

**Time to Yell “Cut?”**  
**An Evaluation of the California Film and Production Tax Credit**  
**for the Motion Picture Industry**

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**Abstract**

Enacted in 2009, California’s Film and Production Tax Credit was a policy reaction to fears that the state had lost motion picture industry jobs to other states and countries. The incentive has since been allocated over \$1 billion in taxpayer funding. Advocates hail the tax credit as a success, but is there evidence to support that claim? This study examines motion picture industry employment in California from 1991 through 2016 to determine the impact of the Film and Production Tax Credit and competing incentives offered by other governments. Results show the tax credit had no significant effect on changes in three occupational categories associated with the motion picture industry. Employment was similarly unaffected by competing incentives. Motion picture industry employment in California instead appears to track the national labor market. These findings were robust to several alternative measures and model specifications and advise that California policymakers should eliminate the Film and Production Tax Credit as soon as possible.

**Introduction**

Although it contributes little more than two percent to the state’s \$2.5 trillion economy, the motion picture industry is often described as California’s “flagship.”<sup>1</sup> The industry’s Golden State roots can be traced to the early twentieth century, when creative and business elements sought to escape legal entanglements with New Jersey-based Thomas Edison. Patent protections gave Edison a near-monopoly over technical aspects of production and individuals working outside his control were often sued for infringement.

Producing films thousands of miles away brought lower litigation risks, greater artistic freedom, and markedly improved weather.

One century later, California policymakers awarded the industry a corporate tax incentive, but not as a reward for longevity. The Film and Production Tax Credit, enacted in 2009, resulted from growing concern that the state had lost motion picture industry jobs to juris-

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<sup>1</sup> Based on 2015 gross domestic product by state and North American Industry Classification System Industry Code “Motion Picture and Sound Recording Industries” for California as reported in Bureau of Economic Analysis Regional Data.

dictions offering billions of dollars in incentives. If policymakers wanted to stem the tide of so-called runaway production, the thinking went, then they would have to counteract those incentives by offering their own. The tax credit received initial annual funding of \$100 million but in 2014 the legislature more than tripled annual funding to \$330 million.

Despite a cumulative and growing taxpayer investment of \$1.1 billion, the question of whether the Film and Production Tax Credit has had a positive effect on motion picture industry employment in California has received little independent scrutiny. Parties with a vested interest in the tax credit, from studios to labor unions, bureaucrats, certain elected officials, and assorted interest groups, hail the incentive as a success. Yet multiple analyses of comparable incentives offered elsewhere have concluded that the employment impact, if any, does not justify the expense.

This study aims to determine whether that's also true in California. Drawing on more than two decades of employment and tax incentive data, several empirical models show that motion picture industry employment in California is largely immune both to the Film and Production Tax Credit and to expenditures on competing incentives. This finding should lead policymakers to question the wisdom of continuing to fund the Film and Production Tax Credit.

## **Background on the Film and Production Tax Credit**

American state and local governments have responded to increased competition for jobs and capital investment with a flurry of tax incentives and regulatory reforms (Burnett 2011, Jenn and Nourzad 1996, Leiser 2015). While policymakers often enact narrow incentives that confer benefits on a specific industry or project, academic studies conclude time and time again that targeted incentives and even some broader policies fail to generate sustained economic growth, often because competitive pressures lead policymakers to overinvest relative to the incentives' capacity to yield commensurate returns (Calcagno and Thompson 2004, Dowall 1996, Elvery 2009, Lynch and Zax 2011, Peters and Fisher 2004, Prillaman and Meier 2014, Wilson 2009, Zheng and Warner 2010).

Tax incentives that target the motion picture industry are an instructive case. Between 1997 and 2015 45 state governments established programs aimed at drawing film and television jobs out of California, both to diversify their economies and to attract the creative class (Christopherson and Rightor 2010, Leiser 2017, Sewordor and Sjoquist 2016). Anxiety over a perceived loss of jobs to those states as well as Canada and the United Kingdom compelled California policymakers to enact the Film and Production Tax Credit (FPTC) in 2009. The FPTC is administered by the California Film Commission (CFC), a public agency established in 1985 to promote the state's film industry.<sup>2</sup>

Like most competing incentives, the FPTC is equal to a percentage of a film or television production's qualified in-state spending (e.g., employee wages). Policymakers initially appropriated the tax credit, dubbed "Program 1.0," annual funding of \$100 million from 2010 through 2017. But in 2014, policymakers enacted "Program 2.0," which modified qualification requirements and increased annual funding to \$330 million. According to a report from the California Legislative Analyst's Office, 80 percent of tax credits to date have been ap-

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<sup>2</sup> The CFC is associated with Governor Jerry Brown's Office of Business and Economic Development.

plied against state corporate income tax liabilities, with the remainder applied against sales and use taxes.<sup>3</sup>

California's pursuit and expansion of a tax incentive for the motion picture industry occurred as other states began to abandon their own. From 2009 through 2016, policymakers in over a dozen states eliminated incentives and several others reduced expenditures (Thom and An 2017).<sup>4</sup> Circumstances behind those reversals varied from state to state but tended to include some combination of shifting legislative priorities, awareness of poor oversight and fraud, and growing evidence that motion picture industry incentives fail to create permanent jobs and/or fail to yield a positive return on investment (e.g., Adkisson 2013, Button 2016, Geballe 2009, Greenbaum et al. 2010, Gross and Stogel 2010, Luther 2010, Mathis 2012; Murray and Bruce 2017; Pew Center on the States 2012; Sanders 2012; Swenson 2017; Tannenwald 2010, Thom 2016, Zinn 2010). Table 1 summarizes the findings of incentive program evaluations conducted by multiple state government agencies. The only difference across these evaluations is not whether incentives were a net taxpayer loss, but rather to what degree.

