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An Analysis of Mississippi Tax Incentives

Bruce H. Brawner
University of Mississippi. Sally McDonnell Barksdale Honors College

AN ANALYSIS OF MISSISSIPPI TAX INCENTIVES

By Bruce Brawner

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Approved by

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Advisor: Dr. Joshua Hendrickson

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Reader: Dr. Jon Moen

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Reader: Dr. John R. Conlon

ABSTRACT

The locational decisions of firms present a complex economic and political problem for State Legislatures across the United States of America. It is well known that individual states compete against one another, offering large packages of incentives to firms who open within their borders – a process popularly known as the "race to the bottom." This thesis examines public subsidy information reported by the Mississippi Development Authority alongside wage and employment data from 1990 to 2016 in a local projection framework to examine whether or not treatment effects of local government spending are significant. I then employ the same method on targeted industries. I find no significant evidence these subsidies have measurable effects on wage or employment in Mississippi.

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1. Introduction

In the United States, it is common for individual state governments to compete against one another to attract businesses within their own borders in the hopes of creating jobs and increasing incomes. Typically, states plead their case by dangling amenities at potential firms, highlighting their strengths – a favorable political climate, a developing industry, brand new infrastructure, or skilled laborers that match-up well with business needs from the jump. When these benefits aren't enough to convince executives, a state turns to its next answer: loans, grants, tax rebates, and worker education programs to seal the deal. These subsidies may target broad industries and cover thousands of firms, or may be customized to fit an individual business at a single location. For the right price, anything is possible. Accordingly, this thesis examines the annual incentives awarded to businesses located or opening in Mississippi.

Historically, Mississippi's agrarian economy suffered major strain after stalled attempts to industrialize in the early 20th century resulted in little progress. Two major events compounded one another: disastrous flooding of the Mississippi River Valley, in 1912 and again in 1927, and the introduction of the Boll Weevil pest which combined to ravage cotton crops (Soloman, 1999). These two events displaced sharecropping African Americans, who represented a majority of the agricultural labor force. Many black workers decided to join the ongoing Great Migration and left for the more industrialized northern cities (Giesen, 2009). To make matters worse, the Great Depression began in the 1930s, and pushed the already struggling rural economy of Mississippi to the brink.

To respond to these desperate times, Governor Hugh White created the Balance Agriculture with Industry program in 1936. This created the first economic agency used

by the state, with the formal title of the Mississippi Industrial Commission. The program was the first independent economic agency created in Mississippi, led by three appointees supervised by the Governor, and had the power to issue bonds to fund local businesses. Among these first subsidized projects were a shipyard, a rubber factory, and a shirt company ("About Us: Milestones," 2018).

Emerging from the Great Depression into World War II, Mississippi found itself in better shape. Alphabet soup organizations such as the War Manpower Commission (WMC) helped to cover capital investments in heavy agricultural machinery. The establishment of huge military encampments like Camp Shelby, near Hattiesburg, necessitated large improvements to infrastructure. World War II saw the end of the utter dominance agriculture once held over Mississippi, tripled wages, and the permanent establishment of industrial, service, and professional sectors in the local economy (Farrell, 2001).

Mississippi still struggles with the same stagnation it has experienced for much of its post-Civil War history. The state ranked last in per capita income in 2016 at $35,484, but enjoyed the lowest cost of living in America. The metropolitan statistical areas, with at least a population of 50,000, are dispersed across the state. The largest of these is the centrally located capital of Jackson. The Memphis metropolitan area in the northwest corner, along with the southern cities of Gulfport and Hattiesburg round out the most populous areas of Mississippi. (BLS, 2016) In 2016, the population was 2,985,000 people and included the highest unemployment rate of any state in January with 6.7 percent while the national average sat at 4.9 percent (Covered Employment, 2016).

Today, the Mississippi Development Authority (MDA) established in the capital, Jackson claims to be a direct extension of the original MIC, and therefore was founded in 1936. The MDA's mission is to "foster a strong state economy and vibrant communities through innovation, use of talent and resources to improve our citizens' lives ("About US," 2018)." The establishment of the Mississippi Film Office in 1973 by Governor Bill Waller is likewise counted as a milestone. At the time of its founding, only four other film commissions like it existed.

Like its forebears, the MDA uses the familiar tools of all governments looking to expand industry: local amenities and subsidies. While the operation began humbly in the wake of the Second World War, the current Development Authority includes 17 divisions with specific operational purposes, a team of eight executives, and 12 managers overseeing all functional divisions. New divisions include a Tourism Office, an Entrepreneur Center, and Community Services.

Beginning in 2013, the MDA has published yearly public reports that detail their most important incentive programs. In these reports, they offer information on the year of the given award, the total amount that was spent, and which county received them. To construct an estimation of the effects of these awards, I use annual county level wage and employment data from 1990 to 2016. To examine this relationship I use Jordá's (2005) local projection method to approximate impulse response functions for wage and employment figures for changes in subsidies given. To account for endogeneity, I control for spillover effects across contiguous counties, and county fixed effects. I find no significant results indicating these subsidies affect either wage or employment throughout the state.

2. Literature Review

The literature on subsidy policies is diverse and often met with contradicting observations on how they affect employment, income, and production. To better understand these implications, I review studies covering tax credit programs in both Arkansas and Wisconsin, public funding for sports stadiums, credit subsidies for entrepreneurs, and a case study of the Nissan plant in Madison County, in the heart of Mississippi itself. In addition, I also review economic literature estimating multiplier effects. I review research about political motivations that may explain subsidy programs and thus influence which firms receive awards.

Bundrick and Snyder (2017) identify common firm behavior in response to state tax incentives in Arkansas using an OLS regression analysis. In their analysis, they find no significant relationship of the program on county level employment. The target of the paper is the "Quick Action Closing Fund," which they cite as encouraging rent-seeking behavior and negative spillover effects due to increased costs on infrastructure, congestion externalities, increased tax liabilities, and job transfers due to the program. The evidence suggests that firms would have expanded operations regardless of whether or not they actually receive them. Furthermore, subsidy awards with "clawback" agreements to recoup upfront payments expose taxpayers to risks of moral hazards and ineffective financial enforcement policies.

Williams (2017) observed positive employment growth after Wisconsin adopted the Manufacturing and Agriculture Credit, which gave tax breaks for those specific industries. In his analysis, Williams finds positive spill-overs for employment across the

county level. However, a comparison to contiguous border counties in Michigan, Minnesota, Iowa, and Illinois suggests that state level differences including urban concentration and growth, labor force dynamics, and demographics played an integral part in the program's success.

Coates and Humphreys (2008) summarize related examples of subsidized sport stadiums which find little to no measurable effect on local economic output. The list of more than twenty separate studies centers on understanding this consensus. Different econometric approaches are used to measure potential changes in employment, income, and benefits rendered from constructing stadiums, establishing franchises, and hosting large events on state and local areas. No pattern of significance was found to last long enough to claim a long-term economic benefit. Baade and Sanderson (1997) examined separate regressions on employment from ten cities from 1958 to 1993 and found no consistent positive results. In fact, when a stadium yielded positive significance, it was at the expense of local employment in another area of the city, implying a transfer of workers had occurred.

In regards to large scale hosting events, Hotchkiss, Moore, and Zobay (2003) examined employment and wage data before and after the 1996 Summer Olympics hosted in Georgia, using a standard difference-in-differences technique. They found no significant effects on wages although depending on what period they began their comparison, positive employment effects are observed. These results are most significant following the announcement of the games in 1994. It is not clear whether not the created jobs were short-term.

Coates and Humphreys (1999) examined the growth rate of per capita income for 37 metropolitan areas with a professional sports team from the NBA, MLB, and NFL from 1967 to 1994. Coates and Humphreys use a reduced form empirical model with a vector of variables to approximate the local economy. Scaling is used to account for time and location effects. The researchers observed that some sports franchises actually had negative effects on income for the local areas.

Another common problem addressed in subsidy literature is the promotional efforts of sponsors, private or governmental, that tout the economic benefits of stadium construction over an actual cost-benefit analysis. In fact, the literature suggests that sponsors of these projects typically report only positive outcomes and do not include potential negative effects (Farren, 2017). These publications also implicitly assume that labor allocated to each project corresponds to the most efficient placement of resources possible (Noll, and Zimbalist, 1997).

Atunes (2014) finds that financial incentives are unlikely to create a significant effect on productivity and may result in a negative effect on wages. A general equilibrium model simulating a credit market with heterogeneous agents, along with endogenous firm sizes and employment found a transfer from workers to entrepreneurs. The researchers establish a counterfactual analysis using Brazil to contrast America, and posit that developing countries will experience more of an observable effect through the use of credit subsidies than already developed countries.

A taxpayer analysis of Madison County's Nissan plant provided by "Good Jobs First" reports an overall loss on investment for the local area. Contrary to political promises of only $295 million for the initial investment, the State of Mississippi spent a total of $1.3

billion at the state and county level in order to maintain infrastructure, establish jobs, and give tax breaks to the car manufacturer. As of the report in 2013, an average job at the plant cost $290,000 with twenty percent of the workforce being temporary employees.

