Growing an Industrial Cluster?: Movie Production Incentives and State Film Industries

GROWING AN INDUSTRIAL CLUSTER?:

MOVIE PRODUCTION INCENTIVES AND STATE FILM INDUSTRIES

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GROWING AN INDUSTRIAL CLUSTER?:

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To Mom, Randy and Paula, for always being there for me

To Kate, who never stopped believing in me

To Candy, without whom I may never have finished this thing

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SUMMARY

After witnessing the success of Canadian strategies to attract U.S. film production in the 1990s, states and localities began offering financial incentives in an effort to lure film and video production away from their traditional hubs in California and New York (Christopherson & Rightor, 2010). This effort increased dramatically in the 2000s, both in scope and in scale. Production activity can now locate in states offering rebates of up to 40 percent of costs, even if this exceeds their actual tax bills, and all but a handful of states offer some form of tax incentives (Christopherson & Rightor, 2010; Katz & Rosenthal, 2006; National Conference of State Legislatures, 2011; Vock, 2008). While some states may be reducing incentive packages in the current climate of fiscal austerity, others are doubling down on that strategy as an effort to stimulate job growth and increased economic activity. And while most states tout many successes from these programs in both metrics, the question of whether such policies promote long-term sustainable economic development has not been fully answered.

First I use theoretical literature to construct a model of sustainable industrial development. I will then test this model using a variety of methods and data sets at the national, and state and county levels. In the following two analytical chapters, I will evaluate the impacts of incentives on state-level employment and firm growth, followed by an assessment of the economic effects of incentives in one such state: Georgia. By using this variety of approaches and units of analysis, I hope to shed light on both the macro- and micro-level impacts such incentives have on the industrial economic development of states.

In the first study, I use data from the County Business Patterns (CBP) over the years 2002-2013 to view changes in economic activity by state by the level of incentives offered. Using panel

data for industry employment, establishment and occupational employment, I use a fixed and random effects regression models to view the relationship between the presence of incentives and the levels of employment and firms in the film industry of each state.

Next, I use Georgia as a case study with which to evaluate the degree to which financial incentives for the motion picture industry can create a sustainable network of local firms and workers. I test these theories by using confidential QCEW data to analyze establishment-level activity and relative locations.

The results neither completely confirm nor disprove the hypothesis that attracting mobile productions with state tax incentives can establish a nascent industry and generate long-term employment in a region. However, there is some evidence that the number of years the MPIs are in effect does have a positive impact, especially on establishments and occupations. Additionally, the states' climate and transportation access relative to Los Angeles and other locations are important factors in building a local industry.

CHAPTER 1 INTRODUCTION

This document is a dissertation consisting of two related studies on the industrial impacts of motion picture tax incentives. Each has its own research questions and hypotheses, and represents a unique methodological approach and scale of inquiry. They are unified, however, in developing a multifaceted understanding of the use of movie production incentives (MPIs) by U.S. states and their impacts on developing a film industry cluster within their jurisdictions.

1.1 Entertainment Clusters and the Movie Production Incentive

Much attention has been given to the attraction of film and other entertainment industrial clusters as a means to local economic development. To this end, policymakers at the state and local level have used traditional and non-traditional attraction strategies, including most significantly, tax credits and other financial incentives (Christopherson & Rightor, 2010; Markusen & Nesse, 2007).

Understanding the efficacy of such strategies is especially important in the current climate of fiscal constraints on state and local governments. In Georgia alone, according to a recent report by the Georgia State University Fiscal Research Center, the incentives are estimated to reduce revenues by as much as $89 million by Fiscal Year 2012 (Fiscal Research Center, 2010). The two studies that follow will seek to describe and evaluate movie production incentives and their impact on the growth and concentration of the motion picture industry in the U.S.

1.2 Problem Statement and Research Questions

The studies to be included in this dissertation all seek to explore a few fundamental questions, in addition to questions unique to each essay. At the broadest level I wish to address the question of whether industry incentives are effective in creating and growing an industry cluster. There is a large body of literature on this question developed over the last twenty years, but the results have been less than conclusive, and such incentives continue to be widely used by policymakers at the state and local level. I am particularly interested in the impact of incentives on building a *sustainable* industry, meaning one that can be weaned off of the support of public subsidies in a reasonable amount of time. This question has received somewhat less attention, and I hope to add to that body of literature.