The CFC nevertheless characterizes the FPTC as a success. In 2017, CFC Executive Director Amy Lemisch remarked that “[t]he tax credit program is working as intended to reaffirm California’s status as the preferred choice for film and TV production.”<sup>5</sup> Annual progress reports published by the CFC comprise dozens of tables and graphs that ostensibly support that claim. For example, the 2016 edition tabulates billions of dollars in California-based production spending that readers are left to infer was facilitated by the CFC and the FPTC.<sup>6</sup>

Yet the CFC’s progress reports offer no evidence of the FPTC’s independent effect on motion picture industry employment in California. Despite countless tables and graphs, the data presented go no further than implying correlation between the tax credit, production spending, and job creation. Worse, some of the jobs data is provided by FPTC-supporting labor unions. Certain metrics offered as evidence of success are drawn from activities that do not qualify.<sup>7</sup> And notwithstanding reams of spending data, the CFC does not quantify tax revenues generated by that spending, a key measure for whether the FPTC yields a positive return on investment.

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<sup>3</sup> See California Legislative Analyst’s Office, “California’s First Film Tax Credit Program,” issued September 2016. The report is available for download from <http://www.lao.ca.gov/Publications/Report/3502>. Brian Weatherford is the report’s stated author but a different name, Mac Taylor, appears on the cover.

<sup>4</sup> A US federal corporate tax incentive expired at the end of 2016.

<sup>5</sup> See California Governor’s Office of Business and Economic Development, “California’s Film & TV Tax Credit Program 2.0 Wraps Second Year by Adding Four Relocating TV Series,” a press release issued on March 17, 2017. The release is available for download from <http://www.business.ca.gov/Newsroom/ArticleId/17/californias-film-tv-tax-credit-program-20-wraps-second-year-by-adding-four-relocating-tv-series>.

<sup>6</sup> See California Film Commission, “Film and Television Tax Credit Programs Progress Report,” issued October 2016. The report is available for download from <http://film.ca.gov/wp-content/uploads/2017/02/CA-Tax-Credit-Progress-Report-10-27-2016-FINAL.pdf>.

<sup>7</sup> For example, the CFC’s 2016 progress report states that under Program 2.0 actor wages do not qualify for tax credit purposes but an adjacent table quotes the “# of cast” paid as one of several measures of success.

**Table 1. Motion Picture Industry Tax Incentive Return on Investment, Based on State Program Evaluations**

State	Cumulative Investment	Return on Investment
Louisiana	\$2,092.9	-77%
Connecticut	799.4	-93%
Massachusetts	652.7	-84%
Pennsylvania	637.0	-76%
New Mexico	590.3	-86%
Michigan	511.8	-89%
Florida	387.6	-57%
North Carolina	308.4	-54%
Arizona	23.7	-72%

Notes: Cumulative investment figures are in millions of constant 2016 US dollars, adapted from Thom (2016) and more recent data available from each state’s film offices, budget offices, and audit reports. Return on investment figures adapted from “Evaluation of the Effectiveness of the Mississippi Film Office,” a report issued in December 2015 by the Mississippi Joint Legislative Committee on Performance Evaluation and Expenditure Review.

Although the CFC’s 2016 progress report lists several studies that purport to document the FPTC’s effectiveness, each is of debatable validity. Two studies were conducted by the Los Angeles Economic Development Corporation (LAEDC). One LAEDC study was funded in part by the Motion Picture Association of America, the industry’s chief lobbying firm, a fact the study did not disclose. Christine Cooper, the study’s lead author, only admitted the connection after being contacted by a columnist from the *Los Angeles Times* (Hiltzik 2011). The other LAEDC study was sponsored by the Southern California Association of Governments, an advocacy group that advertises the tax credit on its website. Both LAEDC studies relied on IMPLAN analysis, an input-output model that does not assess causal relationships but rather assumes certain types of spending will have presumed multiplier effects. Such models tend to overstate the impact of government programs (Mills 1993), and perhaps not surprisingly, one LAEDC report was later found to have exaggerated the FPTC’s impact (Appelbaum et al. 2012). Two other studies cited by the CFC not only relied on IMPLAN but did so using data provided by the CFC.<sup>8</sup>

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<sup>8</sup> See Michael B. Kong and Aniruddha R. Bette, “There’s No Place Like Home: Bringing Film & Television Production Home to California,” a report issued by Project Headway in February 2012. See also Kevin Klowden, Priscilla Hamilton, and Kristen Keough, “A Hollywood Exit: What California Must Do to Remain Competitive in Entertainment—and Keep Jobs,” a report issued by the Milken Institute in 2014. That report is available for download from <http://www.milkeninstitute.org/publications/view/620>.

## Research Design

### Outcome Variable: Annual Changes in Motion Picture Industry Employment in California

The FPTC's enactment was aided by widespread acceptance of the runaway production narrative, i.e., that the availability of competing incentives reduced motion picture industry employment in California.

Supporters argue that the FPTC has driven some of that lost employment back to California, often pointing to subsequent gains in associated indicators. To quantify the impact of various incentives, the outcome variable should therefore capture annual changes in employment levels, following the approach used by Thom (2016). Empirical models can then determine whether those changes were shaped by the FPTC, competing incentives, both, or neither.