Literature on fiscal multipliers from government spending is another source of contentious policy debate on government spending and subsidies. Traditionally, proponents of fiscal multipliers argue that a dollar spent by the U.S. Government will cause a change in output greater than one dollar. Battini et al., (2014) review that estimating the short-term effects of public spending is difficult, largely due to problems with isolating fiscal policy shocks on output. Notably, causality may be difficult to determine as there are often two-way relationships between the inputs and outputs that complicate direct measurements of an effect. They cite research implying that federal spending in America over the course of one year is estimated to carry a multiplier effect of 0.8.

Mittnik and Semmler (2012) analyze large fiscal spending during the 2007-2008 Obama administration stimulus package. They argue that the timing of demand shocks dictates the variability of a fiscal multiplier. Their model uses two regimes: one where economic output is low and one where it is high. This multiple-regime vector auto regression approach estimates the government multiplier is dependent on the business cycle itself, therefore accounting for the variability of multipliers in previous economic literature.

Serrato and Wingender (2016) find a local income multiplier between 1.7 and 2 based on federal spending following population changes recorded by the Census every ten years. They report that any created jobs cost $30,000 each. In their treatment-and-effect

framework and IV approach, they find no significant spill-over effects. Low growth areas around the country are found to be the most affected by the treatment from federal spending.

The political aspect of government is also important in understanding why firms are awarded subsidies. Buts et al. (2012) empirically estimate a positive relationship between government subsidy awards and incumbent parties winning Flemish re-elections. Using an OLS regression approach, per capita subsidy data and subsidy awards with local election data, the researchers find strong evidence that voters tend to reward politicians who give awards to firms.

This relationship is explored by Cerda and Vergara (2008). They find that incumbent politicians who increase the number of subsidy recipients receive higher votes in reelections. They determine this by using panel data from three presidential elections from1989 to 1999 in Chile using a fixed effects model. They account for endogeneity presented by incumbent politicians through an instrumental variable approach. They observe the amount subsidies for disabled individuals and children younger than 15 as exogenous to garner more voters. Their analysis concludes that an incumbent politician seeking reelection who increases the fraction population receiving subsidies between 0.7 and 0.8 percentage points will see an increase of 1% in their electoral performance.

3. Subsidies

Continuing its legacy as heir apparent of the Mississippi Industrial Commission, the Mississippi Development Authority has compiled a significant list of incentives to lure in potential businesses. To begin, Mississippi takes a hands off approach to business. The top corporate tax rate was 5 percent in 2016 (Kaeding, 2016). Organized labor is rare, with right-to-work statutes passed in 1954 and a constitutional amendment adopted in 1960 made it difficult for unions to form (NCSL, 2018). Finally, the Tort Reform Act of 2004 capped the total amount of damages a defendant may be liable for depending on net worth. With the major aspects of the legal environment accounted for, the other carrot dangling from the stick may come into focus: subsidies.

The annual publication titled "Mississippi Incentive Reports," allows the MDA to account for 13 subsidy programs that cover a broad range of policy objectives. Grants and loans target specific industries including, forestry, manufacturing, and health care. Table A-1 lists levels of employment in these industries since 2010. Before diving into analysis, a relatively constant increase in employment is observed over the selected years. The reports may be found publicly through the Mississippi State Government website for transparency, and begin in 2013.

Some awards are granted on different standards to encourage rural areas to develop infrastructure. All 82 counties are ranked annually by the Mississippi Department of Revenue (MDR) and divided into three distinct tiers. Tier 1 includes "developed areas;" Tier 2 includes "moderately developed areas;" and Tier 3 includes "less developed areas." These tiers are created according to contributed tax revenue. The counties in each tier are listed in Table 1.

Foremost among these awards is the "Mississippi Major Economic Impact Act" (MMEIA) found under §57-75-1 of the Mississippi Code. This award is exclusively used to attract specific firms in targeted industries, with large investments of at least $300,000,000 by the firm. These industries include mining, distribution, transportation, processing, tourism, and federal projects; however, most recipients are involved in manufacturing. This legislation is typically introduced by the Governor. Employers may also apply if they meet a $150 million capital investment threshold from private or federal funding in combination with the creation of "1000 net new jobs," or alternatively, with the creation of 1000 net new jobs that pay "125% of the annual wage rate of the state," according to §57-75-5 of Mississippi Code. This program has spent $16 million per business since 2008 and a total of $113,000,000 in that same time.

These businesses typically make headlines throughout the state when they open for this first time with local politicians, the Governor, or civic leaders seen cutting ribbons and giving speeches in commencement. In 2015, Yokohama Tire Company opened the doors to a new $300 million plant in West Point, MS with Governor Phil Bryant in attendance. Continental Tires, another winner, announced an initial investment of $1.45 billion for its plant in Clinton.

The "Mississippi Industry Incentive Revolving Financial Fund," was established in 2010 under Mississippi Code §57-1-221 to speed up the renewal process for previous award winners through the State Treasury. The explicit purpose of this award prepares "cities or counties or businesses for site preparation, infrastructure improvements, building construction costs, [and] training or to relocate equipment" ("Incentive Report"

2016). To qualify, firms must pledge to create "250 new, full-time jobs" with a total capital investment of at least $30 million in Tier 1 or Tier 2 counties.

Under the same program, firms may qualify for a $15 million award by creating 150 new, full-time jobs in federally designated low-income census tracts, by creating 1,000 new, full-time jobs. The Census Bureau defines census tracts as "small, relatively permanent statistical subdivisions of a county," that incorporate populations of no more than 8,000 people and are updated after each recorded census. This legislation also specifically targets kitchen appliance manufacturers, with at least 400 employees and an investment of $5 million. An average of $12,300,000 is given per award, with spending totaling $308,000,000 since its inception. The Revolving Fund awards have gone to 17 different counties across the state, clustering near Jackson with Madison and Rankin, as well as in the north where Lafayette, Yalobusha, and Desoto have all collected awards.

The "ACE Fund," was established in 2000 under Mississippi code §57-1-16 and is designed to close large deals with firms that have competitive offers from other states. This fund typically covers "relocation of equipment, specialized training, and leasehold or building improvements" ("Incentive Report," 2016). Of the 97 incentives awarded, the average amount spent totals to $713,927 with a total of $69,300,000 given. It is common for one county to receive multiple grants; Lee has the most with 11, Desoto with nine, and Lowndes with 7 since 2009. This incentive doesn't target specific industries, so businesses like Posturecraft Mattress Company in Plantersville and AmerisourceBergen Corporation, a pharmaceutical wholesaler in Olive Branch, compete for similar awards.

TABLE 1: County Revenue Rankings

Tier Three	Tier Two	Tier One
Less Developed Areas	Moderately Developed Areas	Developed Areas
Holmes	Marshall	Adams
Wilkinson	Tishomingo	Clarke
Sunflower	Clay	Pearl River
Benton	Franklin	Newton
Claiborne	Stone	Union
Walthall	Washington	Itawamba
Greene	Amite	Jackson
Yazoo	Choctaw	Smith
Perry	Montgomery	Grenada
Attalla	Wayne	Lincoln
Jefferson	Copiah	Lowndes
Quitman	Tunica	Lauderdale
Jefferson Davis	Calhoun	Covington
Kemper	Tallahatchie	Hancock
Panola	Issaquena	Forrest
Winston	Pontotoc	Waren
Webster	Marion	Harrison
Chickasaw	Carroll	Lamar
Leake	Yalobusha	Simpson
Noxubee	Alcorn	Lee
Pike	Scott	Lafayette
Monroe	Jasper	Jones
Humphreys	Lawrence	Hinds
Leflore	Oktibbeha	Neshoba
Tippah	Tate	Desoto
George	Sharkey	Madison
Coahoma	Bolivar	Rankin
Prentiss		

The “Mississippi Job Protection Act” established under Mississippi Code §57-95-1 encourages industries that have lost jobs due to outsourcing. Once applied for and accepted, firms generally must match the grant dollar for dollar for a maximum amount of $200,000. Examples of eligible businesses that qualify for this grant include construction, manufacturing, telecommunication firms, and research facilities. Any firm taking this grant may not reduce employment by more than 20 percent. Additionally, the grant itself cannot exceed half of the cost of the project.

The “Development Infrastructure Grant Program” (DIP) established under Mississippi Code §57-61-36 allows for a maximum of $150,000 per infrastructure expansion project. Municipalities and counties apply for this award on behalf of industries that require improvements to buildings, water utilities, sewage, transportation, and energy facilities. It is common for counties to receive multiple awards during one year for different projects. Firms which receive this grant are typically involved in manufacturing, energy, or medical work.

The “Economic Development Highway Grant Program” was also established under Mississippi Code §57-61-36 and targets job creation and private investment through constructing and improving highways. Like the DIP award, this grant is accessible through applications by local governments on behalf of firms who make commitments of at least $70 million in private investment, according to the MDA.

The “Rural Impact Fund Grant Program” (RIF) established under Mississippi Code §57-85-1 targets rural communities with less than 10,000 residents, or a county containing less than 30,000 residents. Grants are typically awarded for improvements to local infrastructure and land improvements for the specific purpose of expanding

industries involving warehousing, manufacturing, and distributing in the area. The maximum grant amount per project is capped at $150,000. This award does not have any private investment requirement. Since 2009, the allotted awards have totaled almost $9 million.