Secondarily, I hope to shed some light on the impacts of incentives on specific types of industries, especially creative industries. The creative industries have been the target of many economic development efforts in recent years, and the targeted recipient of a recent resurgence in industry incentives at the state level. These industries have unique features that may suggest that incentives might work differently for them than for other sectors such as manufacturing. I hope to parse out the similarities and differences between the impacts of incentives on creative industries relative to other industries, and how those differences might change the effectiveness of public assistance. Using the film and televising industries as an example, the key differences I will explore are 1) the unique labor organization of creative industries, 2) the project-based production process, 3) the especially footloose" nature of creative production, and the need for specialized infrastructure.

I will further consider questions about the scope and scale of state incentives for the film industry, the effectiveness of incentives when states are competing for the same industries, and importance of social networks in the development of a targeted creative industry cluster.

1.3 The Organization of this Dissertation

The following is a brief description of each major section of this dissertation.

1.3.1 Theoretical Foundation and Literature

The theoretical foundation for the essays is set in the broader literature around the mechanisms for economic development policies. I will consider the existing theoretical approaches, and attempt to develop a theoretical model specific to the creative industries.

Three theoretical frameworks—growth-pole/cumulative causation theory, product cycle theory, and entrepreneurship theory—inform the concept of industrial clusters and the stages of economic development for which it might be utilized. A combination of these traditional and modern theories of regional economic development have been used to justify attraction policies such as tax credits and infrastructure development, which suggest a "stage theory" of industry development in which these policies eventually lead to a self-sustaining competitive industry cluster (Christopherson & Rightor, 2010).

Another important theoretical foundation for my work is found in the social networks literature. I will explore this theory in particular in my third essay, and it will serve as a critical part of the theory I am developing on the growth of creative industries.

I will then review the literature important to the general questions to be addressed in this dissertation. The areas of literature to be discussed will be that of general industry incentives, industrial clusters and regional development, the organization and development of the motion picture industry, and the effectiveness of motion picture incentives specifically. And finally, I will outline a theory on the growth and sustainability of creative industries, show the logic model with which it might function, and the ways it can be tested.

1.3.2 National overview

The first of the two studies will investigate the scale and scope of MPIs in the national context. In it I will seek to identify the types of MPIs used by states since they first came to prominence in the early 2000s, and to show the changing economic geography of the industry during that period.

1.3.3 State-level sustainability

The second study will take an in-depth look at a single state, Georgia, and how its indigenous film cluster has developed since MPIs were introduced in 2005. For this essay I will be especially interested in looking at the six criteria put forth by Christopherson and Rightor (2010) as necessary for the development of a local industry using a combination of standardized census data, Bureau of Labor Statistics Covered Employment Where Wages (CEW) data, and data collected from IMDb Pro (IMDb Pro, 2011), the subscriber version of the popular movie information service, and the *Georgia Film, Video & Digital Entertainment Sourcebook (Georgia Department of Economic Development, 2012)*.

1.3.4 Conclusions

Finally, I will use the findings from the two studies to evaluate the national picture outlined in the first study. Then I will use this analysis to discuss the key policy implications that these findings suggest, as well as the possibilities for future research.

CHAPTER 2 THEORETICAL FOUNDATION AND LITERATURE

The theoretical basis for these attraction strategies brings together components of several traditional and more contemporary theories of regional economic development: *location* theories (comprised themselves of *growth-pole* and *cumulative causation* theories), the *product-cycle theory*, and *entrepreneurship* theories (Blakely & Leigh, 2009; Malizia & Feser, 1999), with the relatively recent social network theory of economic development.

In attempting to evaluate the effectiveness of MPIs, I bring together three streams of literature. First, I consider the literature on industry incentives in general, especially those dealing with tax incentives, which attempt to evaluate their effect on industry location decisions, employment growth, economic welfare and efficiency. Second, I look at the literature around the analysis of industry clusters and their role in regional economic development. And finally, I bring these two together with the literature on the unique nature of the motion picture industry.

The cumulative causation and entrepreneurship theories explain how regions can gain a competitive advantage in economic development, while the growth-pole and product-cycle theories focus on the specific industries targeted. The competitive advantage in this case derives from combining an entrepreneurial environment with increased agglomeration within the industry sector.[1] Entertainment industries are considered here because they are growing industries with innovative products. I will focus here on only the theories related to regional advantage.