The California Employment Development Department's (EDD) Current Employment Statistics database retains monthly data from January 1990 forward on employment in three occupational categories related to the motion picture industry. Those categories are "motion picture and video production," "motion picture and video industries," and "motion picture and sound recording."<sup>9</sup> The EDD collects and analyzes data in partnership with the Bureau of Labor Statistics and their data are comparable to those available from federal sources such as the Quarterly Census of Employment and Wages.<sup>10</sup>

The EDD data was used to calculate three outcome variables: the annual percentage-point change in motion picture and video production, motion picture and video industries, and motion picture and sound recording employment from 1991 through 2016. Three separate variables and models are admittedly redundant but help assess the veracity of results across models. The case for an association between an explanatory variable and employment changes is strengthened if that variable's coefficient is statistically significant in three models versus only a single model. Moreover, assessing three occupational categories reduces the likelihood of drawing invalid inferences that might occur from examining the wrong single category.

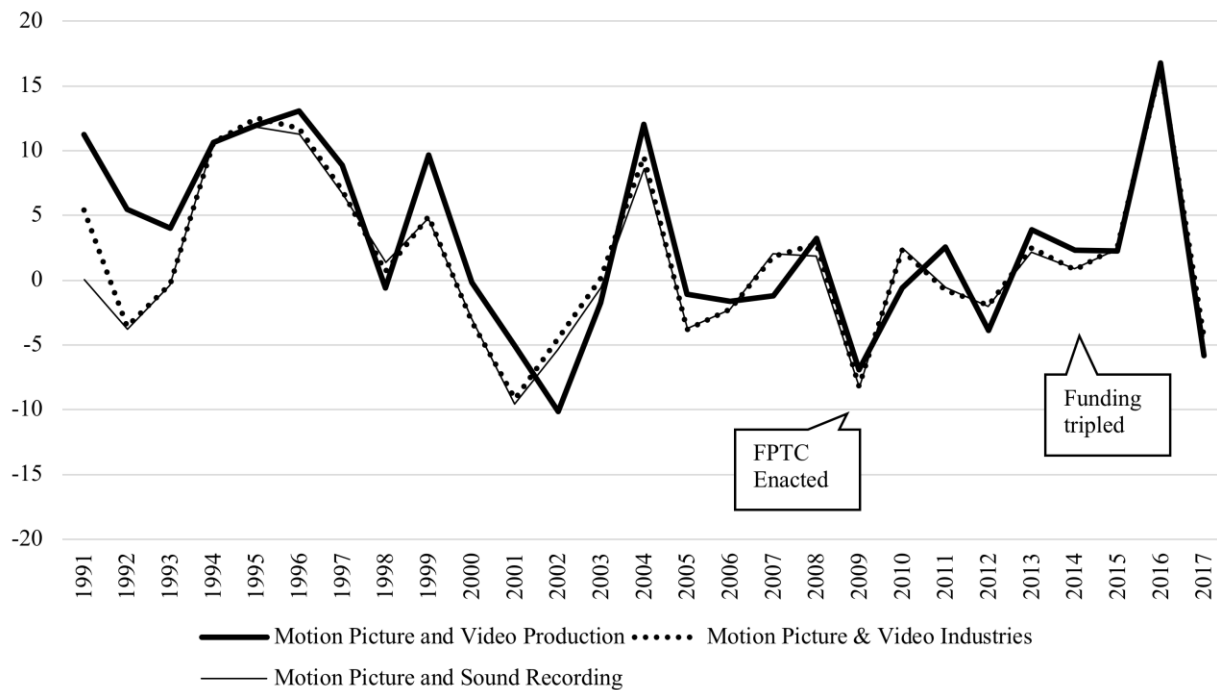
Figure 1 illustrates values for each outcome variable from 1991 through October 2017. As discussed further below, the period depicted in Figure 1 includes the rise of motion picture industry tax incentives throughout the United States, the United Kingdom, and Canada as well years prior to those incentives' existence. Employment changes over this period showed regular, often extreme cyclicality. The FPTC's enactment in 2009 occurred during a year of job losses that subsequently, but only temporarily, reversed. Except for a strong increase in 2016, employment gains in all three categories were less than some of the gains observed in earlier years when no incentives were in place. Despite tripled funding for the FPTC, the sharp employment gains reported in 2016 were followed in 2017 by the largest one-year reversals on record.

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<sup>9</sup> The EDD's Current Employment Statistics series codes are 50512110, 50512100, and 50512000, respectively. EDD nomenclature uses both "and" and "&."

<sup>10</sup> The correlation between annual employment reported by the EDD and the Quarterly Census of Employment and Wages is 0.98, 0.98, and 0.99 for motion picture and video production, motion picture and video industries, and motion picture and sound recording, respectively.

**Figure 1. Annual Percentage-Point Change in California Motion Picture Industry Employment, by Occupational Category, 1991–2017**



**Explanatory Variables: Incorporating Motion Picture Industry Tax Incentive Expenditures**

The CFC’s 2016 progress report includes annual FPTC allocations from 2009 through 2016, figures that represent California’s maximum possible expenditure on the incentive. The CFC does not track the value of tax credits issued or redeemed annually, which may be less than the allocation due to variability in production spending and the timing of when credits are applied against corporate tax liabilities.<sup>11</sup> Consequently, the CFC’s allocation data are the best available spending proxy. Those figures were converted to constant 2016 US dollars and used to derive the annual percentage-point change in FPTC allocation.