The "Existing Industry Productivity Loan Program" under Mississippi Code §57-93-1 offers firms established in Mississippi for at least two years the opportunity to apply for loan funds for long-term fixed assets. These fixed assets are supposed to improve productivity and increase efficiency in business operations. This incentive may also be used to refinance existing loans for fixed assets. Firms which take this loan may not reduce employment by 20 percent. Since 2009, there have been 20 loans given from this program with an average of $2,570,900 per project and a total of $48,800,000 spent. Industries targeted by this incentive include forestry, manufacturing, and food processing.

The "Workforce Training Fund" codified under Mississippi Code §57-1-401 grants funding for community colleges, universities, or Mississippi firms for expenses incurred in training employees that do not qualify for other Federal training programs. This award has expanded since 2011 to account for 56 different counties across the State, with a total amount of $5,288,204 spent overall.

Perhaps one of the most frequently used incentives in Mississippi, "The Community Development Block Grant" (CDBG) Economic Development Program provides public funding for counties on behalf of firms to address infrastructure development. This award is disbursed through the U.S. Department of Housing and Development with the explicit goal of producing jobs. Firms are allowed a grant of $20,000 per job or a maximum award of $2,500,000 per project. This award more so than

others traverses the typical industries awarded subsidies like manufacturing, warehousing, and transportation. In fact since 2009, grants have also notably been disbursed to detention centers, food processing services, energy companies, and forestry businesses. As reported by the MDA, a total of $72,500,000 has been awarded to 67 counties, many receiving multiple awards in that same time.

The "Mississippi Tourism Rebate Program" provides rebates to projects related to tourism in Mississippi. This rebate offers 80 percent of the possible sales tax revenue for 15 years or until the firm has reclaimed 30 percent of the total project cost. These awards are concentrated mainly around the Jackson Metropolitan area, specifically Hinds, Madison, and Rankin counties as well as the Mississippi Gulf Coast county of Harrison. Museums, stadiums, hotels, and shopping outlets have all accepted a total of $34,100,000 in rebates.

The "Motion Picture Rebate Program" provides rebates on payroll, sales tax, rental costs and other "eligible expenditures" for motion pictures, television programs, documentaries, commercials, animations. The listed productions may receive rebates of 25 percent for its local investment in Mississippi, as well as a possible 30 percent rebate on payroll for Mississippi residents of up to $5 million. Due to the accounting methods used by the MDA and the production studios, it is unclear where select commercials, films, and other productions were shot or produced in Mississippi. Since 2009, the film rebate program has awarded $11,100,000. There are 20 projects without an identifiable filming location, totaling $2,208,063.94. The year, project name, and incentives paid for these projects are presented in Table 2.

TABLE 2: Unknown Film Rebate Projects

Project	**Year**	**Incentive Paid**
Crestor Project	2009	$4,605.15
I Am That Man	2010	$125,445.00
Cheat Day Diaries	2010	$33,067.00
Bruce's Food Commercial	2010	$31,175.35
Call Out Documentary	2011	$13,959.32
Big Bad...	2011	$323,103.21
Primos Commerical Campaign	2011	$42,335.00
Haunted	2012	$333,487.00
Sqwincher Freezer-Pop Campaign	2012	$29,775.00
Carnivore	2013	$16,375.00
The Sound and the Fury	2014	$246,057.76
Five Men Live!	2015	$44,773.18
Battlecreek	2015	$309,493.93
Local News	2015	$56,226.26
Preacher Man	2015	$14,629.00
Mississippi Grind	2015	$19,805.90
Farm Bureau Insurance Commercial – Favre Rates	2015	$47,758.00
Gold Tip	2016	$247,348.47
The Neighbor	2016	$247,348.47
St. Joe High Giant Killers	2016	$21,295.94
Total		$2,208,063.94

The final major reported incentive is the "Mississippi Investment Tax Credits Program." This award is eligible for Community Development Entities (CDEs) in low census tract areas and act as state tax credits, and allows for as much as 24% of the Qualified Equity Investment as dictated by the Internal Revenue Service and Mississippi legislation. In addition, firms may also use the Federal New Markets Tax Program (NMTC). A total of 20 counties, most receiving more than one tax credit award, have been recorded by the MDA. There are seven unexplained entries titled "Various Projects" totaling nearly $8.5 million in credits reported between the 2009 to 2016 fiscal years.

In total, the MDA awarded $849,000,000 in grants, loans, and tax rebates. Of the approximately 2,500 awards given, Mississippi counties on average received $353,100 per project across all observed years. Firms that frequently win these awards tend to be near larger urban areas. For example, Madison, Hinds, and Rankin County surround Jackson. The city of Olive Branch in Desoto County falls inside the Memphis Metropolitan Area. Pontotoc county and Lee county both received numerous awards and are situated near the city of Tupelo. Immediately to the south, "The Golden Triangle" made by West Point, Starkville, and Columbus, MS reflect another popular destination for manufacturing firms to invest in. The Mississippi Gulf Coast includes Jackson County, Hancock County, and Harrison County, with the cities of Gulfport and Biloxi drawing tourism for their natural beaches and new casinos. Table 4 presents a list of all grant programs in the reported fiscal period for the state.

TABLE 3: Grant Programs 2010-2016

Grants	2010	2011	2012	2013	2014	2015	2016
CDBG Economic Development (Federal)	$14,731,026	$8,147,717	$9,844,941	$15,592,623	$11,073,988	$9,379,103	$4,809,798
CDBG Public Facilities (Federal)	$25,259,661	$18,631,871	$26,661,117	$21,050,608	$16,364,094	$14,788,718	$15,005,982
Economic Development Highway	$1,466,725	$6,250,000	$3,300,000	$2,500,000	$1,200,000	$11,700,000	$1,200,000
Rural Impact Fund	$2,045,326	$1,631,028	$1,490,950	$600,000	$1,273,614	$1,700,000	$150,000
Small Municipal & Limited Population	$5,859,421	$1,280,607	1,963,127	$250,000	$4,740,000	$1,490,000	$3,857,727
ACE Fund	$7,051,320	$9,220,000	$11,531,500	$3,895,000	$6,740,736	$14,468,728	$17,023,637
HOME Investment	$11,003,162	$16,611,444	$12,906,575	$12,694,343	0	0	0
Job Protection	$900,000	$2,009,250	$1,925,000	$620,000	$1,429,874	$400,000	$400,000
Development Infrastructure	$4,872,934	$4,181,499	$5,196,710	$5,849,492	$5,590,654	$6,016,306	$2,977,436
Total	$73,189,575	$67,963,416	$74,819,920	$63,052,066	$48,412,960	$59,942,855	$45,424,580

4. Methodology

I estimate impulse response functions using the local projection method proposed by Jordà (2005) to estimate the effects of the subsidies described in the previous section on county-level labor market variables. This method allows for a simple least squares estimation, with a robustness to misspecification for multivariate data as each sequential regression uses projections "local to each forecast horizon" (Jordà, 2005). A matrix incorporating distance weights using latitude and longitude data is used to construct weighted averages for neighboring counties for potential neighboring spillover effects (Williams, 2017). I utilize a five period forecasting horizon, where each period corresponds to an entire year, to predict the dynamic effects in this regression analysis.

$$y_{it+h} = \alpha_{\circ} + \beta_1 Subsidy_{it} + \beta_2 y_{it-1} + \beta_3 Subsidy_{yit-1} + \beta_4 D_{it-1} + \epsilon_t$$

This model assumes that subsidies given by the State of Mississippi are exogenous and y_{it} accounts for one of the two coefficients of interest: either wage or employment. I estimate h regressions in the model forecast. The constant term is $\alpha_{\circ}$, while β_1 corresponds to the coefficient of the total subsidy value and represents the coefficient of interest. Let β_2 represent the coefficient of the lagged dependent variable. The lagged coefficient of average surrounding county observations is β_4 as part of the geographic matrix to include for spillover effects. These coefficients estimate the magnitude of neighboring county wages and employment among the private and public sectors. A total of four dependent variables are used in these regressions which include: total wage, private wage, total employment, and private employment.

There are several advantages to using a local projection method instead of vector auto regressions (VARs). The model used is simple and robust to misspecification. The

impulse response functions reveal an estimate of the dynamic path of real changes in wage and employment to changes in subsidies awarded in any given period. As the lead of the dependent variable increases, it is less likely that confounding factors affect the forecast. Vector auto regressions often experience problems that impulse response functions can account for. Issues of symmetry for VARs often mean the response of a variable is the same shape regardless of whether the observed shock is positive or negative. The size of the treatment in VARs scales to the impulse response causing shape-invariance. Vector auto regressions are also history independent, meaning their impulse responses do not take into account previous values for observations. Finally, the local projection model allows me to avoid the structural issues of vector auto regressions. Characteristically, impulse response functions can be estimated equation-to-equation making them useful for panel data sets such as the one I am using to examine subsidies among counties.

The addition of lagging indicators on coefficients allows for the subsequent regressions to account for predictable trends, therefore more accurately forecasting future periods to obtain the counter factual. Controls for fixed effects are added to every regression to reduce issues of constant unobserved heterogeneity at the county level. As a robustness check, a linear trend is added to the regression series. Given the already small effects in the original data, I then transformed the variable data into a logarithmic form to create elasticities that are easier to interpret.

