditions between Louisiana in the 1930s relative to the United States in the modern context. We will use a standard Keynesian cross framework which is the most straightforward way to do this, assuming that marginal propensities are equal to average share of national income or GDP. This is obviously a restrictive assumption, but it will help to fix ideas. The multipliers we find are similar to those found in theoretical work using a Keynesian Cross framework (Hagedorn et al., 2019).

We begin by defining terms: c will be the marginal propensity to consume, t will be the tax rate, and m will be the marginal propensity to import. Assuming constant rates for these variables, we obtain the following multiplier:

$$\frac{1}{1 - c(1-t) + m} \tag{3}$$

In modern times, consumption is roughly 2/3 of GDP, tax revenues are roughly 1/4 of national income, and imports are roughly 1/6 of GDP. This results in:

$$1/\left(1 - \frac{2}{3}\left(1 - \frac{1}{4}\right) + \frac{1}{6}\right) = 1.5$$

This is a bit smaller than the Chodorow-Reich estimates of 1.7-1.8 but within the same ballpark, especially if one views the Chodorow-Reich estimates to be on the high-end of the range. Next, we

want to consider the multiplier for Louisiana around 1930. [20]

Federal taxes were about 3-5% of national income in the early 1930s so we can assume that including Louisiana state and local taxes we should obtain a result of a tax rate of about 1/6. Consumption spending was higher in the 1930s, partially due to a smaller government sector in the USA, averaging about 3/4. However, unlike a standard multiplier analysis, we need to be adjusted for the fact that we want to consider domestic consumption for Louisiana, and not the nation as a whole, and so purchases made by Louisianans on products produced out of state but within the United States should be considered as imports and not domestic consumption. Similarly, we need to adjust upwards the import share, to include both national imports and interstate imports. National imports were a small share of GDP at the time, peaking at 5.3% in 1929 and falling to 3.2% in 1932, and then fluctuating around 3 or 4 percent until the Second World War.[21]

To calculate how much Louisiana would import from the rest of the United States, we'd need to consider how much would be imported in a world without any trade frictions. Louisiana's personal income per capita was $409 in 1929, while that of the United States on average was $700, leading to a ratio of about 4/7 per capita. Louisiana's population in 1930 was 2.1 million, while that of the United States was 123.2 million, so overall Louisiana's share of total personal income was about 1%. If there are no trade frictions or home biases in trade, then we'd expect that Louisiana would import approximately 99% of its consumption of American goods from other states.

However, there are home biases (as Louisianans certainly would prefer some local products, like music and seafood), and there are non-traded goods like services which will be produced and consumed in the same state. The national share of services in GDP in the early 1930s is about 1/3, and services at this time are all nontraded. However, Louisiana had a larger share of agriculture at the time, and so likely had a smaller share of imports, and we have to add in the 3-5 % of international imports that occurred in the USA as a whole. Given that New Orleans was one of the largest ports at the time, this would tend to increase the amount of imports, while some other consumption and investment activity was likely nontraded, so 3/8 domestic expenditure and a 5/8 import share for the state seem reasonable.[22]

Plugging in these values in to the multiplier equation above we obtain the following result:

$$1/\left(1-\frac{3}{4}\left(1-\frac{1}{6}\right)+\frac{5}{8}\right)=1$$

This approximately conforms with what we found earlier for our empirical estimates of a mul-

[20]Sources for this section are the Bureau of Economic Analysis (BEA) and the Organization of Economic Cooperation and Development.

[21]Sources for this section are from the BEA and Federal Reserve Economic Data (FRED), series FYFRGDA188S and DPCERE1A156NBEA.

[22]These series are taken from the Bureau of Economic Analysis and FRED, series LAPCPI, A792RC0A052NBEA, and DSERRE1A156NBEA.

tiplier roughly of one though we do find slightly higher multipliers for the road multiplier for 1929–1933. While this analysis is fairly rough, it supports our empirical results.