Each model also controls for the annual percentage-point change in incentive expenditures (in constant 2016 US dollars) by governments outside California. Four areas are included.<sup>12</sup>

*Other US States.* From a meager \$700,000 in 1998 to an estimated \$1.6 billion in 2016, state governments outside California have significantly increased expenditures for motion picture industry incentives.

<sup>11</sup> The CFC did not respond to a request to confirm this practice. Relatedly, the LAO’s analysis of Program 1.0 notes that “comprehensive, accurate accounting of all tax credit use does not exist.”

<sup>12</sup> Although multiple tax and other incentives are available in Australia, reliable data are generally unavailable. At least one Australian state government is fighting—along with the Walt Disney Company—efforts to fully-disclose tax incentive spending (Miller 2016).

Expenditure data through 2014 was obtained from Thom (2016) and supplemented with data for 2015 and 2016 culled from individual state websites, film offices, budgets, and audit reports.

*US Federal.* Until recently, the US federal government offered a corporate tax credit for domestic motion picture production. Originally included as a provision of the American Jobs Creation Act of 2004, the tax credit expired at the end of 2016. According to the Office of Management and Budget, annual expenditures averaged \$157.3 million over that period. If the incentive was successful at sparking motion picture industry employment nationwide, then each model should reveal at least some positive relationship between federal spending and employment in California, the industry's anchor.

*United Kingdom.* The UK first offered tax incentives for outside motion picture productions in 2007 with payments starting in 2008. Since their inception, UK incentives have nearly doubled in value, rising from about \$221 million in 2008 to about \$412 million in 2016 (both figures in constant 2016 US dollars). Data on UK expenditures was obtained from Her Majesty's Revenue & Customs Official Statistics on Film, High-End Television, and Animation Tax Relief. Those figures were changed from British pounds to constant 2016 US dollars with year-appropriate average currency conversion rates. The US dollar-equivalent figures were then used to calculate annual percentage-point changes.

*Canada.* Outside productions qualify for multiple tax incentives in Canada. The Canadian federal government has funded the Film or Video Production Services Tax Credit since 1998. Spending on that credit increased from about \$26 million in 1998 to about \$114 million in 2016 (both figures in constant 2016 US dollars).<sup>13</sup> Although several Canadian provinces offer small tax incentives, those made available in Ontario and British Columbia are the most generous and oft-cited for harming employment in California. In Ontario, productions may qualify for the Computer Animation and Special Effects Tax Credit and the Production Services Tax Credit. Both incentives have received funding since 2006. In British Columbia, productions qualify for the Production Services Tax Credit. That incentive has received funding since 1999. Combined expenditures have grown from about \$13 million in 1999 to about \$433 million in 2016 (both figures in constant 2016 US dollars). Data was obtained from each respective government's budget documents and tax expenditure reports.<sup>14</sup> Those figures were aggregated and changed from Canadian to constant 2016 US dollars with year-appropriate average currency conversion rates. The US dollar-equivalent figures were then used to calculate annual percentage-point changes.

*Summary.* The cyclical nature evident in Figure 1 suggests that motion picture industry employment in California may simply reflect trends in the broader labor market. Each model therefore controls for the annual percentage-point change in nonfarm employment nation-

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<sup>13</sup> The constant 2016 US dollar equivalent peaked in 2014.

<sup>14</sup> The Ontario Media Development Corporation did not respond to a request for data in addition to that available on their website. Creative British Columbia likewise did not respond to a request for any data. In both cases, provincial tax expenditure reports were the only source of information on incentive spending.

wide, exclusive of motion picture industry employment in California, based on data reported by the Bureau of Labor Statistics.

Table 2 summarizes descriptive statistics for the outcome, explanatory, and control variables. Where appropriate, alternative measures are discussed in both the Findings and Robustness and Sensitivity sections below.

## Methodology

Available data span the period from 1991 through 2016. The FPTC was enacted in 2009, effectively dividing that period into a pre-intervention phase (i.e., 1991 through 2009, before the tax credit was implemented) and a post-intervention phase (i.e., 2010 through 2016, after the tax credit was implemented). A data panel of this composition is best analyzed with an interrupted time series model that accounts for trends prior to policy intervention and isolates the impact of both the policy in question and other relevant factors. As such, this variant of time series analysis has broad applicability in public policy analysis (e.g., Bonham et al. 1992, Crosbie 1993, Lester et al. 2014).

This study utilizes the model developed by Linden (2015), which relies on a generalized least-squares regression, assumes a first-order autoregressive error structure, and uses the pre-intervention period as a counterfactual rather than a separate control.<sup>15</sup> Given the motion picture industry’s California-centric labor force, this strategy is advantageous to alternatives that would require modeling California against a control state where the industry would have a fundamentally different presence and response to tax incentives.<sup>16</sup>

## Findings

Results are reported in Table 3. None of the models offer evidence that the FPTC had a substantial independent effect on motion picture industry employment in California. For in-

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<sup>15</sup> The Linden approach is implemented using either a Prais-Winsten regression or a regression with Newey-West standard errors. The former assumes autocorrelation; the latter assumes both autocorrelation and heteroskedasticity. Neither a Breusch-Pagan nor a Cameron & Trivedi test suggested the data were heteroscedastic, but a Durbin-Watson test suggested autocorrelation. A Cumby-Huizinga test indicated the autocorrelation was first-order ( $p > 0.10$  for lag  $\geq 2$ ). The model was consequently estimated using Prais-Winsten regression. The model’s functional form is  $Y_t = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 T_t X_t + Z_t + \varepsilon_t$  where  $Y_t$  denotes the outcome variable at time  $t$ ,  $\beta_0$  denotes the outcome variable’s initial value,  $\beta_1$  denotes the slope of the outcome variable prior to the intervention,  $T_t$  denotes the length of time elapsed since the beginning of the study,  $\beta_2$  denotes the outcome variable’s change immediately after the intervention,  $X_t$  denotes a control for the intervention period ( $X_t = 0$  for all  $t$  prior to intervention and 1 following intervention),  $\beta_3$  denotes the difference in the outcome variable’s slope before and after the intervention,  $Z_t$  denotes the vector of explanatory and control variables, and  $\varepsilon_t$  denotes error.