5. Data

To measure effects from subsidies, I used data from the Quarterly Census of Employment and Wages (QCEW) presented by the Bureau of Labor Statistics. This data provides quarterly and annual wage and employment statistics at the county level. These observations begin in 1990 and extend until 2016. The North American Industry Classification System (NAICS) compiles data based on ownership including: federal, state, local, and private. I reformatted this panel data to separate private and public wage and employment entries. For film locations, I used the Internet Movie Database (IMDB) that keeps records of production locations according to cities. To account for the possibility of job transfers across industries targeted by subsidy policies, I use observations from the Bureau of Labor Statistics Occupational Employment Statistics. These records account for annual private employment at the state and national level for more than 800 industries.

All subsidy information is taken from the Mississippi Development Authority's free publications that began in the 2013 fiscal year. These reports are for transparency in state spending and list a summary of all major grant and loan programs for the last three years in a consistent format which includes: a brief description stating the objective for each program, total investment committed by companies, total incentives spent to date, as well as jobs committed.

6. Results

6-i. Total Subsidy on Private Wage

The first regression series observes the effect of total subsidies given on private wages forecasted five periods into the future. I find no significant effect in the coefficient of interest across all regressions. In the first forecast, 81.3 percent of the variance is explained according to the coefficient of determination. As zero is within the 95 percent confidence interval, I fail to reject the null hypothesis, and therefore do not find evidence of a change in private wages.

FIGURE 1: Private Wage 95% Confidence Interval

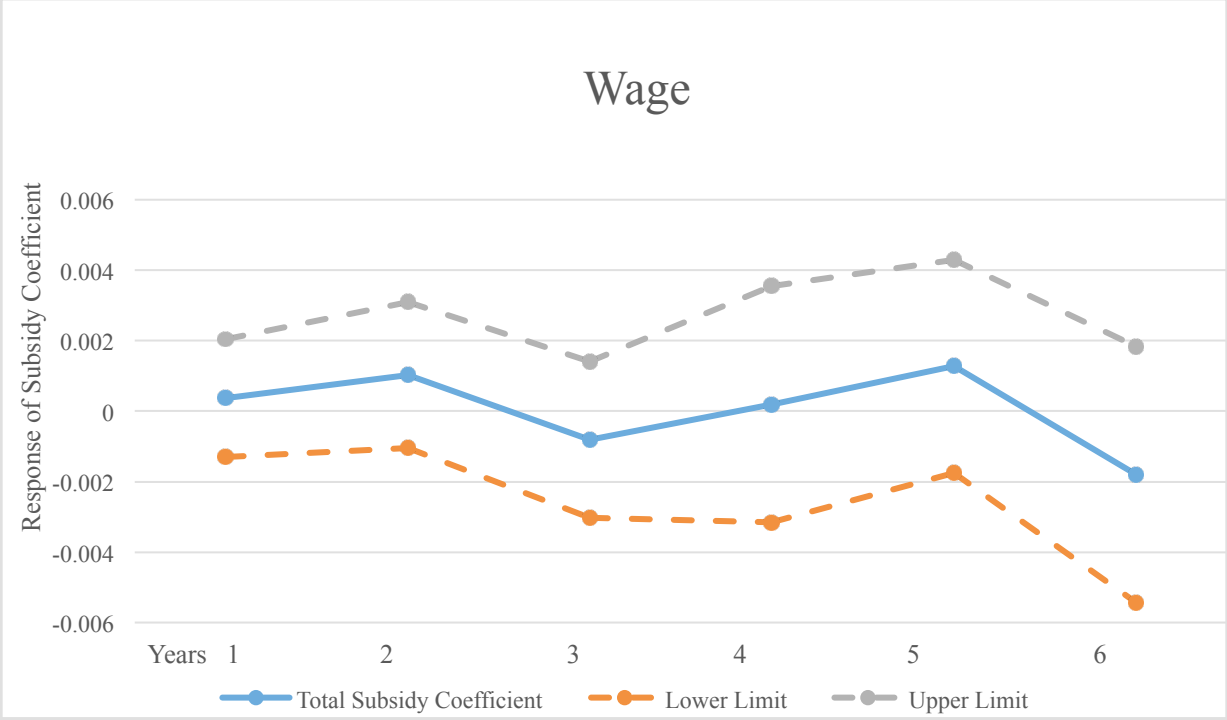
With the addition of year dummies, the coefficient of interest is still not statistically significant at the 5 percent level. The lagged private wage dependent variable is significant at the one and ten percent level for the first and third forecasts. Year

dummies become significant following the first regression. There are seven degrees of freedom following the end of the forecasting horizon, suggesting limited variation in the results.

6-ii. Total Subsidy on Total Wage

Regressing total subsidies on total wages in Mississippi finds no significance at the five percent level for the parameter of interest. 80 percent of variance is explained in the first three forecasts by the coefficient of determination. Again, there is no significance as zero is within the 95 percent confidence interval. With the inclusion of dummy year variables, the explained variance increases to as high as 87 percent. Again, we fail to reject the null hypothesis.

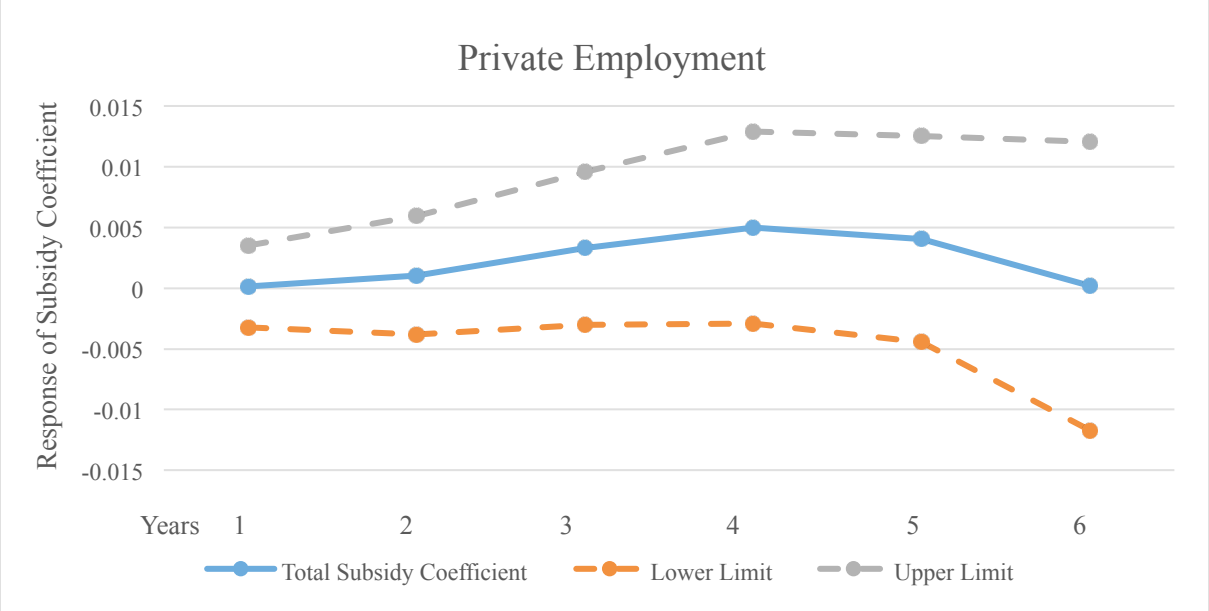
FIGURE 2: All Wages 95% Confidence Interval



6-iii. Total Subsidy on Private Employment

Table 6 reports the regression results for total subsidies on private employment in Mississippi. I find no significant effects of subsidy policies on private employment. Similar to the previous regression forecasts, the lagged indicator for private employment is significant at the 1 percent level in the first three periods. Figure 3 illustrates the 95 percent confidence interval, which again incorporates zero. Dummy year variables offer insignificant changes in the tabled coefficients. Without year dummy variables during the fourth forecast, the R^2 term explains only 30 percent of the variability between private employment and these subsidies.

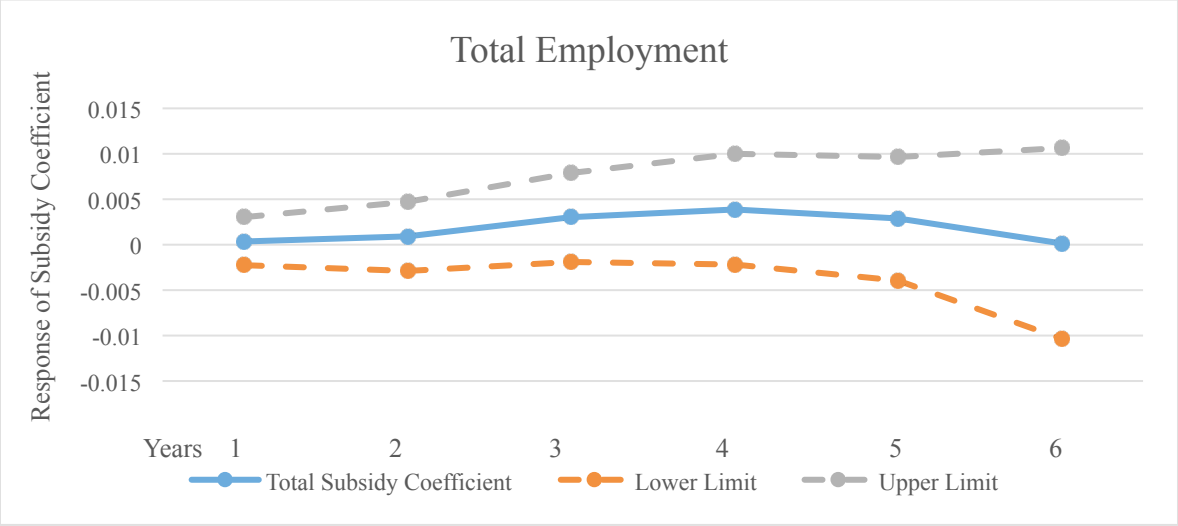
FIGURE 3: Private Employment 95% Confidence Interval



6-iv. Total Subsidy on Total Employment

In the final forecasting series, I again find no significant evidence of subsidy effect on total employment in Mississippi. The lagged employment coefficient is a highly significant in the first four regression periods at the one and ten percent level, indicating the endogeneity present from the employment of the previous year. As the other regressions have indicated, I fail to reject the null hypothesis and find insignificant evidence of change on total employment from the subsidy coefficient. Figure 4 illustrates the 95 percent confidence interval plotting the response of the subsidy coefficients.

