Lights, Camera, but No Action? Tax and Economic Development Lessons From State Motion Picture Incentive Programs

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Abstract

Despite mixed results, state government use of targeted economic development programs has escalated. This study evaluates the impact of motion picture incentive programs, an array of tax incentives employed by over 40 states to entice film and television productions out of California and New York, on labor and economic conditions from 1998 through 2013. Results suggest that sales and lodging tax waivers had no effect on any of four different economic indicators. Transferable tax credits had a small, sustained effect on motion picture employment levels but no effect on wages. Refundable tax credits had no employment effect and only a temporary wage effect. Neither credit affected gross state product or motion picture industry concentration. Incentive spending also had no influence. These findings demonstrate the heterogeneous impacts of different incentives offered under a single program and should inform future economic development policy design.

Keywords

Introduction

For the better part of two centuries, American state governments have employed targeted tax incentives to promote local economic development. Rising competition, both domestic and foreign, has driven the proliferation of programs such as enterprise zones, tax increment financing, and hiring incentives (Burnett, 2011; Kenyon, Langley, & Paquin, 2012). Following a 10-month investigation in 2012, the *New York Times* estimated the number of targeted programs at nearly 1,900 with an annual cost of over US$80 billion.[1]

The spread of targeted incentives has occurred despite doubts regarding their efficacy.[2] Although some evaluations find positive (Wu, 2008; Zhang, 2015) or mixed effects (Langer, 2001; Wilder & Rubin, 1996), others provide no evidence of positive long-term impacts (Peters & Fisher, 2004; Prillaman & Meier, 2014; Taylor, 2012). Factors undermining targeted incentives are varied. For instance, because state tax liabilities represent a small proportion of the cost of business, incentives are unlikely to drastically alter recipients' location calculus (Lynch, 1996). Incentives' marginal benefits have also decreased as the number of programs increased (Calcagno & Thompson, 2004). More broadly, one jurisdiction's gain may come at the expense of another's loss (Wilson, 2009) and intergovernmental competition may induce a proverbial race to the bottom (Zheng & Warner, 2010).

Yet existing research on economic development incentive programs suffers from two critical limitations. First, the literatures narrow in scope. Many studies evaluate one state (e.g., Gabe & Kraybill, 2002; Luger & Bae, 2005; Lynch & Zax, 2011) or intra-state region (e.g., Elvery, 2009). Second, much research has examined immobile industries that cannot quickly relocate in response to incentive changes (e.g., manufacturing). But due to technological advancement and the expanded role of intellectual property, many industries have grown less tethered to physical locations, raising new questions about the capacity of targeted incentives to cultivate growth from agile sectors.

This study represents an effort to address those shortcomings and advance research on state economic development policy by analyzing the effect of motion picture incentive (MPI) programs on labor and economic outcomes from 1998 through 2013. MPI programs are one of several ways policymakers have granted preferential tax treatment to creative sectors from science and technology to the arts and entertainment industry. As film and television productions are temporal business entities, states must attract several productions to realize meaningful benefits,

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a process that has sparked interstate tax competition. In 2014 alone, over 40 states spent nearly US$2 billion on MPI programs. But other than a few excellent qualitative studies (e.g., Christopherson & Rightor, 2010), no national, longitudinal evaluation of MPI efficacy has been conducted.

The remainder of this study is organized as follows. The next section provides an overview of MPI program structure, growth, and controversies. Subsequent sections present the study's research design, empirical findings, and implications for economic development policy. Avenues for further research are offered in conclusion.

A Primer on MPI Programs

Industry Context

Since the early 20th century, the motion picture industry has undergone a profound evolution. The advent of cable television and home video in the 1970s and 1980s boosted consumer demand for differentiated and less costly entertainment products (Christopherson & Rightor, 2010). Later growth of broadband Internet and streaming services further accelerated that trend. While technological innovations have reduced the cost of cameras, eliminated the need for expensive film and film processing, and increased the quality of computer-generated imagery, other costs have increased (e.g., labor and marketing).

More importantly, motion pictures remain a high-risk industry. A studio may invest hundreds of millions of dollars in a single film only to witness that film "bomb" at the box office or invest millions in a television program that few people watch. Intellectual property theft, currency changes, and geopolitical instability can further reduce box office revenues and television viewing.

It thus comes as little surprise that content producers thus pursue risk decentralization strategies. Films, documentaries, and television programs almost always function as business entities separate from recognizable studios. Those entities, often limited liability corporations, often seek another risk reduction tool: tax incentives that offset production costs. Consequently, tax incentives are not a direct subsidy of film studios or television networks, but a direct subsidy of an individual project. Nevertheless, as emails from the 2014 Sony hack revealed, studio executives view tax incentives as critical to profitability.[3]

Types of Incentives

MPI programs comprise a portfolio of incentives funded with state tax dollars aimed at enticing motion picture-related activity by reducing production costs. Incentives fit within states' prototypical economic development approach to reduce barriers to market entry, attract new industries, and reap the benefits of subsequent tax revenue growth. Most MPI programs were not the state's largest development effort

Table 1. Summary Information on State MPI Programs.

Incentive category	Incentive type	No. of states
Tax credit	Transferable	18
	Refundable	26
Tax waivers	Sales tax waiver	12
	Lodging tax waiver	7
	Both	15

Note. Figures are author's calculations based on data collected from state MPI program websites. MPI = motion picture incentive.

but one of several aimed at job creation and economic diversification.

Some program incentives are relatively minor in scale. Almost every state operates a small film office that assists productions with location scouting, logistical support, and labor coordination. These offices are usually housed within an economic development or tourism agency. Some offices also facilitate access to public resources. For example, North Carolina and Tennessee allow no-cost usage of state-owned land and buildings; in Maine, productions may borrow state-owned furniture and surplus property.

MPI program tax incentives are more complicated and costly. Key characteristics are summarized in Table 1. Given the temporary nature of production work—a film may relocate to a state for a matter of weeks—MPIs do not normally include property tax inducements. Instead, over a dozen state programs include *sales tax waivers, lodging tax waivers*, or both. The state's film office may grant an immediate waiver for applicable taxes, or refund taxes paid after the fact on qualified in-state purchases, hotel stays, and the like.

More often, MPI programs issued tax credits, grants, and cash rebates against in-state expenditures for wages and capital investments. Tax credits in most MPI programs were made available in addition to consumption tax waivers. Tax credit funding is normally channeled through economic development agencies or is incurred as tax expenditures, giving the state more or less control over spending, respectively. In exchange, states typically require that production activity occur in designated jurisdictions, that a percentage of wages be paid to local employees, or that spending meet or exceed a specified threshold.