<sup>16</sup> According to data from the Quarterly Census of Employment and Wages, 54 percent of motion picture and video production employment in 2016 was located in California. New York, the next closest state, had just 17 percent. Because other states’ motion picture industry labor markets are smaller and more volatile, and most of those states enacted their own incentives—with some later repealing—using any one of them as a control is not advisable.

**Table 2. Summary Information and Descriptive Statistics for Outcome, Explanatory, and Control Variables**

<b>Variable and Units</b>	<b>Source(s)</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>
Annual Change in California Motion Picture and Video Production Employment (percentage points)	California Employment Development Department	-10.6	16.7	3.3
Annual Change in California Motion Picture & Video Industries Employment (percentage points)	California Employment Development Department	-9.2	13.8	2.1
Annual Change in California Motion Picture and Sound Recording Employment (percentage points)	California Employment Development Department	-9.6	13.5	1.8
Annual Change in California Film and Production Tax Credit Allocation (percentage points)	California Film Commission, 2016 Annual Progress Report	-28.9	232.3	13.5
Annual Change in Aggregate State Spending on Motion Picture Incentives (percentage points)	Thom (2016) and individual state websites, budgets, and audit reports	-67.3	435.4	62.3
Annual Change in US Federal Domestic Production Incentive (percentage points)	US Office of Management and Budget	-41.9	214.3	14.3
Annual Change in United Kingdom Spending on Motion Picture Incentives (percentage point change in constant US dollar equivalent)	Her Majesty's Revenue & Customs Official Statistics on Film, High-End Television, and Animation Tax Relief	-14.4	100.0	6.9
Annual Change in Aggregate Canadian Federal, Ontario (sum of Computer Animation and Special Effects Tax Credit and Production Services Tax Credit) and British Columbia Spending (percentage point change in constant US dollar equivalent)	Canada Revenue Agency; Ontario Ministry of Finance and Ontario Media Development Corporation; British Columbia Ministry of Finance	-21.7	150.5	19.2
Annual Change in US Nonfarm Employment (percentage points)	US Bureau of Labor Statistics	-4.3	3.1	1.1

Note: N = 26 (one observation per variable for each year from 1991 through 2016)

stance, the elasticity of motion picture and video production employment to the FPTC was approximately 0.09, meaning that a one percentage-point increase in annual FPTC allocation increased employment in that occupational category by just 0.09 percentage-points the same

**Table 3. Impact of Motion Picture Industry Tax Incentives on Relevant Occupational Categories in California, 1991–2016**

	Motion Picture and Video Production		Motion Picture & Video Industries		Motion Picture and Sound Recording	
	B/SE	Sig	B/SE	Sig	B/SE	Sig
<b>Explanatory Variables</b>						
Change in California FPTC Allocation	0.091 (0.027)	***	0.039 (0.015)	**	0.038 (0.015)	**
Change in Other US States' Incentive Spending	0.029 (0.008)	***	0.010 (0.013)		0.009 (0.012)	
Change in Federal Domestic Production Incentive Spending	-0.082 (0.023)	***	-0.010 (0.021)		-0.008 (0.020)	
Change in Motion Picture Incentive Spending in the UK	0.152 (0.053)	**	0.044 (0.037)		0.035 (0.035)	
Change in Motion Picture Incentive Spending in Canada	-0.013 (0.026)		-0.011 (0.028)		-0.008 (0.027)	
<b>Control</b>						
Change in US National Nonfarm Employment	2.120 (0.721)	***	1.389 (0.698)	*	1.463 (0.669)	**
<b>Model Information</b>						
Constant	7.586	***	3.831		3.139	
N (Number of Years)	26		26		26	
Durbin-Watson statistic	2.209		1.933		1.918	
F statistic	12.19	***	7.16	***	7.37	***
R-squared	0.753		0.435		0.444	

Notes: Cell entries are Prais-Winsten regression coefficients; numbers in parenthesis are semi-robust standard errors; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

year. Elasticities for the other occupational categories were about 0.04 each. Motion picture industry employment in California thus appears nearly inelastic with respect to the FPTC.

The federal tax credit coefficient is statistically-significant in one model and, although negative, small in magnitude. The federal incentive was not limited to California-based productions, but given the industry's strong presence in the state at least some positive employment effects could reasonably be expected. This finding suggests otherwise for California but cannot necessarily be extrapolated to other states.

In stark contrast to the runaway production narrative, none of the models suggest that California employment was reduced by expenditures on competing incentives.<sup>17</sup> None of the related coefficients are statistically-significant in the motion picture and video industries model nor are they significant in the motion picture and sound recording model. But coeffi-

<sup>17</sup> This finding was robust to disaggregating Canadian incentive expenditures.

cients for expenditures by other US states, by the United Kingdom, and by Canadian governments are positive and statistically-significant in the motion picture and video production model, showing California may have gained employment in that occupational category because of competing incentives. Yet each coefficient's magnitudes suggest another inelastic employment response.