FIGURE 4: Total Employment 95% Confidence Interval



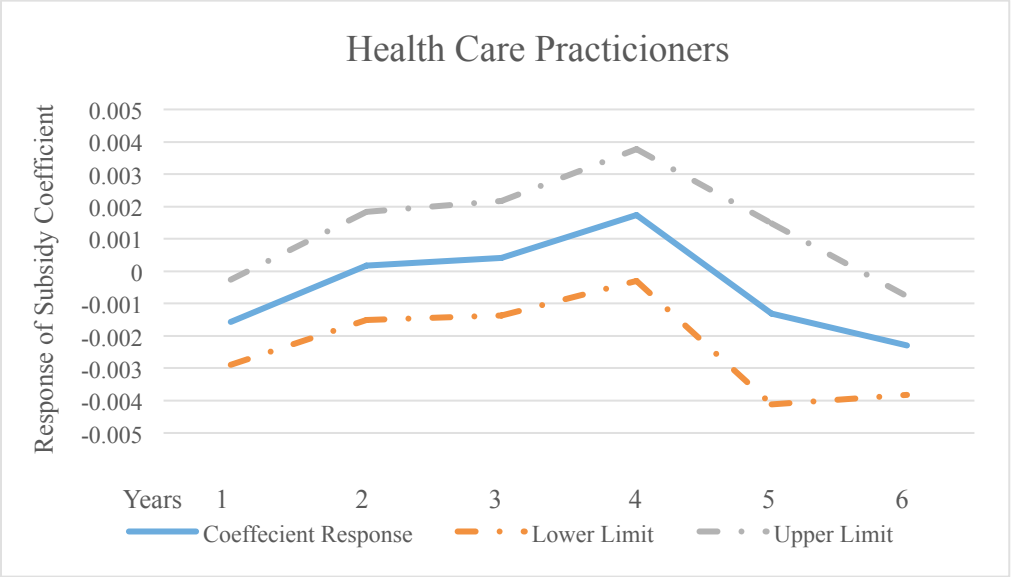
7. Industry Estimates

While the initial estimates plotting the dynamic path of the impulse responses of wages and employment for a given change in subsidies were insignificant, it may be possible to find evidence of employment transfers between targeted industries. I use the same local area method to measure potential changes and again find no significant effects in health care, production, transportation, agriculture, and construction. Table A-1 lists five of the targeted industries specifically mentioned by the MDA reports.

7-i. Health Care Practitioners

Health Care Practitioners form a large industry in Mississippi, employing over 77,000 technical professionals in 2016. It is listed in several MDA awards, including the "Development Infrastructure Program," the "Rural Impact Fund" and the "Community Development Block Grant Program." I fail to reject the null hypothesis using the 95 percent confidence interval. Figure 5 plots these insignificant results.

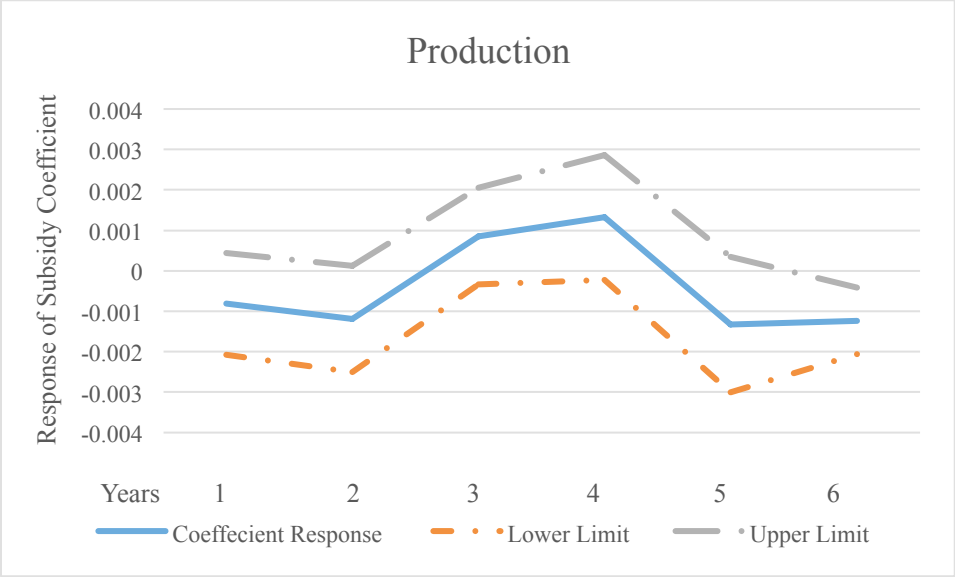
FIGURE 5: Health Care Industry 95% Confidence Interval



7-ii. Production

Production industries are often targeted by large grants, including the MMEIA and ACE Funds. I find only the last regression to be significant at the one percent level with .992 percent of the variation explained and eight degrees of freedom. Zero falls within the confidence interval, therefore there are no significant effects in the Production industry. Figure 6 shows the compiled regressions over six periods in the 95 percent confidence interval.

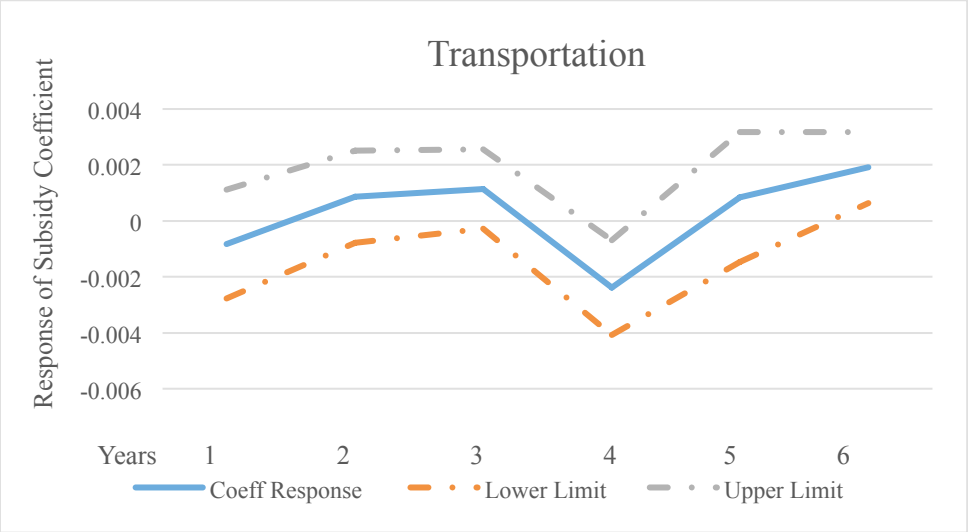
FIGURE 6: Production 95% Confidence Interval



7-iii. Transportation

The transportation industry is often targeted for infrastructure spending, often including awards from the DIP and RIF. The industry itself included more than 94,000 workers as of 2016. The regression series finds no significant effects for this industry using a 95 percent confidence interval. Figure 7 lists the confidence interval for the transportation industry.

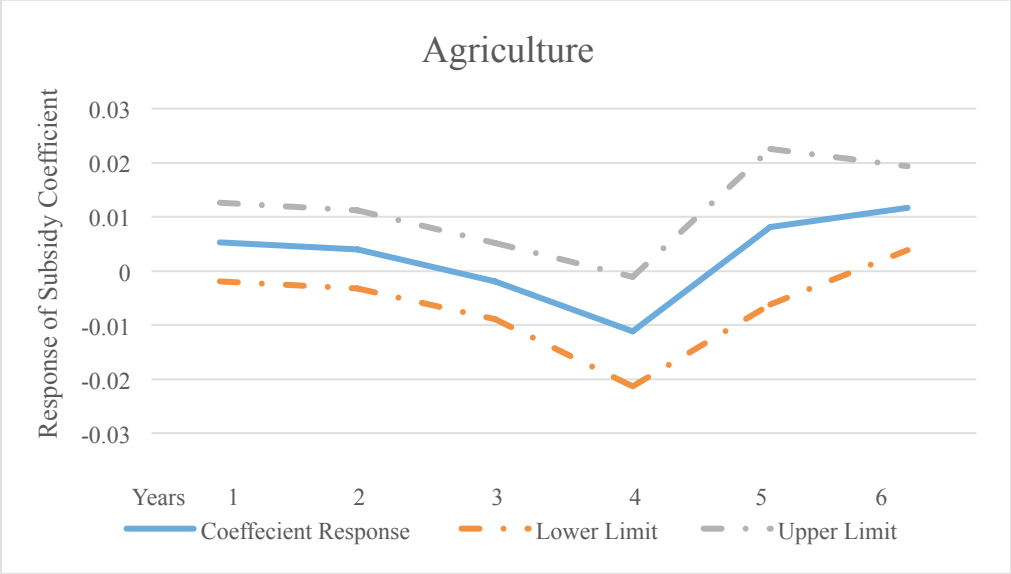
FIGURE 7: Transportation 95% Confidence Interval



7-iv. Agriculture

The agriculture industry incorporates several professions including forestry, fishing, and logging. It often receives funds from the "Existing Industry Productivity Loan Program." I find no significant effects of employment transfers into the agricultural industry following this regression series.