These theories conclude, therefore, that attracting entertainment industries will lead to sustainable long-term employment growth. One challenge unique to these industries, however, is the

[1] For a more detailed explication of these theories, see Malizia & Feser (1999) and Blakely & Leigh (2009, pp. 76-98)

mobile nature of film and entertainment production. This mobility leads to both short-term projects spending and fierce competition between state and municipal entities. One theory as to why financial incentives work, despite this mobility, is that local networks of qualified workers are built up over time, and become an attracting force for more production (Christopherson & Rightor, 2010; Weinstein & Clower, 2000). These local networks attract production in two ways: by offering mobile productions a qualified, stable crew base that doesn't need to be imported to the production site, and by creating contacts leading to bringing and basing production in the area. In the following section, I will briefly describe each or these theories, and why none fully explain the phenomena of entertainment industry-based economic growth. By exploring the social network theory more closely I hope to pull together these various strains of theory into a single cohesive of development for creative industries.

2.1 Economic Development Theories

2.1.1 Growth-Pole and Cumulative Causation Theories

Growth-pole and cumulative causation theories both share the common component of spatial disparity in economic development, though the mechanism behind such disparities differs somewhat. The rationale for growth-pole theory is based in four strategies: a focus on specific locations in limited periods of time, a limited number of such locations, selectivity among spaces based on pre-ordained criteria, and the modification of the spatial structure of both labor and the population (Parr, 1999). In contrast, the logic behind cumulative causation based on the endogeneity of technology to growth and the dynamic externalities associated with that growth, including specialization, diversity, and knowledge spillovers (Choi, 2003). Areas that are successful in attracting capital because of some competitive advantage tend to draw human and physical capital from less-advantaged areas,

leading to increased inequality between these locations (Blakely & Leigh, 2009). This creates a self-reinforcing cycle, as advantaged areas gain and disadvantaged areas lose in the competition for capital. These advantages also contribute to innovation, and ultimately, more economic growth.

2.1.2 Product Cycle Theory and Entrepreneurship Theory

The product cycle theory of economic development, sometimes referred to as *industrial filtering* (Blair & Premus, 1993) focuses on the outputs of the industries of interest. The theory is relatively straightforward, in that growth is a direct result of innovation, therefore policy to encourage innovation, especially in early-stage products in growth industries, is where the value proposition is found (Blakely & Leigh, 2009). New products require highly skilled entrepreneurs and designers, constant market feedback and flexible production facilities, all of which lead to locations providing this mix of resources and risk minimization (Goldstein & Luger, 1993). Markusen and McCurdy point out, however, that innovation alone is insufficient for growth (1989). In their case study of the defense industry in Chicago, they demonstrate that other factors, most notably the lack of a critical mass for specialized firms and labor, have caused policies designed to attract such industries to fail.

Finally, the entrepreneurship theory relates to these theories, especially the product cycle theory, because an environment attractive to entrepreneurship is considered necessary for innovation (Goldstein & Luger, 1993; Malizia & Feser, 1999). Therefore, communities are encouraged to create conditions leading to a critical mass of entrepreneurs, and that these entrepreneurial ventures can survive through their early stages to become viable enterprises in the long run (Goldstein & Luger, 1993). Space is an important factor here, because firms whose networks are beyond the metropolitan region, the tendency for leakage is greatly increased (Goldstein & Luger, 1993). Locations can enact

policies which create and/or strengthen "knowledge networks" that will in turn attract more entrepreneurs to that locality (Blakely & Leigh, 2009).

2.2 Industry clusters and regional development

Michael Porter, largely acknowledged as the originator of the concept of industrial clusters, defined them as a geographic concentration of related firms, suppliers, customers, and supporting institutions that both compete and cooperate (Blair & Carroll, 2009; Motoyama, 2008; Porter, 1998). These firms gain competitive advantage precisely because of their colocation based on agglomeration effects, industrial complex effects, and social network effects (McCann, 2009)[2]. This theory has led to cluster-based economic development (CBED), which uses the competitive advantage industrial clusters represent to develop a pro-active strategy for attracting and growing competitive industrial clusters (Blair & Carroll, 2009). One problem with this approach, however, is that it uses existing clusters as models, and these are often already located in economically advantaged areas, making replication without detailed comparative analysis difficult if not highly unlikely (Perry, 2009). Other issues with CBED are the lack of explanatory data for how clusters form (i.e., go from a smattering of similar firms to being a functioning cluster), at least some of the advantages of clusters conflict with each other (e.g., competing clusters can diminish the competitive advantages of each), and it doesn't allow for the majority of industries for whom cluster development seems unnecessary (Perry, 2009).