Instead of being driven by tax incentives, each model suggests that motion picture industry employment in California rose and fell with the national labor market. Indeed, the same pattern is reflected in each set of results: when national nonfarm employment grew, so did motion picture industry employment in California, and when the former declined, so did the latter. The results further show that changes to motion picture industry employment were elastic with respect to the national labor market. For example, a one percentage-point gain (or loss) in national employment was associated with a 2.12 percentage-point gain (or loss) on average in motion picture and video production employment. A similar elasticity exists for the other occupational categories.

## **Robustness and Sensitivity**

### **Alternate Outcome and Explanatory Variables**

As an initial sensitivity check, each of the models reported in Table 3 was re-estimated using annual constant dollar changes in FPTC allocation and competing incentive expenditures. The findings reported in Table 3 largely remained.<sup>18</sup> Those findings remained when each model was re-estimated with total annual constant dollar amounts for FPTC allocation and competing incentive expenditures rather than the annual change. The findings reported in Table 3 are therefore not an artifact of how those models operationalized tax incentive spending.

Each of the models reported in Table 3 was also re-estimated to include three additional explanatory variables potentially linked to motion picture industry employment in California: the number of films released annually, as reported by [boxofficemojo.com](http://boxofficemojo.com), the annual change in box office receipts, also as reported by [boxofficemojo.com](http://boxofficemojo.com), and changes to the size of the motion picture industry's economic output, as reported by the Bureau of Economic Analysis. In the alternative models, none of these variables had a statistically-significant effect on motion picture industry employment in California. This finding was robust to using time-lagged values of the number of films released annually and the annual change in box office receipts.

### **The Effect of Time-lagging Tax Incentive Expenditures**

The motion picture industry is more adroit than others and employment responses driven by tax incentives conceivably materialize relatively quickly. It is possible, however, that a delay exists between incentive availability and employment changes. To investigate that possibility, each of the models reported in Table 3 was re-estimated with a one-year lag in

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<sup>18</sup> For example, in the motion picture and video production model, the coefficient for FPTC allocation constant dollar change was 0.064 ( $p = 0.018$ ). Coefficients for constant dollar change in competing incentives lost statistical significance. The coefficient for national employment growth remained positive and significant.

FPTC allocation change and one-year lags in competing incentive expenditures.<sup>19</sup> Results are reported in Table 4.

These models confirm the finding that motion picture industry employment was nearly inelastic to lagged changes in FPTC allocation and competing incentive expenditures. The negative coefficients for FPTC allocation changes suggest negative employment impacts, but given those coefficients' magnitudes, the substantive impact can be interpreted as insignificant. Coefficients for competing incentive expenditures show insignificant employment effects in all three models.

### **The Effect of a Different Timeframe**

As an alternative to analyzing all available data (i.e., data from 1991 through 2016), it may be prudent to focus only on the subset of years for which motion picture industry employment in California encountered at least some pressure from competing incentives. This approach narrows the timeframe to 1997 through 2016 and examines only those years for which competing incentives spread and their expenditures grew. Truncating the timeframe effectively eliminates any concern that the results reported in Table 3 were diluted by inclusion of data from years in which competing incentives were a nonfactor. Results are reported in Table 5.

The truncated timeframe models echo the finding that motion picture industry employment in California was nearly inelastic to changes in FPTC allocation and competing incentive expenditures. The models also reiterate the finding that employment changes in California were linked to the national labor market.

### **The Impact of High-Spending Competitor States**

The results presented in Table 3, Table 4, and Table 5 controlled for collective expenditures on competing incentives. It is conceivable that this aggregate measure masks the impact of a specific high-spending competitor by pooling that competitor with all other states. To investigate that possibility, expenditures by each of the five highest-spending states were separated from the aggregated national data. Those five states—New York, Louisiana, Georgia, Connecticut, and Massachusetts—have spent a combined \$7.83 billion on motion picture industry incentives since 1997, representing 65 percent of expenditures across all states. The annual percentage-point change in expenditures for each of those states was tested for their independent effect on motion picture industry employment in California. Summarized results are reported in Table 6. In the interest of conserving space, only relevant coefficients for the motion picture and video production model are included.

These models offer no evidence to suggest that incentive expenditures in New York, Louisiana, Connecticut, or Massachusetts had a statistically-significant impact on motion picture industry employment in California. Georgia's coefficient is positive, suggestive of employment gains, but the magnitude is such that the concrete impact was negligible. Coef-

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<sup>19</sup> By using lagged rather than current-year values these models capture employment changes in 2017, which were excluded from the models reported in Table 3, but results were robust to limiting the timeframe to 2016.

**Table 4. Impact of Motion Picture Industry Tax Incentives on Relevant Occupational Categories in California, 1991–2017, with Time-Lags**

	Motion Picture and Video Production		Motion Picture and Video Production		Motion Picture and Video Production	
	B/SE	Sig	B/SE	Sig	B/SE	Sig
Explanatory Variables						
Change in California FPTC Allocation	-0.050 (0.020)	**	-0.057 (0.017)	***	-0.058 (0.017)	***
Change in Other US States' Incentive Spending	0.001 (0.014)		-0.004 (0.815)		-0.004 (0.016)	
Change in Federal Domestic Production Incentive Spending	-0.049 (0.020)	**	-0.031 (0.013)	**	-0.030 (0.012)	**
Change in Motion Picture Incentive Spending in the UK	0.012 (0.055)		-0.019 (0.038)		-0.019 (0.036)	
Change in Motion Picture Incentive Spending in Canada	-0.013 (0.037)		-0.008 (0.045)		-0.001 (0.045)	
Control						
Change in US National Nonfarm Employment	1.824 (1.224)		1.609 (1.121)		1.660 (1.045)	
Model Information						
Constant	5.864		2.456		1.960	
N (Number of Years)	27		27		27	
Durbin-Watson statistic	2.101		1.851		1.821	
F statistic	7.15	***	7.16	***	7.76	***
R-squared	0.436		0.435		0.462	