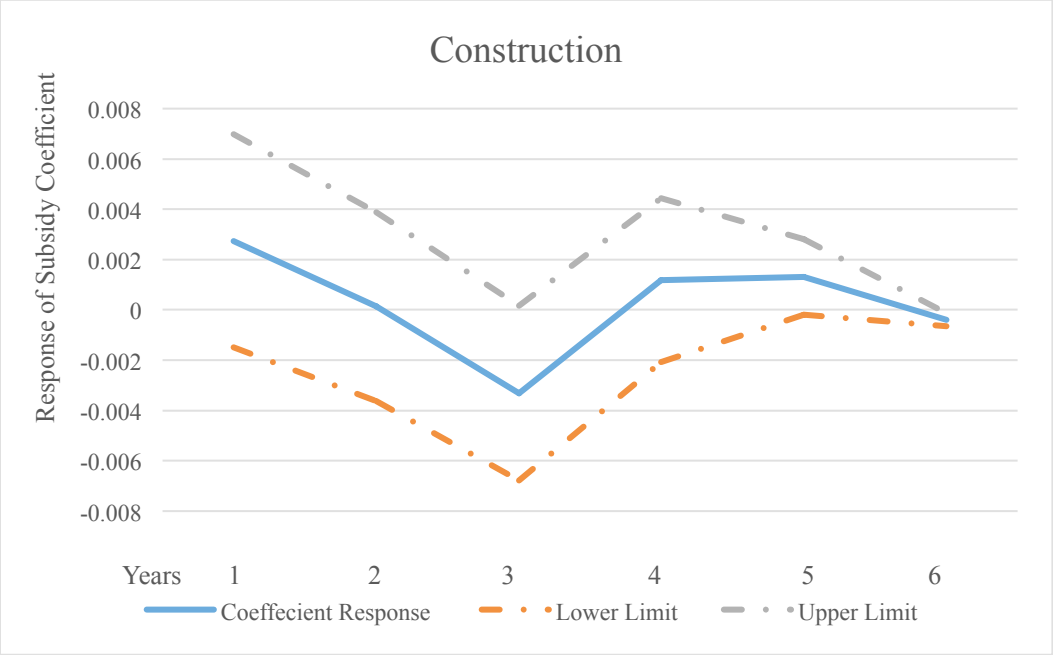
FIGURE 8: Agriculture 95% Confidence Interval



7-v. Construction

During 2010 to 2016, the construction industry began to contract in Mississippi after years of stagnation. This includes professions from plumbers, roofers, setters, metal workers, electricians, and extractors. Employment fell to 42,000 workers from 51,000 in 2011. I find no significant effects and therefore fail to reject the null hypothesis.

FIGURE 9: Construction 95% Confidence Interval



My analysis fails to reveal movement of employment across industries. I find little evidence that subsidies directed toward targeted sectors, including agriculture, production, construction, and healthcare, show significant effects using the local projection method. I therefore find neither evidence of a net gain in jobs, nor a transfer of employment in my regression analysis.

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8. Estimate of a Multiplier Effect

I estimate a multiplier effect using the county average of the gross domestic product (GDP) in Mississippi and the average county subsidy award in 2016. In this case, a multiplier effect is a change in government subsidy spending inputs, which corresponds to a larger change in economic output.

The multiplier is $\frac{\delta y}{\delta g}$ where *y* represents output and *g* is subsidy spending. The elasticity of output with respect to the subsidy is $E_{y,g} = E_{y,e} \times E_{e,g}$. The elasticity of output is a function of government spending, written as $y\big(e(g)\big)$. I estimate that $E_{y,e}$ = .01. An elasticity is defined as $\frac{\delta y}{\delta g} \cdot \frac{g}{y}$. I use the following equation to plot a point estimate of a multiplier effect: $\frac{\delta y}{\delta g} = \frac{y}{g} E_{y,e} E_{e,g}$

The GDP of Mississippi in 2016 was $108.5 billion (BEA, 2016). Average county GDP is $1,323,170,731. The average observed county subsidy in 2016 was $375,734. I use the fourth forecast's private employment subsidy coefficient for E. I convert my results into logs for better interpretation. I estimate a point estimate of 0.18 for my multiplier effect. While my calculations are simple, this estimate provides additional evidence to the results gathered in my previous analysis which suggest that any county benefits in employment correspond in a reduction of economic activity in other counties.

Politicians will likely support any spending decisions as long as the estimated multiplier is positive because an increase in economic output can be determined. However, in addition to my previous results, the estimated multiplier is very small and any changes that appear on wages or employment are not statistically different from zero.

9. Conclusion

Mississippi has had difficulty adapting to industrialization in the post-bellum United States. Politicians seized upon the political climate of the early 20th century and began to turn the wheel of industry in the state away from just crops. Yet natural disasters, rampant pests, and a diminished workforce compounded upon one another to create lingering problems not fully addressed until the Second World War, when federal government projects supplemented laborers with machines for the first time to significant effect. The war effort established a growing infrastructure, higher wages, skilled workers, and better technology. For the first time, industry could rival the cotton empire that had grown over centuries. The king's long reign was ending.

To address pressing economic and political concerns, Governor Hugh White supervised the creation of the Mississippi Industrial Commission. Born in the throes of the Great Depression it laid the foundation for the modern day Mississippi Development Authority. In its current incarnation, the MDA has all the trappings of a bureaucratic machine. It holds significant power and discretion in the placement of infrastructure projects, workplace training programs, and award decisions for firms looking to open new locations in Mississippi.

The MDA pulls many levers to attract businesses. Amenities of a relaxed political climate, preferential of businesses, right-to-work laws, favorable tort reform towards corporations, and low tax rates are just the tip of the iceberg. As all state governments understand, businesses care as much about money as they do about how pleasant it is to live in an area. To convince firms who strategically perch on the fence that Mississippi

has exactly what they are looking for, subsidies are shown. The courtship process can be as formal as any first date in the South: the Governor himself may even make an appearance and shake hands.

The MDA has subsidies for every occasion. Payments for infrastructure development are common, as well as block buster grants for businesses with large investments to the order of hundreds of millions of dollars. For public accountability, the Development Authority has published annual incentive reports beginning in 2013 that list where the most important subsidy awards have gone. The aim of these reports is to not only give facts on what new businesses have pledged but also maintain the effectiveness of their awards. With every section of reports a committed investment total is strategically positioned, tallying expected hiring opportunities for the future as well as a government spending to private investment ratio. Overall, the awards tend to congregate near larger cities like Jackson, Hattiesburg, Gulfport, Biloxi, and Olive Branch.

The literature is skeptical when it comes to awarding public funds to incentivize private investment. Economists shrewdly point out that this is as much a political statement as it is a fiscal one. The prospect of new jobs must leave politicians licking their chops and a bottom line in dollar amount is secondary to concerns about reelection. Negative spillover effects can occur due to firms populating one area that can contribute to negative externalities like congestion, pollution, and poor infrastructure. Studies determine that projects which require large public investment, such as stadiums, have also shown negligible effects on wage and employment over large periods of time. Transfers of wealth from households to private entrepreneurs often result following subsidies. Others argue that by virtue of a government suggesting where a firm should

locate, the location will likely be less efficient than a business finding a location itself. Furthermore, it is important to distinguish programs that attempt to raise human capital from those that seek to influence location decisions.

This thesis is directed at primarily isolating an economic effect from the awarded subsidies of the state of Mississippi. As I find no significant effects of changes to wage and employment, perhaps the answer lies in the political arena, where incumbent politicians seeking reelection may give out more subsidies and try to redistrict themselves to incorporate more productive areas of the state. This area of future research could involve how the political process of the state factors in to the disbursement of public funds and lies waiting to be explored.

To estimate the effect of the reported subsidies, I use impulse response from Jordà's (2005) local area method. This framework offers a simple model that estimates the dynamic path of wage and employment to changes in the subsidies reported across the state. It is robust to misspecification and accounts for more endogeneity with each successive regression. This model is used as an alternative to vector auto regressions and addresses problems of symmetry, shape invariance, value independence, and structural assumptions. I include fixed effects, lagged indicators, and dummy variables to explain any heterogeneity that otherwise may influence the results.