Tax credits are ordinarily a percentage (from 15% to over 40%) of qualified spending and in many cases their value dwarfs the production's tax liability. States remedy this problem in two ways.[4] The tax credit may be designated as *refundable*, meaning the state refunds the difference (i.e., total incentive earned less state tax liability) in cash to the receiving production company. The credit may instead be designated as *transferable*, meaning the state allows the receiving production company to apply the value of unused credits (again, total incentive earned less state tax liability) to other projects, but does not issue a cash refund. States with transferable credits may also allow recipients to sell the unused share of their credit to other qualified parties.
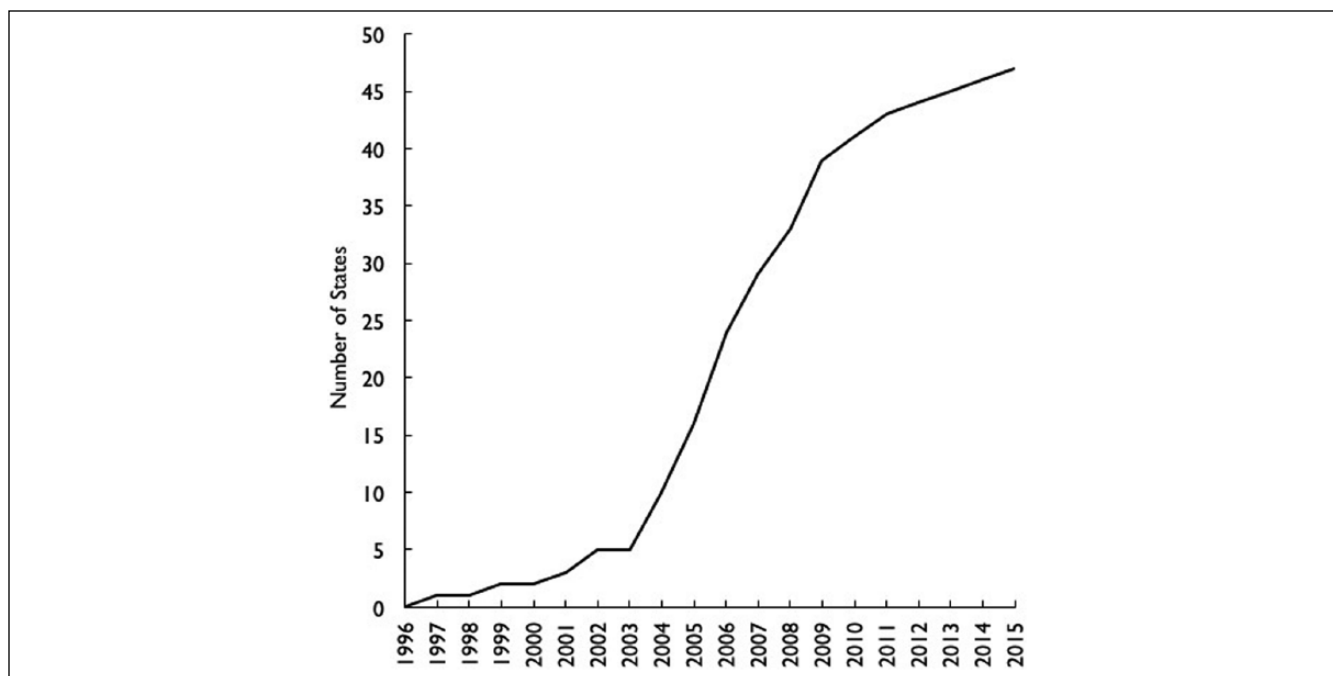
Figure 1. Cumulative number of states with MPI programs, 1997-2015.
Note. MPI = motion picture incentive.

Diffusion and Growth

As early as 1992, Louisiana offered a so-called safety net tax credit to investors who realized financial losses on Louisiana-based productions.[5] More recent MPI iterations trace their conceptual origins to Hawaii, which began offering tax credits in 1997, followed by Missouri (1999), Oklahoma (2001), and New Mexico (2002). As illustrated in Figure 1, MPIs spread quickly thereafter.

MPI investment swelled as more states joined the fray. Figure 2 illustrates aggregate annual spending from 1998 to 2014. In nearly every single year, spending increased, reaching almost US$2 billion in 2014 for a per-state average of US$59.1 million.

MPI enactment and spending were driven by policymakers and stakeholders who emphasized job creation and the need to compete with other states. After signing legislation that made Michigan's MPIs the most generous in the United States, former Governor Jennifer Granholm said in a radio address,

> We've set the stage now to grow an industry that will provide good-paying, long-term jobs for Michigan workers . . . Every dollar spent in film production will generate up to $3 in economic activity in Michigan. These new laws are timed perfectly to attract business to Michigan . . . the film industry can give our economy an immediate shot in the arm while it takes years to reap the benefits of other economic development incentives.[6]

But policy institutes from across the political spectrum—including the Center on Budget and Policy Priorities, Reason Foundation, Tax Foundation, and American Enterprise Institute—criticized MPI programs (e.g., Luther, 2010; Tannenwald, 2010) and findings from state-specific evaluations were inconsistent. A 2014 analysis prepared for the pro-incentive Maryland Film Industry Coalition concluded that each dollar in tax credits generated US$1.03 in tax revenues (Irani, Grimm, Clayton, Steward, & Ebersole, 2014). The Massachusetts Department of Revenue produced a report finding that the state's MPIs had a small but positive economic impact (Pitter, 2013). But in 2009, a child advocacy group in Connecticut claimed that state's largest MPI beneficiaries were actually out-of-state businesses (Geballe, 2009). An analysis found that New Mexico's program generated just 14 cents in revenue per dollar of state investment (Pew Center on the States, 2012). And a Missouri commission recommended the elimination of MPIs because they did not "provide a positive return on investment" (Gross & Stogel, 2010).

Worse, some programs attracted criminal activity. In 2009, the Iowa Film Office received a tip via email from a Minnesota resident vacationing in Los Angeles that stated, in part,

> The head of the company . . . told me how she gets the state of Iowa to totally fund her movies. She explained how she puts in millions of dollars in phony deferments with people she knows then gets tax credits to cover it. She walks away having the state pick up the whole bill.[7]

The accused ultimately struck a plea deal and was sentenced to 10 years in prison
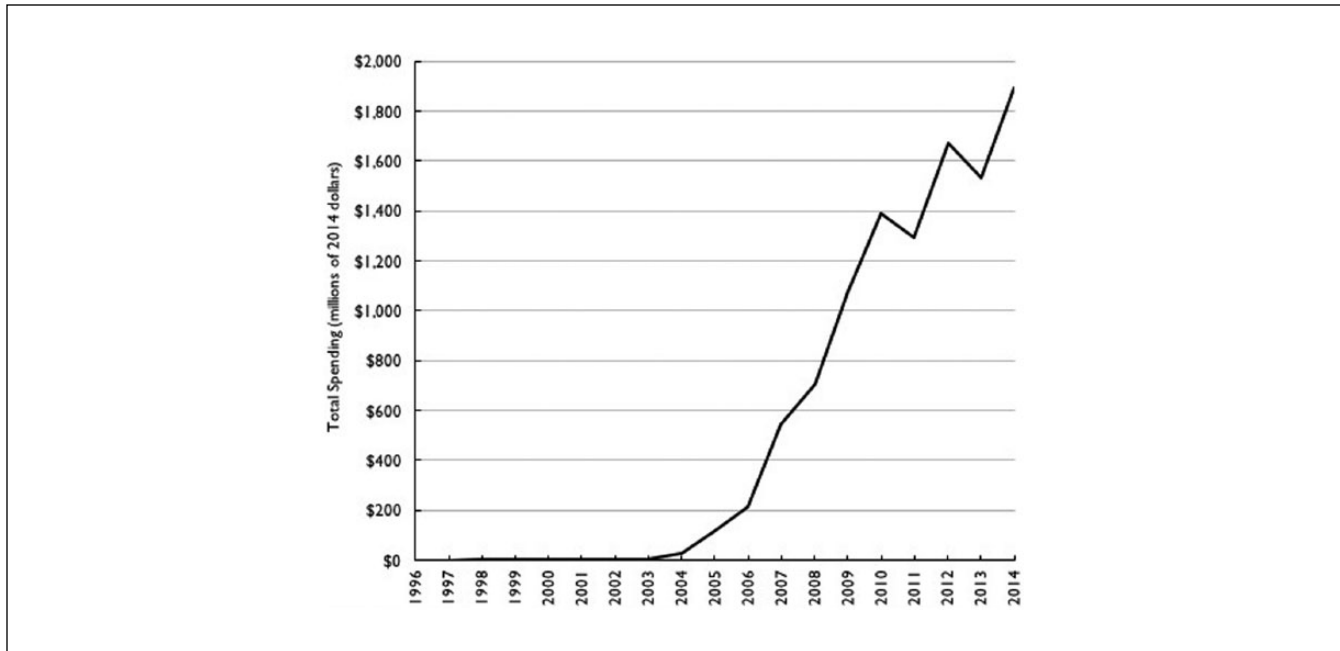
Figure 2. Aggregate spending on MPI programs, 1997-2014.
Note. MPI = motion picture incentive.

Iowa was not alone. In 2014, a federal grand jury indicted two lawyers for fabricating production expenses to qualify for MPI credits in Louisiana. The same month, a California state senator was indicted on charges of accepting cash bribes, paid vacations, and a no-work job for his daughter in exchange for supporting the state's MPI program. When a new film studio in suburban Detroit defaulted on bond payments in 2012, Michigan public employees were dismayed to learn that their already underfunded pension system had been used as collateral and was now US$2 million in arrears.

Questionable effectiveness and poor public relations were not without effect. By the end of 2014, six states had terminated their MPI programs. Two more followed in 2015. But concurrently, several other states were considering whether or not to expand their programs.

Research Design

Dependent Variables

This study's objective is to assess MPI efficacy across the 50 states. Because no county or regional data on MPI recipients are available, effectiveness is best evaluated by determining the extent to which incentives affected changes in state-level, industry-specific labor and economic measures. Dependent variables can then be regressed across controls for different types of incentives to isolate those incentives' stand-alone impact. Evaluating broader indicators such as statewide changes in income would mistakenly absorb effects from other industries (Wasylenko, 1997).