Cluster-based economic development has led to industry targeting, which Voytek and Ledebur point out can be problematic as well. They note that we still know too little about location decisions for non-manufacturing sectors for CBED to work, about how to integrate this strategy into

[2] This section was largely based on three summaries of cluster theory by Blair (Blair & Carroll, 2009), McCann (2009), Motoyama (2008), and Perry (2009).

comprehensive economic development plans, the techniques to use one targeted industries are identified, nor the expertise, talent, experience and knowledge to implement effective targeting strategies (Voytek & Ledebur, 1997). Others argue that targeting is still beneficial despite these limitations (Iannone, 1997).

2.3 Social Networks, Social Capital, and their Roles in Creative Industries

The theories outlined above, when taken together, suggest the importance of colocation of related firms and industries in a centralized space. The relationships between these firms create a "stickiness" or "embeddedness" that may contribute to resilience and long-term sustainable growth (Malizia & Feser, 1999). In the next section, I look at how networks of firms and individuals might affect the success of the local economy, and the mechanisms by which this might play out.

2.3.1 Social Networks and the Social Capital Theory

The concept and analysis of social networks comes from the sociology literature, where the social capital theory was largely developed by Bourdieu, Jacobs, and others, and more recently expanded by Granovetter, Coleman, Putnam and others (Woolcock, 1998).

These theories from sociology were applied to economic theory by Granovetter (1973, 1983, 1985), and later by Florida (Florida, 2012), to suggest the relationship between social capital, social networks, and economic growth . Because of this relationship, both firm and individual networks are increasingly important for development, as specialized labor and increasingly contingent labor arrangements require workers and firms to maintain connections in the region.

Coleman and Granovetter connected social capital to human capital (Coleman, 1988; Granovetter, 1985). Social connections play an important role in the development of human capital both in direct ways, through family and other social networks specifically, and more generally

through association of others who have benefitted from such social capital (Coleman, 1988). But the relationship is not as clear-cut as some have argued. Granovetter posits that the embeddedness associated with high levels of social capital can have both positive and negative effects on the economic relations (Granovetter, 1985). And while *weak* ties can aid in the development of human capital, too many *strong* ties may actually hinder such development due to the inherently limited and homogeneous nature of the latter (Granovetter, 1973, 1983).

Extending this connection to firms, networks can take the form of industrial clusters. But unlike the more neo-classical types of clustering that is based on crude agglomeration or a model of the industrial complex, social networks of firms and individuals characterize a form of clustering based more on trust than impersonal, or *arm's length,* market interactions (Gordon & McCann, 2000). This informality based in trust then creates an environment in which innovation and efficiency can flourish, and regional competitiveness increase (Malecki, 2002; Uzzi, 1997). Uzzi used this social network analysis to evaluate the competitiveness of the garment industry in New York (Uzzi, 1996). Using metrics such as first- and second-order network coupling, network size and centrality, and membership in business organizations, he found that the most competitive firms were those with an integrated network of embedded and arm's length ties. However, this may not hold true in practice, where large firms may squelch innovation and crowd out small firms in a competition for resources (Christopherson & Clark, 2007a, 2007b).

2.4 Industry Location Incentives

State and local governments have a long history of using government policies to lure businesses to their jurisdictions, but the rapid proliferation of such policies since in the last thirty years has led to an increase in interregional competition that some have termed a "new war between the states" (Buss, 2001; Holmes, 1995; Ledebur & Woodward, 1990; LeRoy, 2007). However, while

these policies have been popular among policymakers and voters as potential job creators (Buss, 2001; Holmes, 1995; Markusen & Nesse, 2007; Rolnick, 2007), some economists and urban planners have been skeptical of their efficacy and efficiency (Holmes, 1995; Markusen & Nesse, 2007; Rolnick, 2007). Tax incentives have been a particularly popular tool for economic development in recent years, especially after the passage of the North American Free Trade Agreement and other national policies that have forced states to become even more aggressive in competing for business (Buss, 2001).

Economists generally have evaluated tax incentives using three criteria: fiscal and economic impacts, location efficiency, and tax equity. Most studies of industry tax incentives have focused on the first criterion. Fiscal and economic impacts are related, and though the relationship is complex, one would generally expect the two to move in the same direction in response to government incentives to specific businesses or industries. In other words, positive economic impacts would be expected lead to positive fiscal impacts and vice versa, since as business revenues rise, tax revenues would rise as well.