I find no significant effects of the $840 million spent in loans and grants on wages and employment in Mississippi. I look first at private wages, then all industry wages and see no significant results at the five percent level. The inclusion of dummy year variables also reveal no significance. I turn my attention to private employment and employment across all industries. The results are insignificant at the five percent level. I fail to reject

the null hypothesis using a 95 percent confidence interval. I find it unlikely that a multiplier effect exists given the insignificant results. Therefore, I arrive at the conclusion that these grants and loans have no significant impact on the creation of jobs or on wages. This thesis represents another entry in an expanding list of literature that finds no observable positive effects subsidies have for the American taxpayer.

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Appendix

A-1: Targeted Industry Employment

Industry Employment	2010	2011	2012	2013	2014	2015	2016
Healthcare Practicioners	71,710	73,960	74,920	73,870	75,140	75,310	77,970
Production	101,700	101,590	105,750	106,160	105,970	106,700	109,330
Transportation	88,050	87,820	87,470	87,520	89,410	93,080	94,320
Agriculture	4,450	4,240	3,930	4,330	4,640	5,150	4,850
Construction	50,200	51,320	50,500	50,470	48,800	45,160	42,020
Total State Employment	1,070,820	1,073,100	1,080,420	1,083,560	1,094,070	1,106,550	1,117,280

A-2: Private Industry Wages Regression

	Pvt Wage 1 b/se	Pvt Wage 2 b/se	Pvt Wage 3 b/se	Pvt Wage 4 b/se	Pvt Wage 5 b/se	Pvt Wage 6 b/se
logSubsidyTotal	0.000	0.001	-0.001	-0.000	0.000	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logprivatewage	0.520***	0.096	-0.356**	-0.079	0.001	0.204
	(0.07)	(0.09)	(0.11)	(0.12)	(0.14)	(0.23)
L.logSubsidyTotal	0.002	-0.000	-0.000	-0.001	-0.000	-0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~e	-0.031	-0.074	-0.065	-0.170	0.192	0.771*
	(0.06)	(0.07)	(0.08)	(0.11)	(0.17)	(0.32)
Year	0.008***	0.017***	0.026***	0.022***	0.013*	0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
constant	-11.771***	-24.885***	-38.089***	-30.550***	-17.976*	-4.833
	(2.91)	(3.83)	(4.80)	(6.47)	(8.36)	(8.77)
r2	0.813	0.717	0.704	0.583	0.659	0.765
df_r	127.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-3: Private Industry Wages Regression with Year Dummies

	Pvt Wage 1 b/se	Pvt Wage 2 b/se	Pvt Wage 3 b/se	Pvt Wage 4 b/se	Pvt Wage 5 b/se	Pvt Wage 6 b/se
logSubsidyTotal	0.001	0.002	-0.001	0.000	0.000	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logprivatewage	0.481***	0.078	-0.364**	-0.092	0.010	0.220
	(0.07)	(0.09)	(0.11)	(0.12)	(0.14)	(0.26)
L.logSubsidyTotal	0.002	-0.000	-0.001	-0.002	-0.002	-0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~e	-0.016	-0.054	-0.060	-0.154	0.336	0.821
	(0.06)	(0.08)	(0.09)	(0.12)	(0.22)	(0.40)
Year =2009	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)
Year =2010	-0.016	-0.011	-0.004	-0.004	-0.004	0.006
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Year =2011	0.000	0.017	0.029	0.025	0.016	0.007
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Year =2012	0.019	0.036	0.054*	0.044*	0.021	
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	
Year =2013	0.016	0.049*	0.080**	0.066**		
	(0.02)	(0.02)	(0.02)	(0.02)		
Year =2014	0.028	0.066**	0.106***			
	(0.02)	(0.02)	(0.02)			
Year =2015	0.037	0.083***				
	(0.02)	(0.02)				
Year =2016	0.040					
	(0.02)					
constant	5.517***	10.119***	14.780***	12.961***	6.884*	-0.195
	(0.86)	(1.09)	(1.32)	(1.41)	(2.79)	(4.65)
r2	0.829	0.727	0.713	0.608	0.703	0.767
df_r	121.000	103.000	72.000	46.000	29.000	7.000

* p<0.05, ** p<0.01, *** p<0.001

A-4: All Wages Regression

	Total Wage 1 b/se	Total Wage 2 b/se	Total Wage 3 b/se	Total Wage 4 b/se	Total Wage 5 b/se	Total Wage 6 b/se
logSubsidyTotal	0.000	0.001	-0.001	0.000	0.001	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logtotalwage	0.444***	0.079	-0.387***	-0.185	-0.103	0.137
	(0.07)	(0.09)	(0.10)	(0.14)	(0.16)	(0.27)
L.logSubsidyTotal	0.001	-0.000	-0.000	-0.000	0.001	-0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighbortotal~e	-0.017	-0.047	-0.030	-0.159	0.131	0.960
	(0.06)	(0.07)	(0.08)	(0.14)	(0.23)	(0.43)
Year	0.010***	0.018***	0.026***	0.024***	0.017*	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
constant	-13.821***	-25.223***	-36.917***	-34.259***	-23.540*	-2.690
	(2.74)	(3.44)	(3.98)	(6.99)	(9.52)	(11.08)
r2	0.863	0.804	0.800	0.636	0.719	0.801
df_r	127.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-5: All Wages Regression with Year Dummies

	Total Wage 1 b/se	Total Wage 2 b/se	Total Wage 3 b/se	Total Wage 4 b/se	Total Wage 5 b/se	Total Wage 6 b/se
logSubsidyTotal	0.001	0.001	-0.001	0.001	0.002	-0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logtotalwage	0.425***	0.069	-0.384***	-0.206	-0.112	0.163
	(0.07)	(0.09)	(0.10)	(0.15)	(0.16)	(0.29)
L.logSubsidyTotal	0.001	-0.000	-0.001	-0.000	0.001	-0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighbortotal~e	0.005	-0.024	-0.012	-0.114	0.108	1.098
	(0.06)	(0.08)	(0.09)	(0.16)	(0.30)	(0.53)
Year =2009	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)
Year =2010	-0.004	0.003	0.017	0.015	0.003	0.006
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
Year =2011	0.011	0.029	0.049**	0.041*	0.023	0.003
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Year =2012	0.027	0.047*	0.073***	0.066**	0.040	
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	
Year =2013	0.028	0.061**	0.098***	0.085***		
	(0.02)	(0.02)	(0.02)	(0.02)		
Year =2014	0.041*	0.078***	0.122***			
	(0.02)	(0.02)	(0.02)			
Year =2015	0.051**	0.095***				
	(0.02)	(0.02)				
Year =2016	0.056**					
	(0.02)					
constant	5.901***	9.907***	14.501***	13.716***	10.449*	-2.471
	(0.91)	(1.12)	(1.29)	(1.85)	(3.81)	(6.29)
r2	0.871	0.810	0.804	0.642	0.729	0.807
df_r	121.000	103.000	72.000	46.000	29.000	7.000

* p<0.05, ** p<0.01, *** p<0.001

A-6: Private Employment Regression

	Pvt Emp 1 b/se	Pvt Emp 2 b/se	Pvt Emp 3 b/se	Pvt Emp 4 b/se	Pvt Emp 5 b/se	Pvt Emp 6 b/se
logSubsidyTotal	0.000	0.001	0.003	0.005	0.004	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
L.logprivateemploy~t	0.881***	0.760***	0.436**	0.224	0.307	-0.384
	(0.06)	(0.09)	(0.13)	(0.16)	(0.19)	(0.37)
L.logSubsidyTotal	0.001	0.003	0.007*	0.002	0.003	0.005
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~t	-0.052	-0.113	-0.199	-0.240	-0.484	-0.125
	(0.06)	(0.10)	(0.14)	(0.21)	(0.33)	(0.73)
Year	0.005**	0.009***	0.014***	0.018***	0.018**	0.008
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
constant	-8.349**	-14.423***	-20.659**	-26.803**	-26.030*	-2.273
	(2.69)	(4.25)	(6.58)	(9.00)	(11.68)	(27.46)
r2	0.720	0.538	0.365	0.301	0.341	0.435
df_r	127.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-7: Private Employment Regression with Year Dummies

	Pvt Emp 1 b/se	Pvt Emp 2 b/se	Pvt Emp 3 b/se	Pvt Emp 4 b/se	Pvt Emp 5 b/se	Pvt Emp 6 b/se
logSubsidyTotal	0.001	0.001	0.003	0.006	0.006	0.008
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
L.logprivateemploy~t	0.883***	0.755***	0.409**	0.178	0.240	-0.168
	(0.07)	(0.10)	(0.14)	(0.17)	(0.19)	(0.39)
L.logSubsidyTotal	0.001	0.002	0.007*	0.002	0.003	0.005
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~t	-0.046	-0.106	-0.234	-0.292	-0.584	-1.574
	(0.07)	(0.10)	(0.15)	(0.23)	(0.34)	(1.28)
Year =2009	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)
Year =2010	0.012	0.017	-0.011	-0.041	-0.042	-0.099
	(0.03)	(0.04)	(0.05)	(0.05)	(0.04)	(0.08)
Year =2011	0.014	0.034	-0.012	-0.021	-0.013	-0.084
	(0.03)	(0.04)	(0.05)	(0.04)	(0.04)	(0.08)
Year =2012	0.021	0.031	0.005	0.000	0.005	
	(0.03)	(0.04)	(0.05)	(0.04)	(0.04)	
Year =2013	0.016	0.043	0.025	0.019		
	(0.03)	(0.04)	(0.05)	(0.04)		
Year =2014	0.026	0.055	0.039			
	(0.03)	(0.04)	(0.05)			
Year =2015	0.037	0.065				
	(0.03)	(0.04)				
Year =2016	0.038					
	(0.03)					
constant	1.476	3.167*	7.457***	10.099***	12.047***	24.815*
	(0.84)	(1.29)	(1.77)	(2.21)	(3.06)	(9.54)
r2	0.726	0.544	0.377	0.327	0.395	0.551
df_r	121.000	103.000	72.000	46.000	29.000	7.000