Assessing efficacy through this lens offers several benefits. First, focusing on annual changes and including all 50 states in the panel recognizes certain important realities: Every state had motion picture industry activity before and after funding an MPI program, activity endured after some states terminated their programs, and activity occurred in states that never offered incentives in the first place. Second, examining changes in relevant indicators comports with policy-makers' stated objective for MPIs, which was to attract multiple productions that would drive higher employment, wages, and output versus the status quo (Phillips, Cline, & Fox, 2012). Third, evaluating indicator changes instead of their levels circumvents potential endogeneity—that is, that states with successful motion picture industries enacted MPIs and continued to reap benefits, potentially biasing results.

I deconstruct program efficacy into two labor indicators and two economic indicators. With respect to labor, I examine each state's *annual percentage point change in motion picture industry employment*, inclusive of both full- and part-time positions, and *annual percentage point change in motion picture industry wages*. As many motion picture-related positions are part-time and would qualify for incentives, and one individual could work multiple part-time jobs on different productions, both part- and full-time positions are included. Theoretically, and consistent with MPI advocates' statements, employment and wage growth should be larger in states with incentives because incentives reduce production costs.[8]

With respect to economic indicators, I examine each state's *annual percentage point change in motion picture gross state product* (GSP) and *annual change in motion picture industry*

concentration as measured by the state's location quotient (LQ).[9] An LQ indicates the extent to which an industry is more or less concentrated in a particular state relative to the nation as a whole based on the state's share of the industry's contribution to gross domestic product. Higher LQs indicate that a relatively high share of the industry resides in that state; lower values indicate a lower share.[10] MPI programs hypothetically have a positive effect on both GSP and LQ. Lowered production costs should crowd-in productions from other states while helping smaller productions overcome barriers to market entry. That, in turn, should drive industry concentration and GSP higher.

Explanatory Variables

The models contain four explanatory variables that control for different incentive types. I include separate variables for *transferable credits, refundable credits, sales tax waivers*, and *lodging tax waivers*. Little is known about how different types of tax credits affect economic outcomes because most research on targeted incentives focuses on the target rather than on incentives' constitution. Transferable credits could drive larger employment gains as unused portions have to be applied to other productions. However, refundable credits that lack this constraint and offer more flexibility could attract relatively more interest from filmmakers.

Each explanatory variable is coded in a binary fashion. If a state had a given incentive in a given year, the variable is set equal to 1 and 0 otherwise. If a state had multiple incentives, each particular variable was set equal to 1. This coding scheme incorporates states that never enacted incentives by setting all explanatory variables equal to 0 for every year. The scheme recognizes states that had incentives for only certain years or that changed incentives over time by allowing the variables to change from 0 to 1 or vice versa if a particular incentive was adopted or terminated, respectively.

In addition to incentive characteristics, I examine the role of *program duration*, defined as the number of years each incentive was in effect. The longer an incentive is available, the more cognizant potential beneficiaries are of its existence and the more likely they are to take advantage. Because duration effect might vary by incentive type, I interact each explanatory variable with program duration.

Controls

States expended different amounts on MPI programs, and directing higher funding to incentives may attract more productions. The models control for each state's *annual MPI spending change*, measured in millions of dollars per year. Because changes in the motion picture-related indicators could be a product of each state's general economic conditions rather than MPIs, I include four additional controls: the annual percentage point *change in per capita GSP, change in overall employment, change in overall wages*, and *change in*

corporate tax burden (based on corporate tax revenue as a percentage of GSP). Finally, because annual growth in employment may be shaped by wages and vice versa, the respective models include those variables as controls.

Data

Values for each dependent variable from 1998 through 2013 were drawn from the U.S. Bureau of Economic Analysis (BEA). Certain BEA and state MPI spending data are not yet available for 2014 or 2015. The timeframe coincides with nearly all MPI enactments and aligns with the BEA's shift in 1998 to the North American Industry Classification System (NAICS) from the Standard Industrial Classification, eliminating any need to correct for changes across occupational taxonomies.[11] For further reference, Appendix Figures A1, A2, A3, and A4 illustrate the mean and range of values for each dependent variable on a per-state basis. Explanatory and control variables were drawn from state websites and the BEA. Descriptive statistics for all variables are listed in Table 2.

Methodology and Preliminary Diagnostics

The data yield a strongly balanced, cross-sectional panel. Each state-year dyad is a discrete observation for which the continuous dependent variable is regressed on the explanatory variables and controls. As in studies of state research and development tax credits (Wu, 2008) and biotechnology incentives (Moretti & Wilson, 2013), unit-level fixed effect regression models are customary for analyzing panels that exhaust the population and/or there is a need to control for unobserved unit heterogeneity.

For each dependent variable, I estimate a separate state fixed effect regression model. This estimation method over a random effects model was confirmed with a Hausman test. Variance inflation factors for each variable did not suggest problematic levels of collinearity (<2.0). Because fixed effects variants may yield inconsistent results (McCaffrey, Lockwood, Mihaly, & Sass, 2012), valid modeling necessitates careful attention to diagnostics. I used a Wooldridge test to rule out autocorrelation (Drukker, 2003). Im–Pesaran–Shin tests did not indicate the panel contained any unit roots, suggesting the data represent a stationary process with insignificant time dependence (Im, Pesaran, & Yongcheol, 2003). Other diagnostic exercises recommended that some models needed additional statistical modifications (e.g., inclusion of year fixed effects and adjustments for cross-sectional dependence) that are discussed in context below.

Empirical Results

Effect of MPIs on Labor Outcomes

Table 3 reports models of MPI effects on motion picture employment and wages.[12] To correct for heteroscedasticity,

Table 2. Descriptive Statistics.

Variable	Units	Minimum	Maximum	M	SD
Dependent variables					
Annual change in industry employment	PP	−35.7	81.4	0.60	8.63
Annual change in industry wages	PP	−73.8	179.3	3.95	18.54
Annual change in industry GSP	PP	−69.4	217.1	9.70	25.60
Annual change in industry LQ	PP	−0.5	0.5	<0.01	0.08
Explanatory variables and controls					
Transferable tax credit	—	0	1	0.16	0.37
Refundable tax credit	—	0	1	0.25	0.43
Sales tax waiver	—	0	1	0.21	0.41
Lodging tax waiver	—	0	1	0.19	0.40
Program duration	Years	0	17.0	6.50	3.90
Annual MPI spending change, in millions	US$	−66.5	319.0	2.40	18.25
Annual change in overall GSP	PP	−13.2	21.8	4.39	3.34
Annual change in overall employment	PP	−2.8	5.1	0.04	1.04
Annual change in overall wages	PP	−7.9	16.9	3.92	2.89
Annual change in corporate tax burden	PP	−1.1	0.8	−0.01	0.09

Note. All statistics are author's calculations based on data collected from state websites and the Bureau of Economic Analysis. PP = percentage points; GSP = gross state product; LQ = location quotient; MPI = motion picture incentive.

Table 3. MPI Impact on Labor Indicators, 1998-2013.

	MP employment change	MP wage change
Type of tax credit		
Transferable	−0.653 (1.114)	7.345 (3.968)
Transferable × Duration	0.579* (0.291)	−1.079 (0.705)
Refundable	0.285 (1.085)	4.918* (2.438)
Refundable × Duration	0.407 (0.324)	−0.815 (0.433)
Other incentives		
Sales tax waiver	0.048 (1.000)	−2.588 (2.590)
Sales Tax Waiver × Duration	−0.042 (0.209)	0.543 (0.380)
Lodging tax waiver	−0.228 (0.981)	−1.700 (3.226)
Lodging Tax Waiver × Duration	0.049 (0.174)	0.541 (0.579)
Controls		
Annual MPI spending change	0.006 (0.008)	0.349 (0.022)
Program duration	−0.303 (0.319)	−0.165 (0.612)
Employment change	−0.242 (0.456)	−0.565 (1.141)
Overall GSP change	0.184* (0.093)	−0.475* (0.238)
Overall wage change	−0.244 (0.218)	1.677* (0.753)
Overall corporate tax change	−2.890 (2.671)	8.752* (3.878)
Annual wage change	0.289*** (0.042)	—
Annual employment change	—	1.423*** (0.250)
Model information		
Observations	720	720
F statistic	114.84***	19.97***
R^2	.493	.480
Rho	0.052	0.076
State and year fixed effects	Included	Included

Note. Cell entries are fixed effects regression coefficients. Numbers in parentheses are robust standard errors clustered by state. MPI = motion picture incentive; MP = motion picture; GSP = gross state product.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed).

each model includes robust standard errors clustered by state. Estimated state fixed effects are reported in Appendix Table A1. Preliminary tests suggested each model should also include year fixed effects.[13] Baum and Pesaran's tests did not indicate cross-sectional dependence (Baltagi, 2013). Recall that the employment growth model includes wage growth as a control, and that the wage growth model contains employment growth as a control. Each control is lagged 1 year—that is, employment gains in year t are regressed on wage growth in year $t - 1$. Substantive findings did not change if the lag is not incorporated.