Notes: Cell entries are Prais-Winsten regression coefficients; numbers in parenthesis are semi-robust standard errors; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

ficients for changes in FPTC allocation and spending by other states (excluding each respective high-spender) remain statistically-significant but small in magnitude, again repeating the finding of nearly inelastic employment responses. Across the board, the most substantive and consistent finding is that motion picture industry employment in California rises and falls with the national labor market.<sup>20</sup>

<sup>20</sup> This finding was generally robust to inclusion of time lagged values. The only major difference is that when lagged values are included, coefficients for other US states' incentive expenditures lose statistical significance.

**Table 5. Impact of Motion Picture Industry Tax Incentives on Relevant Occupational Categories in California, Truncated Timeframe (1997–2016)**

	Motion Picture and Video Production		Motion Picture and Video Industries		Motion Picture and Sound Recording	
	B/SE	Sig	B/SE	Sig	B/SE	Sig
Explanatory Variables						
Change in California FPTC Allocation	0.094 (0.023)	***	0.074 (0.019)	***	0.080 (0.018)	***
Change in Other US States' Incentive Spending	0.029 (0.005)	***	0.022 (0.005)	***	0.021 (0.005)	***
Change in Federal Domestic Production Incentive Spending	-0.078 (0.025)	**	-0.060 (0.020)	**	-0.063 (0.019)	***
Change in Motion Picture Incentive Spending in the UK	0.125 (0.039)	***	0.102 (0.036)	**	0.100 (0.034)	**
Change in Motion Picture Incentive Spending in Canada	0.057 (0.024)	**	0.025 (0.029)		0.028 (0.028)	
Control						
Change in US National Nonfarm Employment	1.717 (0.454)	***	1.408 (0.528)	**	1.670 (0.538)	**
Model Information						
Constant	-5.837		-4.102		-4.891	***
N (Number of Years)	20		20		20	
Durbin-Watson statistic	2.693		1.890		1.852	
F statistic	19.33	***	20.70	***	23.16	***
R-squared	0.886		0.819		0.834	

Notes: Cell entries are Prais-Winsten regression coefficients; numbers in parenthesis are semi-robust standard errors; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

## Discussion and Conclusions

This study sought to determine if the FPTC had a positive impact on motion picture industry employment in California, as supporters claim, or if there was no evidence to that effect, as most independent studies of comparable incentives conclude. Three findings were consistent across several empirical models that assessed annual changes to three industry-related occupational categories from 1991 through 2016. First, there is no evidence to suggest that the FPTC had a substantial effect on motion picture industry employment in California. Second, there is no evidence to suggest that expenditures on competing incentives offered by other governments influenced employment levels in California.<sup>21</sup> And third, there is strong evidence that employment gains and losses are instead shaped by gains and losses in the national labor market.

<sup>21</sup> Put another way, there is no empirical evidence to support the runaway production narrative and its purportedly negative impact on California employment, a point taken for granted in some academic papers that recommend policy responses including tax incentives (e.g., Ferguson 2005).

**Table 6. Impact of Motion Picture Industry Tax Incentives on Motion Picture and Video Production Employment in California, Selected States, 1991–2016**

	High-Spending State									
	New York		Louisiana		Georgia		Connecticut		Massachusetts	
	B/SE	Sig	B/SE	Sig	B/SE	Sig	B/SE	Sig	B/SE	Sig
Change in California FPTC Allocation	0.081 (0.024)	***	0.070 (0.021)	***	0.105 (0.025)	***	0.079 (0.027)	***	0.090 (0.025)	***
Change Individual State's Incentive Spending	-0.004 (0.003)		-0.002 (0.002)		0.043 (0.022)	*	-0.030 (0.534)		0.024 (0.027)	
Change in Other States' Incentive Spending	0.030 (0.009)	***	0.023 (0.006)	***	0.033 (0.008)	***	0.027 (0.009)	***	0.029 (0.009)	***
Change in National Nonfarm Employment	1.988 (0.766)	**	1.634 (0.705)	**	2.514 (0.723)	***	2.229 (0.840)	**	1.829 (0.839)	**
F statistic	78.72	***	99.06	***	25.11	***	12.79	***	14.40	***
R-squared	0.731		0.712		0.787		0.737		0.754	

Notes: Cell entries are Prais-Winsten regression coefficients; numbers in parenthesis are semi-robust standard errors; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

Despite over \$1.1 billion in tax credit allocations and an annual budget of over \$2 million for the CFC, this study shows that California taxpayers have little to show for their investment. This California-specific conclusion aligns with results of motion picture industry tax incentive evaluations conducted by several other states (see Table 1). This conclusion also aligns with information reported in a California Legislative Analyst's Office evaluation of Program 1.0, which determined that the FPTC's overall cost exceeded the tax revenues generated by production activities the tax credit allegedly incentivizes. That particular evaluation estimated that the FPTC will result in a net loss to California's general fund of around \$100 million in 2018–2019 alone, an estimate that does not reflect the legislature's subsequent decision to triple funding. Therefore, it is likely that the net loss to taxpayers has since grown, especially if the funding increase under Program 2.0 has failed to yield sustained employment gains (see Figure 1).