This renewed interest in supply-side attraction strategies is surprising, however, given the evolution of economic development tools leading up to it. Ted Bradshaw and Edward Blakely wrote of a "third wave" of economic development policies (Bradshaw & Blakely, 1999). The first wave emphasized direct payments to firms to attract them to the region. The second wave focused on developing existing local firms and entrepreneurship, and the third wave emphasizes the importance of creating a "supportive economic development marketplace." (Bradshaw & Blakely, 1999, p. 230). Fitzgerald and Leigh (Fitzgerald & Leigh, 2002) described a similar evolution, and the two were later merged by Blakely and Leigh (2009). So, what has created this seeming reversal of a decades-long trend? The final of the combined five phases of economic development strategies described by Blakely and Leigh is then criticized by the authors, because the reliance of market solutions based on

industrial clusters, especially in key growth industries, can lead to concerns about sustainability and equity (Blakely & Leigh, 2009).

2.4.1 Hysteresis and the labor market growth

If the goal of incentives is to increase employment in the long-run, can this be achieved by the short-term employment gains that most incentives offer? According to Bartik, the answer is yes (1991, pp. 11-12). Economists borrowed the term *hysteresis*[3] from the natural sciences to describe this phenomenon, and Bartik showed that it seemed to fit. According to his research, a one-time impact on the employment rate had effects rippling out for at least eight years following, affecting unemployment rates, labor force participation, and upgrades in occupational status. But while such incentives can have positive long-term effects, he later cautions against overestimating these gains and allowing business interests dominate in the debate on incentive policies (Bartik, 2007). The empirical evidence on the efficacy of local incentives remains mixed, however, and seems to suggest relatively modest gains in some specific situations (Hissong, 2003).

2.4.2 Critiques of Incentives

Fiscal and economic impacts are not the only criteria on which economic development incentive programs have been judged. As incentive programs aimed at certain firms have morphed into programs to develop industrial clusters, several key criticisms remain. In particular, I wish to highlight concerns about location efficiency, rent-seeking behavior, opportunity costs and tax inequality.

[3] In the natural sciences, the term refers to magnetic and elastic properties of certain materials, and is typically used in economics to refer to a change in equilibrium after an economic shock such as a major recession (Martin, 2012).

2.4.2.1 Location inefficiency

One of the strongest economic arguments is that short-term incentives can't make up for long-run location disadvantages. Many studies have suggested that tax rates and tax incentives represent a low priority for firm location decisions. (Mackay, 1994; Markusen & Nesse, 2007). This is largely because the advantages they represent are small relative to other more important factors in determining the most efficient firm location. This argument suggests one of two outcomes: that if attraction policies are successful in bringing economic activity to inefficient locations, eventually the firm will move to a more efficient location, or at least harm more efficient producers not receiving subsidies (Thomas, 2007); or that incentives can only succeed when the location decision is between equally efficient locations. The former is clearly bad policy for sustained economic growth, but the latter may only succeed if not subjected to other issues, such as rent-seeking behavior, inefficient allocation of public resources, and tax inequality.

2.4.2.2 Rent-seeking behavior and a "race to the bottom"

A major concern of many types of incentive programs is the concern that it encourages rent-seeking behavior, with businesses seeking policy changes that benefit individual firms or industries, rather than the economic gains derived from competition. This concern views rent seeking as assuming a zero-sum game, in which powerful interests simply redistribute existing economic activity rather than creating new wealth (Markusen & Nesse, 2007).

Related to rent seeking is the issue of a "race to the bottom," where jurisdictions merely compete to redistribute existing economic activity from rent-seeking firms and industries by outbidding others while increasingly reducing the long-term tax revenues and economic welfare of each jurisdiction, and ultimately the general welfare (Fisher, 2007; Fisher & Peters, 1997; Markusen & Nesse, 2007; Peters & Fisher, 1995). Models based on the "prisoner's dilemma" and game theory suggest that this may be the case (Holmes, 1995).

2.4.2.3 Opportunity costs

Some critics have pointed out that even seemingly successful incentive programs may replacing policies that could use those same resources to achieve a greater impact on local economic development (Markusen & Nesse, 2007). This common counterfactual argument suggests the importance of considering several possible uses of public funds, and the outcomes likely with each, before choosing one approach. Those who advocate for more sustainable policies might argue that public funds would be better spent on improving the overall business climate of the jurisdiction by focusing on workforce development, infrastructure, and the regulatory regime (Blakely & Bradshaw, 2002; Blakely & Leigh, 2009).