Results suggest that transferable and refundable tax credits had distinct influences on labor outcomes. Wages in states with refundable credits increased an average of 4.918 percentage points relative to states with transferable credits and those with no credits at all. The program duration interaction term is negative and nearly significant ($b = -0.815$, $p = .06$), indicative that this wage effect decreased each year the credit was available and, on average, vanished after 6 years.

This finding is linked to the elasticity of labor demand. For every 1-percentage-point employment increase, there was an average wage increase of 1.422 percentage points, suggesting wage elasticity. Similarly, the employment growth model reports that a 1-percentage-point wage increase caused an average employment increase of just 0.290 percentage points, suggesting labor inelasticity. Wage growth likely outpaced employment growth because the qualified labor pool in most states failed to meet demand as productions temporarily left California and New York to take advantage of new incentives. Because labor supply did not meet demand, wages initially increased—a business decision made easy with the availability of a refundable tax credit.[14] As supply and demand moved closer to equilibrium, initial wage gains dissipated. The pattern is consistent with Neumark's (2013, p. 165) argument that hiring incentives in markets characterized by a relatively inelastic labor supply will "result mainly in higher wages for existing workers, and fail to create many jobs."

In contrast to refundable credits, transferable credits had no wage effect but a positive employment effect. The statistically significant program duration interaction term indicates that transferable credits increased annual employment gains by 0.579 percentage points for each year the credit was available. Thus, the average effect of transferable credits in place 2 years was 1.158 percentage points (2×0.579), for 3 years was 1.739 percentage points (3×0.579), and so on.

Positive effects are likely a result of the transferable credit's structure. Productions awarded a transferable credit had to apply the unused portion to other productions or risk losing the credit, therefore encouraging additional employment but not necessarily higher wages. To stretch the value of a transferable credit, some productions may have actually resisted wage increases.

The effect of other incentives was statistically indistinguishable from zero. In fact, none of the coefficients for sales or lodging tax waivers is significant even at reduced thresholds ($p < .15$). While sales tax waivers may incentivize capital investment, they do not encourage hiring or wage increases, nor do lodging tax waivers. Sales tax waivers may also be insufficient to incentivize significant capital purchasing; there's little need to buy new equipment just to take advantage of not paying a sales tax, especially if a production company can transport already purchased equipment from another location. Moreover, merchants may increase prices on goods when tax waivers are in place, offsetting the tax benefit (Harper, Hawkins, Martin, & Sjolander, 2003). Lodging tax waivers could actually encourage labor importation by defraying the cost of housing although the models do not suggest a depressive effect on either employment or wages.

Effect of MPIs on Economic Outcomes

Table 4 reports two models of MPI effects on annual changes in each state's motion picture GSP and motion picture industry concentration as measured by the state's LQ. Estimated fixed effects for each state are reported in Appendix Table A1. Similar to the employment and wage models, year fixed effects are included. Baum's (2001) test and Pesaran's (2004) test advised that both panels contained cross-sectional dependence. Hoechle (2007) recommends addressing this issue by using Driscoll and Kraay (1998) standard errors, which the model incorporates.[15]

Both models suggest that MPI effects on GSP growth and LQ changes were not statistically distinguishable from zero.[16] GSP was not influenced by spending levels and was largely unaffected by states' broader economic changes. LQ changes were also unaffected. The coefficient for corporate tax burden is significant and positive but the effect, a 1-percentage-point increase in tax burden drove a 0.052-point increase in the LQ, is not meaningful. Because MPIs did not motivate sustained increases in employment or wages, it is not surprising that they show no impact on GSP or industry concentration.

Robustness and Sensitivity

Agglomeration Bias

A reasonable critique of the preceding analysis is that the panel includes California and New York, states in which motion picture production activity has been concentrated for decades. Although the empirical focus on annual changes in labor and economic indicators should prevent endogeneity, including these states may bias results. However, the results and their implications were unchanged when each model was re-estimated with a truncated panel that excluded data from California and New York.

Alternative Explanatory Variables

None of the models suggested that increased MPI program spending had an effect on labor or economic indicators.

Table 4. MPI Impact on Economic Indicators, 1998-2013.

	MP GSP change	MP industry concentration
Type of tax credit		
Transferable	3.275 (17.413)	0.011 (0.011)
Transferable × Duration	−0.391 (2.117)	−0.001 (0.004)
Refundable	11.426 (6.310)	0.016 (0.019)
Refundable × Duration	−0.129 (1.436)	−0.004 (0.005)
Other incentives		
Sales tax waiver	−5.091 (9.625)	−0.007 (0.017)
Sales Tax Waiver × Duration	−0.157 (1.564)	0.004 (0.004)
Lodging tax waiver	1.305 (5.953)	0.004 (0.009)
Lodging Tax Waiver × Duration	0.378 (0.830)	−0.003 (0.003)
Controls		
Annual MPI spending change	0.090 (0.075)	<0.001 (<0.001)
Program duration	−0.174 (2.553)	<0.001 (<0.001)
Overall GSP change	0.835 (2.781)	<0.001 (<0.001)
Overall corporate tax change	−298.419 (224.18)	0.052* (0.020)
Model information		
Observations	720	720
F statistic	6.97***	8.25***
R^2	.010	.013
Rho	0.052	0.076
State and year fixed effects	Included	Included

Note. Cell entries are fixed effects regression coefficients. Numbers in parentheses are Driscoll–Kraay standard errors. MPI = motion picture incentive; MP = motion picture; GSP = gross state product.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed).

This finding was robust to two similar measurements: Cumulative incentive spending and the annual percentage point change in spending revealed no significant effects. It appears that states spending more money on MPIs were no more or less likely to reap gains in motion picture employment, wages, GSP, or industry concentration. I also found no evidence that labor outcomes were any different in states that offered larger incentives for hiring relative to incentives for infrastructure. Including various combinations of incentives as interaction terms revealed no "hidden" effects.

Alternative Estimation Method

An alternative to fixed effects regression is a simple cross-sectional regression model of the entire time period, which would "smooth" the annual volatility in industry-specific labor and economic indicators. Appendix Tables A2 and A3 report pooled ordinary least squares (OLS) analogues to the fixed effects models reported in Tables 3 and 4, respectively. OLS variants suggest the same wage and employment relationship indicated by the fixed effects models. Tax credit influence remains but is statistically weaker ($p < .05$). The GSP model was not significant overall. The industry concentration model suggests a statistically significant but substantively meaningless spending effect on LQ ($b = .0004$).

Discussion

The preceding results offer little evidence that MPI programs paid significant dividends to states' motion picture industries. The results further suggest that program design choices are partially to blame. Eighteen MPI programs offered transferable tax credits, but this credit type had no significant impact on wages, GSP, or industry concentration and only modest effects on employment growth. Twenty-six programs offered refundable tax credits, which did not increase employment but did motivate short-term wage gains. Many programs offered sales or lodging tax waivers that had no effect on labor and economic indicators.

The collective result was a popular targeted economic development program that was perhaps too targeted. MPI's largest beneficiaries were individuals in states' existing motion picture labor pools, whose wages temporarily rose as demand for their skills increased in the aftermath of program creation. Content producers were the next largest beneficiary as they could finance those higher wages—and more—with tax incentives. Of course, productions could also claim tax credits for hiring that would have occurred anyway, a classic "employer windfall."