* p<0.05, ** p<0.01, *** p<0.001

A-8: Total Employment Regression

	Total Emp 1	Total Emp 2	Total Emp 3	Total Emp 4	Total Emp 5	Total Emp 6
	b/se	b/se	b/se	b/se	b/se	b/se
logSubsidyTotal	0.000	0.001	0.003	0.004	0.003	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logtotalemployment	0.962***	0.874***	0.659***	0.448**	0.361	-0.239
	(0.06)	(0.08)	(0.12)	(0.16)	(0.20)	(0.40)
L.logSubsidyTotal	0.001	0.003	0.005*	0.002	0.002	0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighbortotal~t	-0.031	-0.068	-0.175	-0.226	-0.300	-0.187
	(0.06)	(0.10)	(0.14)	(0.21)	(0.32)	(0.75)
Year	0.004**	0.007***	0.010***	0.014***	0.015**	0.007
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
constant	-6.688**	-11.368***	-14.912**	-21.124**	-21.958*	-0.580
	(2.01)	(3.19)	(5.00)	(6.93)	(9.88)	(25.94)
r2	0.765	0.610	0.445	0.371	0.345	0.338
df_r	127.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-9: Total Employment Regression with Dummies

	Total Emp 1	Total Emp 2	Total Emp 3	Total Emp 4	Total Emp 5	Total Emp 6
	b/se	b/se	b/se	b/se	b/se	b/se
logSubsidyTotal	0.001	0.001	0.003	0.005	0.005	0.007
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
L.logtotalemployment	0.963***	0.864***	0.643***	0.425*	0.317	-0.050
	(0.06)	(0.09)	(0.13)	(0.16)	(0.19)	(0.43)
L.logSubsidyTotal	0.001	0.002	0.005*	0.002	0.002	0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighbortotal~t	-0.026	-0.060	-0.206	-0.275	-0.401	-1.726
	(0.06)	(0.10)	(0.15)	(0.23)	(0.34)	(1.51)
Year =2009	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)
Year =2010	0.003	0.004	-0.011	-0.032	-0.034	-0.085
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.08)
Year =2011	0.004	0.018	-0.010	-0.015	-0.009	-0.073
	(0.02)	(0.03)	(0.04)	(0.03)	(0.03)	(0.08)
Year =2012	0.011	0.016	0.002	0.002	0.005	
	(0.02)	(0.03)	(0.04)	(0.03)	(0.03)	
Year =2013	0.006	0.023	0.015	0.015		
	(0.02)	(0.03)	(0.04)	(0.03)		
Year =2014	0.013	0.032	0.025			
	(0.02)	(0.03)	(0.04)			
Year =2015	0.022	0.042				
	(0.02)	(0.03)				
Year =2016	0.023					
	(0.02)					
constant	0.566	1.805	5.198**	7.899***	10.019**	25.774
	(0.77)	(1.21)	(1.74)	(2.19)	(3.11)	(12.26)
r2	0.770	0.615	0.454	0.395	0.405	0.445
df_r	121.000	103.000	72.000	46.000	29.000	7.000

* p<0.05, ** p<0.01, *** p<0.001

A-10: Health Care Regression

	Health Car~1	Health Car~2	Health Car~3	Health Car~4	Health Car~5	Health Car~6
	b/se	b/se	b/se	b/se	b/se	b/se
logSubsidyTotal	-0.002*	0.000	0.000	0.002	-0.001	-0.002**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logprivateemploy~t	0.029	0.010	0.012	0.057	-0.027	-0.061
	(0.02)	(0.03)	(0.04)	(0.04)	(0.06)	(0.05)
L.logSubsidyTotal	0.000	0.001	-0.001	0.001	-0.003*	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~t	-0.008	-0.031	0.042	0.067	0.129	0.409**
	(0.03)	(0.03)	(0.04)	(0.06)	(0.11)	(0.09)
Year	0.009***	0.009***	0.012***	0.014***	0.022***	0.033***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
constant	-6.963***	-7.205***	-12.880***	-18.817***	-33.356***	-57.310***
	(1.08)	(1.45)	(1.85)	(2.33)	(3.86)	(3.51)
r2	0.746	0.625	0.728	0.802	0.825	0.988
df_r	126.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-11: Production Industry Regression

	Production 1	Production 2	Production 3	Production 4	Production 5	Production 6
	b/se	b/se	b/se	b/se	b/se	b/se
logSubsidyTotal	-0.001	-0.001	0.001	0.001	-0.001	-0.001**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logprivateemploy~t	-0.017	0.007	-0.005	0.018	0.000	-0.033
	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)
L.logSubsidyTotal	-0.002**	0.001	0.001	-0.001	-0.002*	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~t	0.008	-0.032	0.004	0.079	0.106	0.220**
	(0.02)	(0.03)	(0.03)	(0.04)	(0.06)	(0.05)
Year	0.012***	0.010***	0.008***	0.010***	0.016***	0.023***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
constant	-11.706***	-9.299***	-5.169***	-8.459***	-22.210***	-36.701***
	(1.03)	(1.14)	(1.24)	(1.75)	(2.31)	(1.89)
r2	0.827	0.780	0.743	0.768	0.884	0.993
df_r	126.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-12: Transportation Industry Regression

	Transport 1 b/se	Transport 2 b/se	Transport 3 b/se	Transport 4 b/se	Transport 5 b/se	Transport 6 b/se
logSubsidyTotal	-0.001	0.001	0.001	-0.002**	0.001	0.002**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logprivateemploy~t	0.030	0.031	0.039	-0.009	0.028	0.051
	(0.04)	(0.03)	(0.03)	(0.03)	(0.05)	(0.04)
L.logSubsidyTotal	0.000	0.001	-0.001*	-0.001	0.002*	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~t	-0.030	0.023	0.049	0.013	-0.093	-0.340**
	(0.04)	(0.03)	(0.03)	(0.05)	(0.09)	(0.08)
Year	0.013***	0.017***	0.021***	0.027***	0.024***	0.015***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
constant	-14.509***	-22.422***	-31.808***	-42.104***	-35.522***	-16.182***
	(1.58)	(1.43)	(1.47)	(1.93)	(3.19)	(2.92)
r2	0.723	0.858	0.930	0.942	0.896	0.976
df_r	126.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-13: Agriculture Industry Regression

	Agricultur~1 b/se	Agricultur~2 b/se	Agricultur~3 b/se	Agricultur~4 b/se	Agricultur~5 b/se	Agricultur~6 b/se
logSubsidyTotal	0.005	0.004	-0.002	-0.011*	0.008	0.012**
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)
L.logprivateemploy~t	0.014	0.024	0.039	-0.197	0.101	0.309
	(0.14)	(0.14)	(0.15)	(0.20)	(0.32)	(0.24)
L.logSubsidyTotal	0.003	-0.003	-0.003	-0.002	0.014*	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
L.logneighborpriva~t	-0.047	0.211	-0.045	-0.372	-0.742	-2.071**
	(0.14)	(0.15)	(0.16)	(0.28)	(0.56)	(0.47)
Year	0.034***	0.044***	0.052***	0.049***	0.008	-0.049***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
constant	-59.708***	-82.949***	-95.293***	-85.712***	-2.243	122.955***
	(5.94)	(6.30)	(7.31)	(11.55)	(19.83)	(17.77)
r2	0.551	0.696	0.745	0.590	0.258	0.911
df_r	126.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001

A-14: Construction Industry Regression

	Constructi~1 b/se	Constructi~2 b/se	Constructi~3 b/se	Constructi~4 b/se	Constructi~5 b/se	Constructi~6 b/se
logSubsidyTotal	0.003	0.000	-0.003	0.001	0.001	-0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logprivateemploy~t	-0.076	-0.080	-0.092	-0.032	-0.041	-0.010
	(0.08)	(0.07)	(0.07)	(0.07)	(0.03)	(0.01)
L.logSubsidyTotal	0.002	-0.002	0.001	0.003*	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
L.logneighborpriva~t	0.062	0.001	-0.123	-0.184*	-0.068	0.069**
	(0.08)	(0.08)	(0.08)	(0.09)	(0.06)	(0.02)
Year	-0.030***	-0.040***	-0.049***	-0.062***	-0.072***	-0.072***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
constant	71.950***	92.398***	111.490***	138.244***	155.920***	155.778***
	(3.45)	(3.27)	(3.61)	(3.71)	(2.07)	(0.59)
r2	0.752	0.869	0.924	0.963	0.994	1.000
df_r	126.000	108.000	76.000	49.000	31.000	8.000

* p<0.05, ** p<0.01, *** p<0.001