5.4 Fiscal Multipliers in Developing Countries

We argue that the same type of dynamics that make the multiplier relatively low in Louisiana during the Depression are often present in developing countries today. Izquierdo et al. (2019) find that public investment multipliers are higher in developing countries with a smaller capital stock, consistent with standard growth theory. This effect does not seem to be dominant for Louisiana's case studied here. Ilzetzki et al. (2013) find that government consumption multipliers are higher in more industrialized, high income countries, consistent with our finding of a low multiplier for less-industrialized, lower-income Louisiana. They also find that multipliers are lower in more open economies, consistent with very open Louisiana having a lower multiplier. Guy and Belgrave (2012) similarly find low fiscal multipliers for the small, open, less industrialized Caribbean, a region which share many features with Louisiana.

5.4.1 Lack of Industry in Louisiana

The Deep South had a minimal manufacturing base historically, and Louisiana at this time was no exception. Louisiana's share of the US population was 1.7%, while its share of industry was roughly half that. The Census of Manufactures of 1929 shows how little manufacturing capacity Louisiana had relative to the rest of the United States, and how Louisiana's manufacturing capacity was focused primarily on processing of natural resources. The entire American Sugar Cane processing industry was located in Louisiana, Louisiana accounted by a bit less than half of the rice cleaning and polishing industry, and its share of the bone black was roughly a third. On the other hand, there were more than 250 industries which were simply not recorded in the 1929 Census of Manufactures for Louisiana that were present in more industrialized states. There was no mention of any manufacture of iron or steel products, cast-iron pipe, cement, chemicals, coke, electrical equipment, lime, machine tools, motor vehicles, paving materials, or rubber tires in Louisiana in 1929. The need to import so much from other states (or from other nations) would increase the leakage from the multiplier.

5.4.2 Human Capital and Multipliers

Louisiana was a state with one of the highest illiteracy rates in the United States. In 1930, Louisiana's illiteracy rate was 15.1%, surpassed only a similar southern state, South Carolina (16.7%). Louisiana's illiteracy rate surpassed that of similar states like Mississippi (14.8%) and Alabama (14%), while other neighboring states like Texas (7.3%) and Arkansas (7.6%) had illiteracy

rates roughly half of Louisiana's (Census Bureau 1963, p. 2). Naturally, this reflected a broader lack of human capital in Louisiana, but it meant that almost one in six workers could only perform the most menial and simple of tasks. This can be seen in Table 8, with the six states with the highest illiteracy rates in 1910 listed, with the state with the highest illiteracy rate in bold.

State	**1910**	**1920**	**1930**	**1950**
Louisiana	**29.9**	**23.4**	15.1	**9.8**
South Carolina	27.6	20.9	**16.7**	7.9
Mississippi	24.4	17.8	14.8	7.1
North Carolina	20.2	15.0	11.5	5.5
Arkansas	13.4	10.2	7.6	5
Texas	10.6	8.9	7.3	5.4

Table 8: Illiteracy as a percent of Population Age 14 years and older (Census 1963)

When Long hired for his spending programs, he often had to hire out of state managers due to the lack of trained professionals in Louisiana, reducing the multiplier. Long built a new LSU Medical school in New Orleans, hiring the best faculty to rival Tulane's, and many of them came from outside of the state (Kane, 1971, p. 223). When Huey built a new Capitol in 1931, it had to be the very best. While headed by the Louisiana firm of Weiss, Dreyfous, and Seiferth, the door was carved by Loredo Taft, based in Chicago, with limestone from Alabama (Hitchcock and Seale, 1976, p.283). Due to a lack of trained engineers, Huey had to look out of state for skilled engineers and managers, hiring away the chief engineer of the Highway department on North Carolina, L. R.Ames, by more than doubling his salary. Long also hired twenty other employees of the North Carolina Highway department, as well as a Missouri purchasing agent and a maintenance engineer from Oklahoma (Williams, 1969, p. 333). If out-of-state employees could not be found, then spending would tend to hire workers who were already employed in the state, "crowding out" private activity due to this labor bottleneck.

6 Conclusion

Louisiana under Huey Long provides an ideal environment to study the effects of a large spending program under depressed economic conditions. Just as the Depression was underway, the Long administration started a massive spending programs for unrelated reasons. This spending surged from 1929–1931 before receding once Long went to Congress, falling to lower levels by 1933 before rising again as the New Deal ramped up. This spending program was focused on a single state, a relatively unique episode in a literature dominated by national programs like the New Deal. We

have looked at two major Long programs, focused in education and road building, at the parish level, as well as overall government spending at the state level.