If California taxpayers are “losing” on the FPTC, it is natural to wonder who or what is “winning.” The answer to that question is the motion picture industry which, thanks to the California legislature, receives an annual subsidy of up to \$330 million. Using generous assumptions, the California Legislative Analyst's Office evaluation of Program 1.0 estimated that about one-third of film and television productions that received FPTC funding would have located in California anyway. For those productions, the FPTC was and continues to be a significant windfall. For any production, the FPTC reduces effective labor costs and allows the production to allocate the savings to expenses that do not qualify for the incentive. In other

words, the FPTC may indirectly subsidize nonqualified expenses despite legislative and CFC efforts to the contrary.

It is also natural to wonder how a corporate tax incentive like the FPTC is created and sustained despite questionable efficacy. Public policies like the FPTC are often created because other governments have previously enacted a similar policy. Motion picture industry tax incentives diffused quickly because of bandwagon effects (Leiser 2017, Thom and An 2017), in part because policymakers interpret a policy's popularity as evidence of value (Maor 2012). Elected officials and bureaucrats also tend to rely on analyses that support their decision and conform to their underlying ideologies, even if the analyses are flawed and are sourced from special interest groups (Boswell 2009). Indeed, interest groups fund research that inevitably find tax credits like the FPTC are good for the economy and then work to ensure that those studies reach policymakers, confusing efforts to determine true programmatic impact. The Motion Picture Association of America also has a record of publicly attacking authors of studies critical of tax incentives that the organization lobbies for.<sup>22</sup> In 2016, the organization criticized a study by Thom (2016) and accused the author of "academic malpractice" alleging, in a press release, that the study was not peer-reviewed—even though it was—and that the study failed to control for state tax incentive spending—even though it did. Summarizing targeted incentive programs, Buss (1999) wrote that they are "based on poor data, unsound social science methods, and faulty economic reasoning" and are "largely a political activity."

Tax incentives like the FPTC are difficult to repeal because those made better off (e.g., the motion picture industry, interest groups, labor unions, and employees of the CFC) are concentrated and lobby for continuation. Consider the number of vested interests created by the FPTC, all of whom benefit directly and have no reason to jeopardize the status quo. No CFC employee has any reason to criticize the agency or the tax credit it administers, nor do they have any incentive to seek out rigorous evaluations of their own performance. More fundamentally, the CFC's leadership has associations with the motion picture industry that may reduce their ability to consistently act in taxpayers' best interest. The CFC's current executive director, deputy director, and program director are all former producers. Two of those three are members of the Producers Guild of America, an interest group that lobbied in favor of the FPTC. As of July 2017, the CFC website lists three openings for positions related to tax credit administration.

Brief descriptions for all three positions are consistent on one point: applicants must have experience in the motion picture industry. One wonders if the public would be comfortable with that many oil or banking alumni overseeing subsidies for their respective industries.

At the same time, those made worse off by the FPTC (e.g., taxpayers) are relatively decentralized and feel little direct impact. This creates a structural imbalance of political power that strongly favors incentive continuation over repeal. Amid that imbalance, taxpayers that oppose the FPTC should not expect much help from the state legislature. Most legislators are on record supporting the incentive; some have even used their support as a campaign talking point. Political science tells us that policymakers avoid turning a critical eye on policies they once supported (de Leon 1978) and that they perceive as providing for constituents' liveli-

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<sup>22</sup> See Joseph Henchman, "Motion Picture Association Attacks Tax Foundation Critique of Film Tax Subsidies," available at <https://taxfoundation.org/motion-picture-association-attacks-tax-foundation-critique-film-tax-subsidies-2/>, and "Motion Picture Association Fails to Discredit Damaging Film Tax Credit Study," available at <https://taxfoundation.org/motion-picture-association-fails-refute-damaging-film-tax-credit-study/>.

hoods (Bardach 1976). Shifting positions may also raise questions of policymakers' competence in the minds of voters, thereby reducing their electoral chances (Durr 2001).

Taken together, the political deck is stacked against taxpayers once corporate tax incentives like the FPTC are authorized. The power imbalance only grows the longer the incentive is in place and vested interests multiply. With any luck, this study and others like it will reach California policymakers, who should consider implementing the following recommendations.

First, both a performance audit of the CFC and financial audit of all funds paid under the FPTC are long overdue and should be executed as soon as possible. The California State Auditor has never examined the CFC or the FPTC. The auditor's closest effort was a 2016 report on statewide corporate tax incentives which remarked—without supporting evidence—that the FPTC “appear(ed) to be fulfilling” its purpose. It should be noted that the California Legislative Analyst's Office evaluation of Program 1.0 found that under current procedures, the Franchise Tax Board cannot easily share information on FPTC compliance with the Board of Equalization and, in the Office's estimation, “it is unclear to us how well the state can ascertain that credits are not being claimed more than once.”

Second and most importantly, the FPTC should be repealed as soon as possible. There is simply no evidence that the tax incentive has had a positive, sustained impact on motion picture industry employment in California. Employment instead rises and falls with the national labor market. Motion pictures may be described as California's flagship industry, but any resident knows the state also has flagship problems. Those include, but are far from limited to, earthquake preparedness deficiencies, subpar water infrastructure, looming pension liabilities, and a rising transient population. Taxpayers' \$1.1 billion investment in the motion picture industry would almost certainly have been better spent on solving those problems. Perhaps in the future it will be.

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