Not helping matters was the fact that many MPI programs had little accountability. Several programs issued credits for wages paid to out-of-state employees. Some states created programs with no spending controls, attracting multiple

incentive seekers whose subsidies crowded out spending on fundamental public goods. Before repeal, Iowa offered tax credits for in-kind transactions and did not require receipts. Minnesota currently requires audits but only for productions with budgets exceeding US$1 million and the state—not the recipient—pays audit expenses. Industry norms should have compelled substantial oversight of entertainment projects. The dubious meaning attached to "Hollywood accounting" is no accident.[17]

More generally, four underlying issues undermined MPI efficacy. First, MPI programs and other targeted incentives reflect a disregard for market signals (Coyne & Moberg, 2014). Outside agglomerations in California and New York, the motion picture industry historically has not found that other states' labor, tax, and regulatory environments created sufficient economies of scale to justify sustained relocation. Policymakers outside California and New York paid little regard to that status quo—one that has held true for a century—and instead followed political signals. Indeed, policymakers often pursue a course of action because their peers have already acted likewise, a cognitive shortcut that interprets a policy's popularity as a proxy for its economic value (Elkins & Simmons, 2005; Maor, 2012). Policymakers also suffer from an "action bias" wherein they feel compelled to act regardless of circumstances (Patt & Zeckhauser, 2000). This creates a policy bubble wherein a state government over-invests in a policy instrument relative to the instrument's value (Jones, Thomas, & Wolfe, 2014). MPI programs would, in most cases, certainly qualify as a bubble.

Second, MPIs and other targeted incentives encourage rent seeking that may lead to regulatory capture. Those with the most access to policymaking institutions can secure favorable subsidies and other policy changes, but this is no guarantee that outcomes are the most efficient or widely beneficial. Targeted incentives also facilitate an extortive political economy. Economic development history is replete with policymakers' acquiescence to relocation threats lest subsidy demands are met (e.g., Spindler, 1994).

Third, policymakers supporting MPI programs often relied on flawed cost-benefit or economic impact analyses written by special interest groups or the entertainment industry. The use of flawed analyses may be a result of policymakers' desire to find research that confirms preexisting beliefs about tax incentives or to demonstrate an ability to integrate research and policy (Boswell, 2009). But those studies were often poorly constructed and failed to incorporate critical economic phenomena like leakage and displacement (Christopherson & Rightor, 2010). Some IMPLAN-style analyses were based on overly optimistic direct and indirect job creation and multiplier effects with no discussion of methodology.[18]

Fourth and finally, targeting a specific industry for preferential tax treatment is not necessarily beneficial for that industry (e.g., Cowen, 2007). By and large, subsides do not encourage recipients to seek greater efficiency; on the contrary, incentives may encourage inefficiency. Furthermore, enticing an industry to locate in a given area may not be the optimal long-term location for that industry. When market realities strike, industries seek additional incentives and policymakers are often happy to oblige.

Policy Implications

Short of a wholesale elimination of all targeted tax incentives, politics will continue to play a role in their creation and disbursement. In their defense, policymakers do not always receive consistent direction from voters. Although policymakers do incorporate public needs when resolving the trade-offs inherent to scarce budgeting (Nicholson-Crotty, Theobald, & Wood, 2006), voter responses at the ballot box are inconsistent, shaped by incumbency, party identification, and other factors (Davis & Nicholson-Crotty, 2015; Lowry, Alt, & Ferree, 1998; Turner, 2003). But the process is not without hope for reform, and the preceding results on MPIs can be simplified to improve future economic development practices. Four points are most essential.

First, policymakers must think carefully about economic development objectives before proceeding with incentive programs. Some 64% of local governments participating in a 2014 International City/County Management Association (ICMA) survey indicated that they did not link economic development spending with overarching policy goals. At minimum, policymakers must determine if programs are aimed at generating organic growth or enticing relocation of a scarce resource. These goals do not carry the same electoral incentives; growth takes time and is difficult to perceive, whereas landing a scarce resource (e.g., a new tech facility) offers an immediate opportunity for credit-taking. A related consideration is whether programs will incentivize new hiring or simply provide assistance to displaced employees. That requires considering the labor and wage elasticity within targeted industries. It also requires attention to training opportunities for non-qualified employees if they are to benefit from incentives targeted at industries in which they have no experience.

Second, policymakers must pay more attention to incentive design. The preceding results suggest that different tax credit structures have divergent effects on wages and employment. Future programs should recognize that all tax credits are not the same. Sound implementation also requires a high level of oversight for incentives awarded on the basis of satisfying verifiable hiring and spending targets. In that respect, incentives could be revised to "ladder" payments as recipients satisfy benchmarks. Policymakers should also consider adding clawback provisions to incentive packages—that is, require that recipients repay all or part of their tax credits from profits. Forty-two percent of local governments participating in the ICMA survey referenced above said that they did not include clawback agreements in development programs. Clawback provisions may also reduce moral hazards among incentive seekers and ensure they meet the

employment and spending targets often quoted to receive public funding.

Third, economic development institutions must solicit multiple cost-benefit analyses before acting on incentive proposals. It is imperative that parties with no conflict of interest conduct those evaluations and that agencies avoid venue-shopping for favorable outcomes. Knowing that policymakers and bureaucrats view cost-benefit analysis through different lenses (Boardman, Vining, & Waters, 1993), it is critical to establish and enforce rigorous requirements for program evaluation both before and after public funds have been allocated. Attention should be paid to empirical analysis as targeted incentive studies often engage in "poor social science" (Buss, 1999). Cost-benefit calculations should use discount rates that reflect differing opportunity costs across funding methods (Massiani & Picco, 2013). Due care must be paid to whether or not industry relocation is feasible and would yield a positive economic impact and to how incentives align with states' overall tax systems (Mikesell, 2002, 2012). While difficult to implement, policymaking institutions may wish to consider developing formal linkages between cost-benefit analyses and actual decision making.

Fourth, state governments should pursue greater interstate cooperation, a strategy that is likely to benefit all parties (Lombard & Morris, 2010). Although interstate compacts exist on myriad issues, economic development is often not one of them. The reasons are no different than they are for any other form of collective action: Transaction and monitoring costs can be prohibitive, and the risk of free riders is ever present. Yet Feiock, Steinacker, and Park (2009) find that interlocal cooperation is improved among proximate metropolitan areas with well-structured venues of interaction and mayor-driven policy. The implication for states is that governors, not legislatures, should consider adopting a more determinative role in negotiating economic development compacts with other states. This reduces but does not eliminate the role of the legislature, but recognizes that legislators tend to prefer policies with targeted benefits and diffused costs (Peterson, 1995), which a growing body of research suggests is ineffective.

Conclusion

Domestic and foreign competition have compelled state governments to spend billions of dollars on targeted economic development incentives to produce labor and economic gains, a trend that shows no sign of abating even as scholars raise questions about those programs' efficacy. This study explored the impact of MPI programs, a collection of incentives used by over 40 states to entice the entertainment industry out of California and New York. Results suggested that most of the incentives included under these programs had little to no sustained impact on employment or wage growth and that none of the incentives affected motion picture industry GSP or concentration.

This study's results shed light on several future areas of research. One of the central findings reported here is that different types of tax credit had heterogeneous influences on employment and wages. Transferable credits had small but positive and sustained impacts on employment growth, but no effect on wages. Refundable credits had no effect on employment but had positive yet temporary influence on wages. This pattern should motivate future scholarship on the differential effects of tax credit structures on labor and economic outcomes.