We have also examined tax multipliers, as well as spending multipliers, though we only use property taxes, which are not comprehensive and don't scale with income. In terms of outcome variables, we use multiple measures, given the paucity of data during the 1930s. We use retail sales at the parish level, which has similar cyclicality as the overall business cycle, as well as various agricultural commodities. We find multipliers around 1 to 4/3 based on retail sales, which are largely nontraded, and multiplier of 0 for cotton, with cotton being a precisely estimated zero. Multipliers of state spending on personal income per capita is roughly 1 as well. We show that these multipliers are consistent with what a simple Keynesian model of the multiplier would predict, gives the openness to trade and tax rates that prevailed in Louisiana in the 1930s. We also discussed some other factors that would reduce the multiplier in Louisiana at the time, that might offset the large amount of slack in the Louisiana of the Depression, which would tend to raise the multiplier.

We have proposed reasons why multipliers may have been lower in the past. While the past is often useful to inform the present, we could be aware of changes in economic structures over time which can cause estimates to differ, making apples-to-apples comparisons difficult. This paper has contributed to our understanding of multipliers in the Depression, as well as examining the impact of corruption on the estimation of fiscal multipliers, and has proposed a method to correct for this mismeasurement. Given similar conditions between developing countries today and Louisiana in the Great Depression, including corruption, low human capital, and a small, open economy, these methods could be developed further in a modern context with better data. This is left for future work.

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A The Corruption "Dismultiplier"

Corruption could affect the multiplier is multiple ways. Corruption redirects income from liquidity-constrained, lower income households to higher income, less liquidity constrained households, reducing the expenditure effects of a given amount of spending. In terms of estimation, corruption also reallocated spending from where it is recorded to where it is actually being allocated. Acconcia et al. (2014) look at corruption as it relates to fiscal multipliers, though in a different context, of changes in local spending stemming from mafia-related corruption in Italy. They exploit variation in fiscal spending that results from the dismissal of local officials when evidence of mafia infiltration is discovered, which tends to result in immediate spending cuts. They find multipliers of 1.5-1.9, higher that what we find for Huey Long's Louisiana. To the best of our knowledge, previous work has not yet estimated the effect of corruption on either the actual fiscal multiplier or the estimated fiscal multiplier .

A.1 Corruption Dismultipliers in Louisiana

The corruption of the Long administration, even in a state with a long history of corruption, was legendary. Huey was adept at getting kickbacks wherever he could, including the use of patronage at all levels of the state government. Huey himself got kickbacks from state employees. The famous deducts box (which eventually contained millions of inflation-adjusted dollars) was filled with the 5% mandatory contribution of all state employees, who, after all, owed their jobs to the Kingfish Williams (1969). Long was unparalleled in using corruption to advance his political program, which largely kept him out of the cross-hairs of federal prosecutors. He certainly shared the wealth with his subordinated, building a well-oiled political machine that was able to rout the long-ruling political establishment in Louisiana. However, he kept his subordinates under control and centralized corruption in his hands, preventing underlings from getting themselves in trouble. Long was well-aware of the necessity of this control: he famously said that without his restraining influences, his subordinates would all end up in the penitentiary.

And they did. After Long's assassination, Richard Leche was chosen to become governor in 1936. He would preside over corruption on a large scale, but was much less careful than Huey. Leche would resign in 1939, and was convicted for corruption in 1940 in the famous "Louisiana Scandals". These scandals erupted from suspicious activity related to WPA project at LSU. This eventually uncovered a wide-ranging embezzlement scandal involving LSU's president, Dr. James Monroe Smith, fraudulently creating university bonds to generate funds to cover losses related to a failed speculative scheme in wheat futures. More corruption was uncovered as well. The construction superintendent of Louisiana State University, George Caldwell, received a 2% cut on all building constructed under Dr. James Monroe Smith (president of LSU) (Daniell, 1939a).

A.2 Estimation of Corruption Dismultipliers in Louisiana

Corruption could affect the estimated multiplier in a few ways. Income would be redistributed from needy areas to the location of corrupt individuals. If the corrupt tend to be higher income than the needy, then their tendency to spend would be lower, reducing the actual multiplier. We cannot control for this effect directly. Since corruption is illegal, there may be measurement error as funds which are actually being spent in one parish are actually being diverted and spent in another where the corrupt are located. Retail sales would then be higher in locations where the

corrupt as located relative to measured road spending, while retail sales would be lower in other areas relative to their measured road spending. This would then increase the standard errors and potentially bias the estimated multiplier toward zero, especially if spending occurred out-of-state. We can attempt to correct for this effect by reallocating road spending from the location where it was spent in the records to the location of the politicians and politically-connected individuals. In general this kind of counterfactual cannot be constructed, but in this case we can consult the records of those individuals indicted for corruption in the famous 1939–1940 Louisiana Scandals to see where we might expect corruption to have reallocate funds earlier in the 1930s.

If funds which are supposedly being spent in one location (say an outlying parish) and then are instead redirected to a corrupt individual in Baton Rouge or New Orleans, this will bias the estimated multiplier downward and increase the standard error. We have some sense of where the corrupt monies were being diverted due to these Louisiana Scandals. The origin of the Louisiana Scandals related to corruption at Louisiana State University (LSU) in Baton Rouge. Long lavished funding on LSU and installed his cronies there, including Dr. James Monroe Smith, the LSU president who fraudulently sold university bonds to embezzle funds for financial speculation. Additionally, East Baton Rouge parish includes the city of Baton Rouge, the capitol of Louisiana. As many politicians spent a significant amount of time there, we can assume that some of their ill-gotten gains were spent there.

One of Leche's top lieutenants, James McLachlan, diverted WPA materials and labor to construct a new home in Metairie, which is a western suburb of New Orleans in Jefferson Parish (Daniell, 1939a). Moreover, significant corruption was tied to Louisiana State University, which was the focus of the Louisiana Scandals, and that university is also located in Baton Rouge, and so the top officials were also located nearby.

Weiss would also go to jail as part of the Louisiana scandals for defrauding the Louisiana state government. After selling a hotel for $575,000, he then sold the furniture again (which had been included in the original price), for an additional $75,000 (Daniell, 1939b)). This amount represented roughly 13% of the purchase price, therefore we will produce a counterfactual where 13% of spending from all other parishes is diverted to East Baton Rouge and Jefferson parishes, taking from all other parishes equally, as these are the parishes where expect the corrupt individuals spent their money. We also produce a counterfactual assuming the 2% graft level instead, consistent with the degree of skimming at LSU discussed above.

A.3 Results

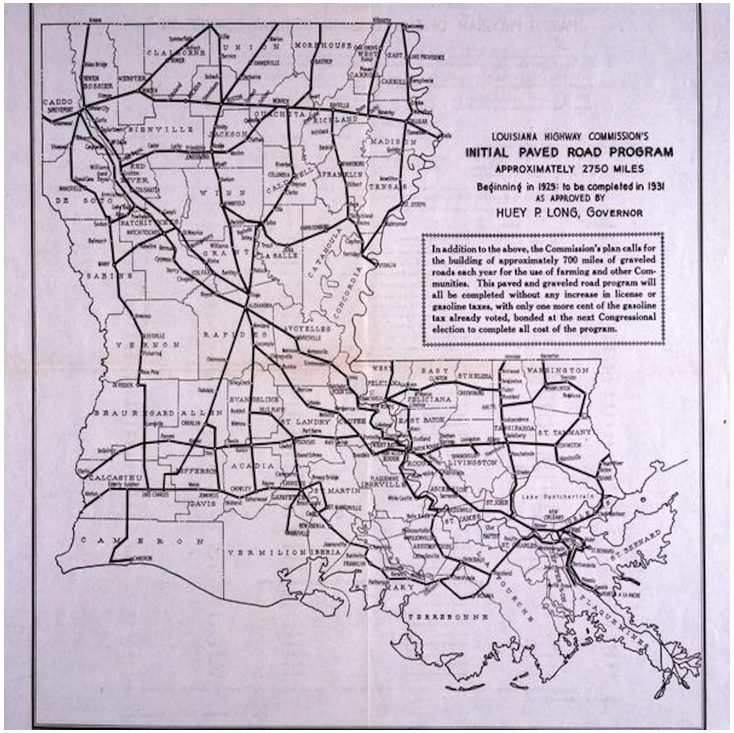
The results are provided in Table 9 alongside the uncorrected multiplier from before. We can see that multipliers rise slightly if we assume that 2% of road projects were skimmed and these funds allocated to the two "corrupt" parishes. However, a 13% the results are a much lower multiplier, consistent with an overcorrection. We also plot a whole range of multipliers in Figure **??**. We find that the multiplier increases up to about a 2% level of skimming, where we reallocate 2% of road spending to East Baton Rouge and Jefferson Parishes from all other parishes, and then decreases after this point. This is by no meant to constitute a proof that this increase in the estimated multiplier was caused by corruption, but it is consistent with a measurement error from corruption that could potentially be corrected with perfect information.