Further attention should also be paid to cost-effectiveness. Even in states with programs hailed as successful, financial losses often mount. An analysis prepared for the Louisiana Department of Economic Development in 2015 found that the state's popular incentive program has resulted in a net loss of anywhere from US$13,000 to over US$20,000 per job created.[19] The larger question for policymakers and scholars is what success "looks like" and, more importantly, how success is measured. Particular emphasis should be placed on time frames, because targeted tax incentive supporters repeatedly tell detractors that success is "just around the corner." Better evaluation of economic development programs will make it easier for policymakers and citizens alike to know when those programs' time is up.
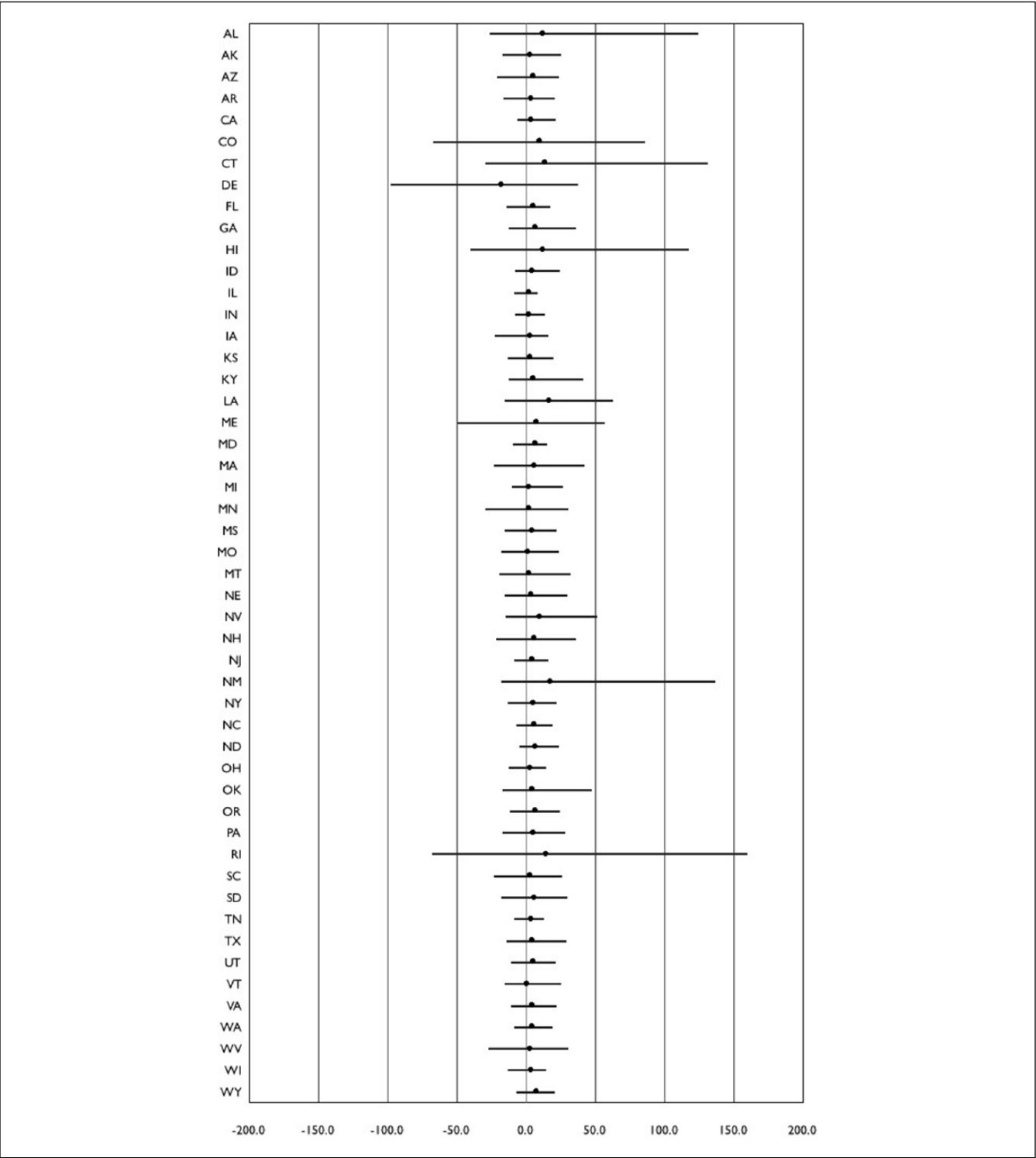
Appendix

Figure A1. Mean and range annual motion picture GSP percent change by state, 1999-2013.
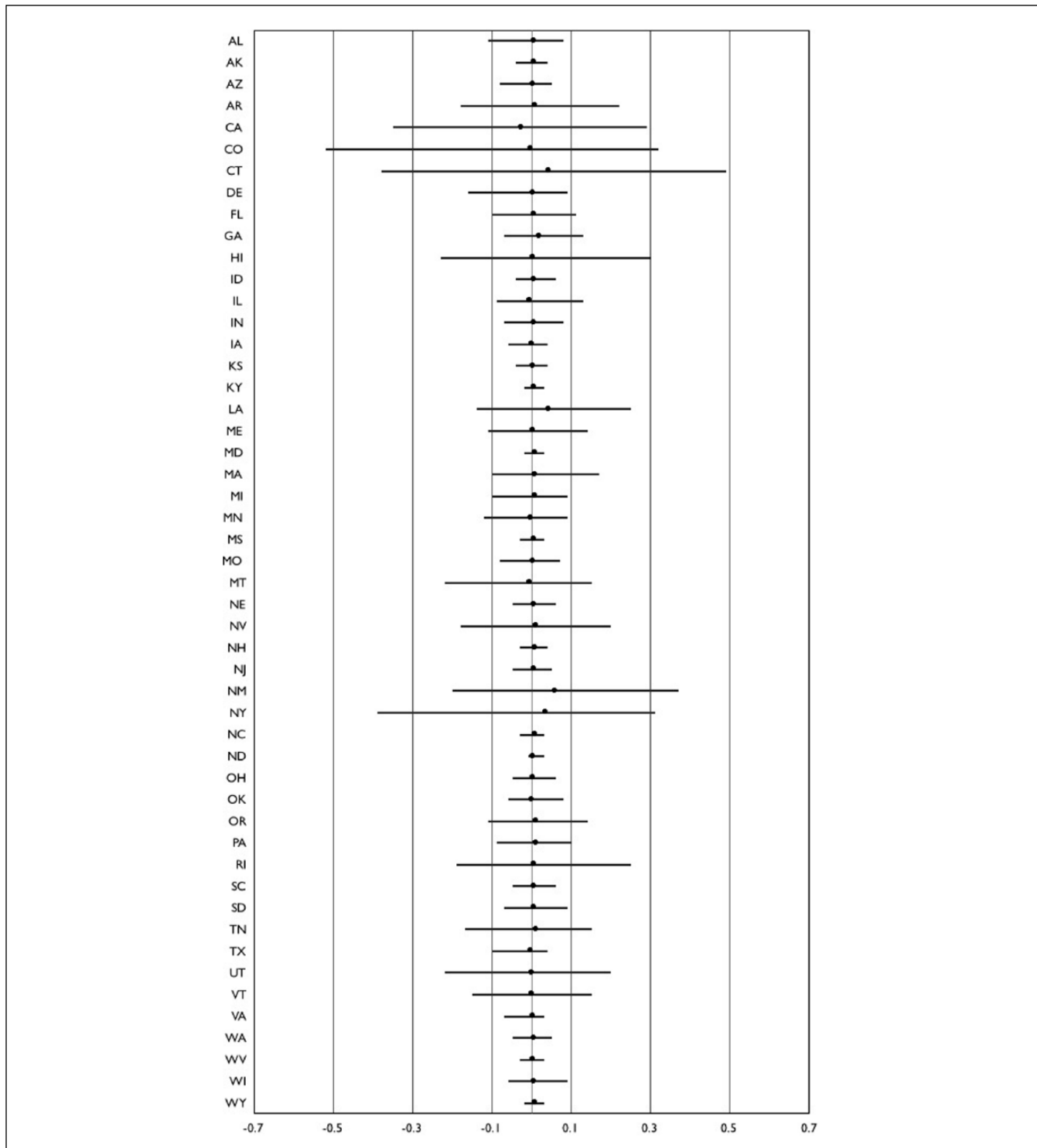*Note.* GSP = gross state product.