are these the updated multipliers need to be updated.

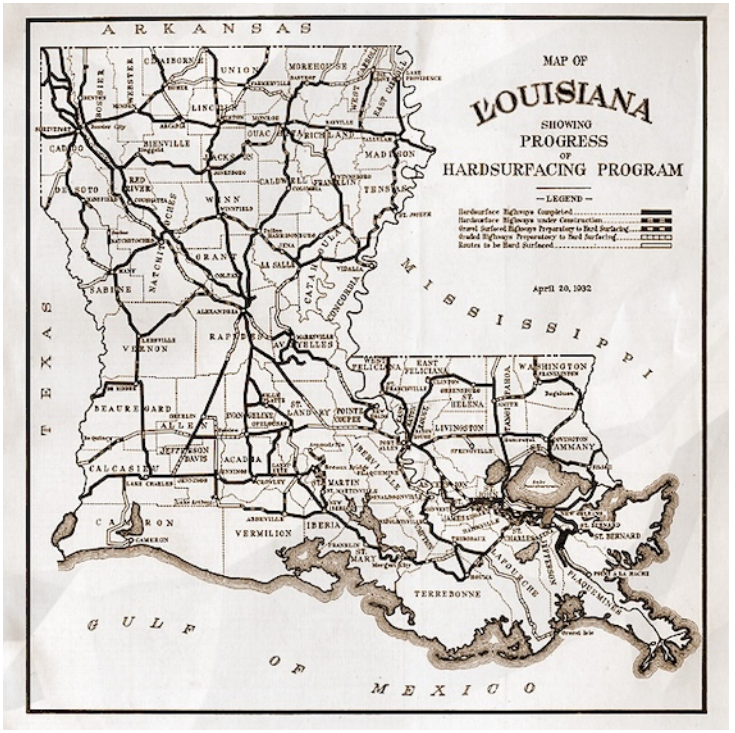
	Baseline Multiplier		@ 2%		@ 13%	
			Adjusted Multiplier	**Corruption Dismultiplier**	**Adjusted Multiplier**	**Corruption Dismultiplier**
	1929-39	1929-33	1929-33		1929-33	
Road Multipliers						
OLS Baseline	1.26	1.33	1.37	-0.04	1.21	0.12
2SLS ND Instrums. Only	1.17					
2SLS Road Instrums. Only	1.38	0.94	0.95	-0.01	1.00	-0.05
2SLS Both ND and Road Instrums.	1.64	0.89	0.88	0.01	0.83	0.06
Education Multipliers						
OLS Baseline	1.04	1.09				
2SLS ND Instrums. Only	1.27					
2SLS Road Instrums. Only	0.82	0.93				
2SLS Both ND and Road Instrums.	1.25	-0.23				

Table 9: Implied Multipliers for Fiscal Spending Programs

B Additional Figures



(a) Paved Road plan, 1929



(b) Progress of road program, 1932

Figure 9: Louisiana highway maps showing initial plan and progress over the Long era.