Figure A2. Mean and range annual motion picture LQ change by state, 1999-2013.
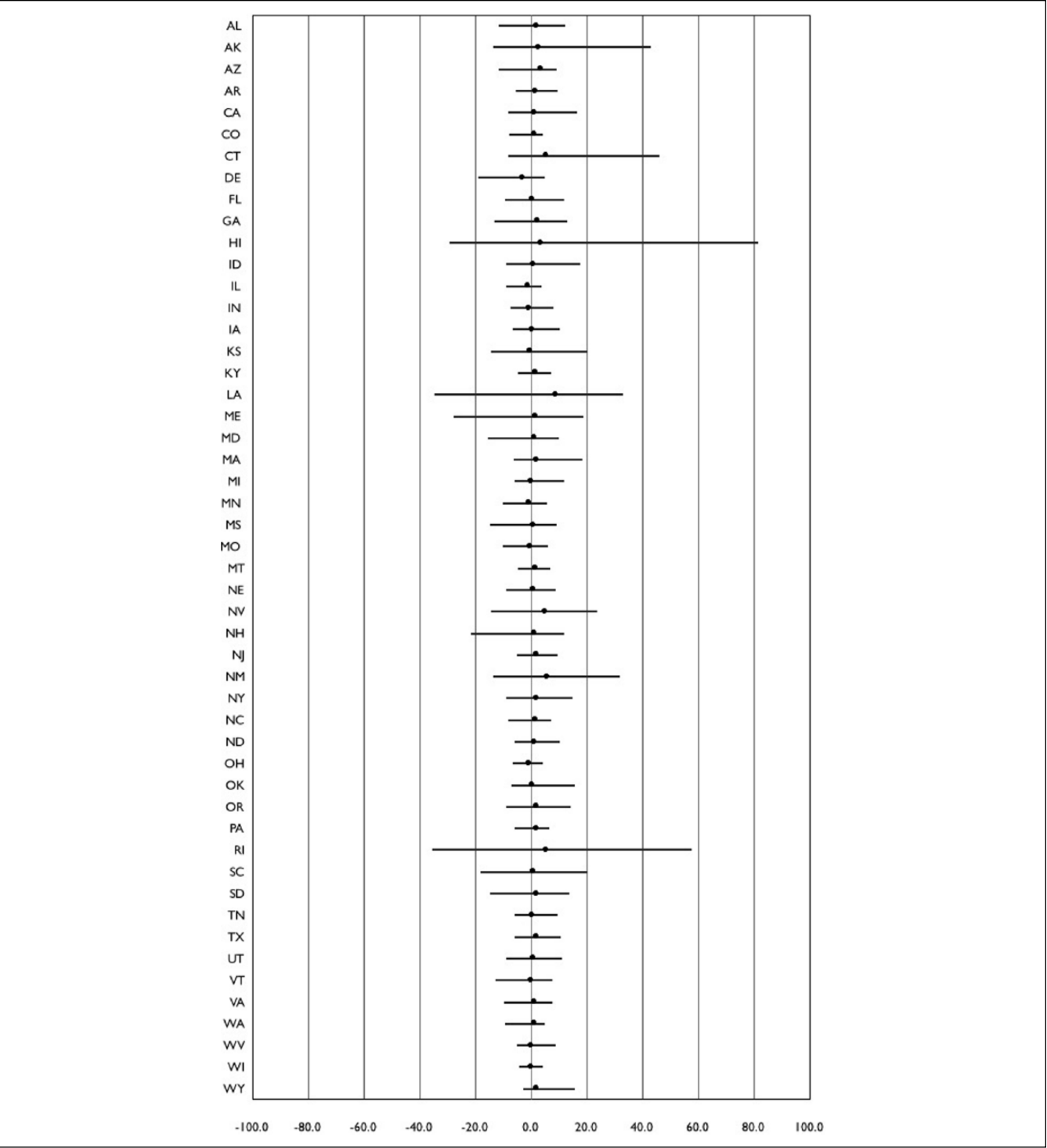*Note.* LQ = location quotient.

Figure A3. Mean and range annual motion picture employment percent change by state, 1999-2013.
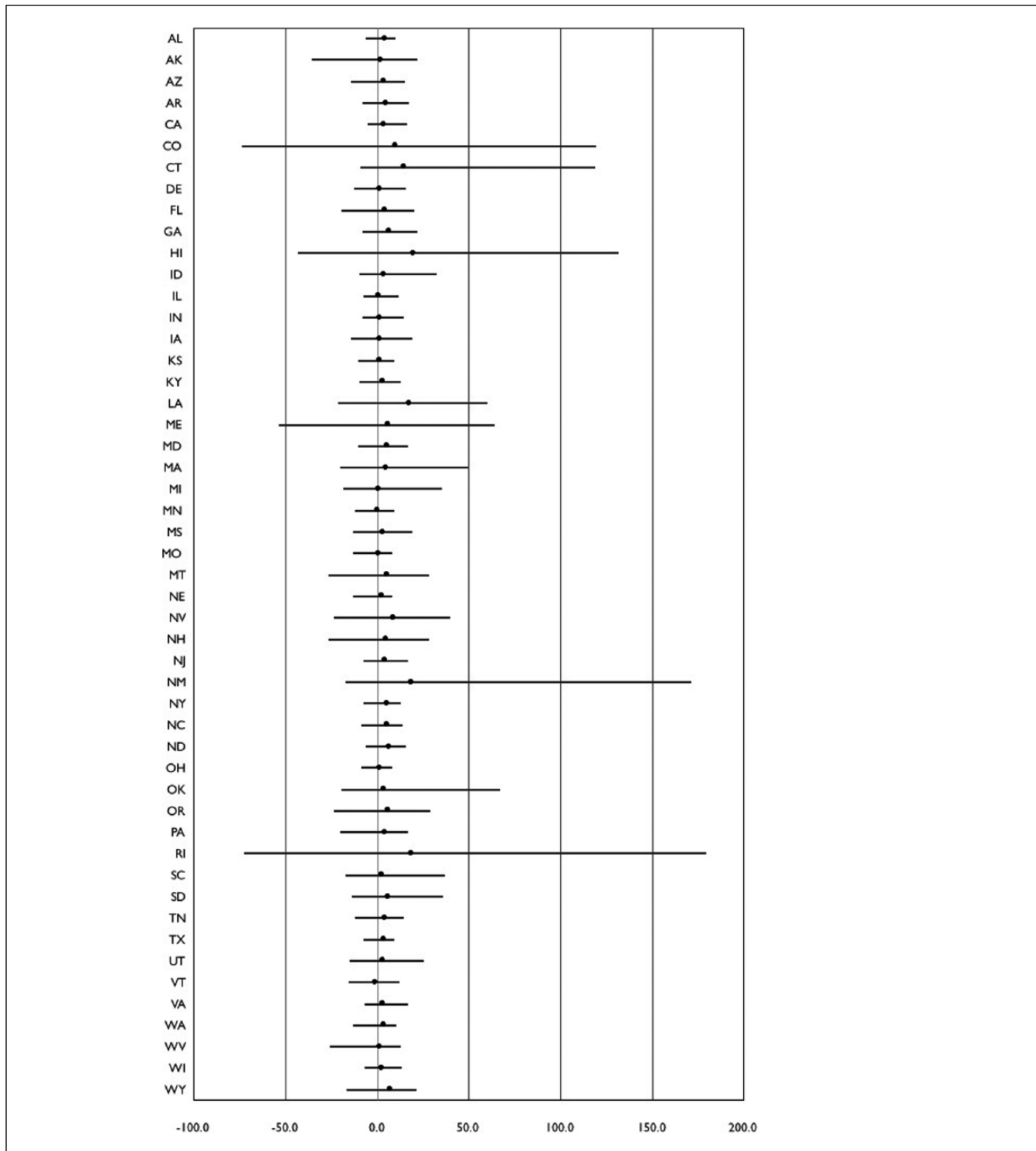
Figure A4. Mean and range annual motion picture compensation percent change by state, 1999-2013.

Table A1. Fixed Effect Estimates by Dependent Variable.

State	GSP	LQ	Employ	Wages
Alabama	−18.635	0.002	0.597	0.719
Alaska	−25.952	−0.002	0.463	−5.305
Arizona	9.503	−0.012	2.937	0.162
Arkansas	−16.421	0.004	0.708	1.984
California	−14.576	−0.020	−0.603	−2.581
Colorado	−8.173	−0.010	0.244	6.274
Connecticut	−20.096	0.023	3.760	9.065
Delaware	8.168	−0.005	−3.140	−0.815
Florida	−9.101	−0.004	−0.666	−0.102
Georgia	−23.680	−0.006	−1.074	−3.774
Hawaii	11.704	−0.040	−3.701	5.516
Idaho	−15.269	0.003	−0.084	0.297
Illinois	−28.184	0.000	−1.676	−3.330
Indiana	−32.217	0.002	−0.963	−0.700
Iowa	−29.572	−0.002	−0.428	−2.530
Kansas	−21.775	−0.002	−1.723	−3.487
Kentucky	−4.131	0.000	1.574	0.329
Louisiana	−23.224	0.023	−0.518	1.408
Maine	−15.894	0.007	4.576	12.198
Maryland	−7.040	0.003	0.676	1.717
Massachusetts	−2.823	−0.007	−1.803	−4.574
Michigan	−44.047	0.006	−2.686	−2.704
Minnesota	−23.818	−0.003	−1.247	−2.387
Mississippi	−9.962	0.000	0.214	0.484
Missouri	−18.941	0.010	0.920	−4.608
Montana	−3.324	−0.006	0.059	−0.753
Nebraska	−30.145	0.005	0.135	0.219
Nevada	−17.852	0.009	4.247	5.235
New Hampshire	−5.779	0.004	0.761	1.991
New Jersey	−23.094	0.002	1.070	0.177
New Mexico	14.289	0.054	1.547	9.338
New York	−34.272	−0.024	−3.104	0.954
North Carolina	−17.413	0.005	0.889	0.847
North Dakota	4.193	−0.007	−0.839	−1.910
Ohio	−26.241	−0.003	−2.240	−1.849
Oklahoma	3.357	−0.007	0.561	−1.667
Oregon	−23.767	0.004	−0.522	0.322
Pennsylvania	−18.716	0.007	−0.240	−3.612
Rhode Island	−13.491	0.005	3.838	12.418
South Carolina	−12.333	−0.011	−1.086	−4.113
South Dakota	−14.376	−0.003	0.418	0.021
Tennessee	−14.699	0.009	0.409	0.475
Texas	−19.451	−0.014	0.108	−2.720
Utah	−7.473	−0.020	−0.645	−2.327
Vermont	−14.857	−0.001	−0.428	−3.394
Virginia	−7.837	−0.008	−0.542	−2.436
Washington	−8.701	−0.007	−1.133	−3.078
West Virginia	−19.243	−0.001	−1.718	−3.925
Wisconsin	−10.734	0.000	0.143	−0.425
Wyoming	−16.664	0.010	1.867	3.141

Note. GSP = gross state product; LQ = location quotient.

Table A2. Effect of MPIs on Motion Picture Industry Labor Indicators, 1998-2013, OLS Robustness Check.

	MP employment change	MP wage change
Type of tax credit		
Transferable	−0.970 (1.652)	7.669 (4.303)
Transferable × Duration	0.700 (0.430)	−1.589 (0.837)
Refundable	−0.191 (1.467)	5.645 (3.137)
Refundable × Duration	0.449 (0.398)	−0.963 (0.618)
Other incentives		
Sales tax waiver	0.104 (1.154)	−2.227 (2.600)
Sales Tax Waiver × Duration	0.076 (0.232)	−0.004 (0.435)
Lodging tax waiver	−0.044 (1.132)	−1.907 (2.801)
Lodging Tax Waiver × Duration	0.039 (0.212)	0.125 (0.490)
Controls		
Annual MPI spending change	0.009 (0.009)	0.029 (0.020)
Program duration	−0.559* (0.271)	0.937 (0.533)
Employment change	−0.369 (0.475)	−0.247 (1.130)
Overall GSP change	0.192 (0.131)	−0.480 (0.264)
Overall wage change	−0.150 (0.192)	1.490** (0.520)
Overall corporate tax change	−2.329 (2.950)	8.002 (6.174)
Annual industry wage change	0.292*** (0.033)	—
Annual industry employment change	—	1.452*** (0.192)
Model information		
Observations	720	720
F statistic	10.99***	5.90***
R^2	.497	.491

Note. Cell entries are OLS regression coefficients; Numbers in parentheses below each coefficient are robust standard errors. MPI = motion picture incentive; OLS = ordinary least squares; MP = motion picture; GSP = gross state product.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed).

Table A3. Effect of MPIs on Motion Picture Industry Economic Indicators, 1998-2013, OLS Robustness Check.

	MP GSP change	MP industry concentration
Type of tax credit		
Transferable	−20.736 (32.285)	0.013 (0.013)
Transferable × Duration	3.314 (5.084)	< 0.001 (0.004)
Refundable	−30.194 (41.221)	0.031 (0.020)
Refundable × Duration	5.429 (6.840)	−0.003 (0.005)
Other incentives		
Sales tax waiver	−13.031 (22.259)	−0.015 (0.017)
Sales Tax Waiver × Duration	0.661 (2.737)	0.003 (0.005)
Lodging tax waiver	< 0.001	0.002
Lodging Tax Waiver × Duration	−0.212 (2.588)	−0.002 (0.002)
Controls		
Annual MPI spending change	−0.226 (0.428)	< 0.001* (< 0.001)
Program duration	−5.322 (6.436)	< 0.001 (0.004)
Employment change	−13.379 (10.106)	−0.002 (0.003)
Overall GSP change	18.917 (19.492)	−0.004** (0.001)
Overall wage change	−27.297 (28.985)	0.006** (0.002)
Overall corporate tax change	−272.097 (273.448)	0.042* (0.021)
Model information		
Observations	720	720
F statistic	0.20	1.92*
R^2	.026	.038

Note. Cell entries are OLS regression coefficients; Numbers in parentheses below each coefficient are robust standard errors. MPI = motion picture incentive; OLS = ordinary least squares; MP = motion picture; GSP = gross state product.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed).

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Notes

1. See http://www.nytimes.com/interactive/2012/12/01/us/government-incentives.html
2. Tax incentives have also been the target of legal challenges over the Dormant Commerce Clause and claims of taxpayer injury (e.g., *Cuno v. DaimlerChrysler*).
3. Dozens of emails mentioned tax incentives. One producer informed Sony executives that although his project was over budget, the deficit would be offset by US$546,000 in British incentives. Another email conveyed a producer's lament that productions were leaving California because incentives weren't generous enough. And in prepared remarks meant to temper an activist investor, one senior Sony executive noted that tax incentives were helping the studio control costs.
4. Some policymakers concluded that refundable credits were the most flexible and would encourage the most relocation; others decided transferable credits were the best option.
5. Although technically the first motion picture incentive (MPI) program, it was not until 2002 that Louisiana's program was revised and to resemble other states' programs.
6. Audio of the address is available at michigan.gov/documents/gov/Gov140_Full_231237_7.mp3
7. Full text of this and other emails is available within the "Report on Special Investigation of the Film, Television, and Video Project Production Program Administered by the Department of Economic Development," Office of Auditor of State, State of Iowa.
8. I argue that these measures are more important to evaluate than indirect job creation. Not only are indirect jobs difficult to estimate, but it's also not likely indirect job growth is significant if MPIs aren't first catalyzing industry-related employment and wage growth.
9. The location quotient (LQ) is also referred to as the industry specialization index.
10. Preceding studies have relied on LQs to study human capital flows (Brown & Scott, 2012) and tax policy (Foster, 2014).
11. The North American Industry Classification System (NAICS) codes are 5121 and 5122 for "motion picture and sound recording industries."
12. U.S. Bureau of Economic Analysis (BEA) has separate data for wages and total compensation but findings were robust to using either measure.
13. The approach estimates a two-way fixed effects model and then uses an F test to evaluate the null hypothesis that the year dummies are equal to zero. As $p < .05$ for each model, I reject the null and estimate both models with time fixed effects.
14. This finding is intuitive: Productions were more likely to hire personnel with relevant work backgrounds, and pay them higher wages, than hire those with little to no experience.
15. Estimation with Driscoll–Kraay standard errors does not alter coefficient estimates.
16. The refundable tax credit coefficient is weakly significant ($p = .09$).
17. In July 2014, DreamWorks Animation disclosed that the Securities and Exchange Commission was investigating the firm's US$13.5 million charge for *Turbo*, an animated film that grossed nearly US$300 million in worldwide ticket sales against a reported budget of US$135 million. In 2010, a leaked financial statement from Warner Brothers indicated that one of the *Harry Potter* films showed a loss of US$167 million, despite grossing US$939 million in worldwide ticket sales. Despite grossing over 10 times its production budget, LucasFilms claims that one of the *Star Wars* films has never turned a profit.
18. For example, an 81-page report on the "creative economy" commissioned by the Otis College of Art and Design and conducted by the Los Angeles Economic Development Corporation in 2015 relied on IMPLAN but explains almost nothing about the methodology or assumptions. That report—favorable to creative industries—was sponsored by multiple interest groups including the California Arts Council, Californians for the Arts, and the City of Los Angeles Department of Cultural Affairs.
19. See "The Economic Impact of Louisiana's Entertainment Tax Credit Programs," prepared for the Office of Entertainment Industry Development, Louisiana Department of Economic Development, by Loren C. Scott and Associates.

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