2.4.2.4 Tax inequality

Tax incentives for firms also have distributional effects on tax fairness. Tax incentives shift the tax burden from taxpayers to corporate ownership (Thomas, 2007). In addition, they represent an increasing regressivity in state and local tax systems, as progressive taxes like the income tax has been cut while more regressive taxes such as consumption taxes and fees for government services have been raised (Fisher, 2007).

2.5 Motion Picture Industry Organization

The way creative industries are organized is different from other sectors such as manufacturing or retail. These industries, especially those as complex as the motion picture industry, require many working parts to come together for specific projects that may last anywhere from a few days to a few months, but rarely longer than a year. In addition, projects vary widely in their location depending on exterior scenery requirements. The heavy use of subcontractors and individuals makes existing networks especially important for this project-based, variable-location production scheme.

2.5.1 Networks and Project-based Production in Creative Industries

Flexible specialization, project-based work and contingent labor arrangements are especially important in the film and entertainment industries (Christopherson & Storper, 1989; Storper & Christopherson, 1987). Another related industry in which this is true is the new media industry. A study of new media workers in New York showed that, given the project-based nature of the work and the non-traditional work arrangements of the work force, local social networks were the most important source for employment opportunities (Batt, Christopherson, Rightor, & Van Jaarsveld, 2001). The importance of social networks for project-based production was further substantiated by Neff et al. (Neff, 2005; Neff, Wissinger, & Zukin, 2005). The significance of networks in these industries represents an opportunity for local economic development, since networks are more difficult to move than large firms and footloose production (Batt et al., 2001; Christopherson & Storper, 1989). Finally, it is worth noting that arts and entertainment industry workers tend to, as Batt et al. found with new media workers, co-locate (Currid & Williams, 2010). Florida et al. call this phenomenon "geographies of scope" (Florida, Mellander, & Stolarick, 2009), which they define as "significant, large-scale concentrations of key related skills, inputs and capabilities" (Florida, Mellander, & Stolarick, 2012, p. 198). They found a close spatial connection between many segments of the entertainment industry, though these connections seem to be diminishing over time. Studies in California, Texas and New York seem to confirm the importance of labor and firm networks for the film industry. Christopherson and Storper noted the importance of fairly closed networks in the Southern California film industry, especially given the familial and social contacts necessary to break into Hollywood (1986). When Texas began to target the film industry in the 1990s, they found both dramatic growth and increased competition by other states (Weinstein & Clower, 2000). The authors concluded that only areas capable of maintaining strong human and physical infrastructure could be competitive in the industry. And as recently as 2010, Christopherson

and Rightor suggested that, among other things, New York's comparative advantage in the industry was largely due to the concentration of creative talent located there (2010).

Citing earlier studies of Los Angeles and New York, Christopherson and Rightor identified what they described as six "critical components" for a sustainable film industry. These include

- The presence of the industry decision makers (studio executives, producers, etc.),
- specialized business services such as attorneys, investment bankers, location scouts, and agents,
- smaller service businesses catering to the film industry,
- training and education programs in specialized fields,
- studios and other production, rehearsal, and sound-recording spaces,
- and the research and development that comes from industry-specific events and programs such as trade shows and film festivals (Christopherson & Rightor, 2010, pp. 345-346).

The question is, can locations outside of Los Angeles and New York create and sustain these components, and thus nurture a competitive, self-sustaining industry cluster?

2.5.2 "Runaway production"

Technology and globalization has made industries in general more "footloose" than they have been previously (Bartik, 2007), but this is especially true in the motion picture industry (Christopherson & Storper, 1989; Lukinbeal, 2004; Scott, 2002; Weinstein & Clower, 2000). The concern about "runaway production" began in the 1980s and 1990s, as vertical disintegration was deconcentrating the power of a few firms (Storper & Christopherson, 1987), while Canada and other locations began seriously competing for film industry production (Lukinbeal, 2004), and this in turn led many states in the U.S. to bid for work which might otherwise go abroad (Christopherson & Rightor, 2010).

Storper and Christopherson found that even as the actual filming moved to other locations, employment and firms in the motion picture industry reconcentrated the Los Angeles area (Storper & Christopherson, 1987), a pattern that has not changed dramatically since (Christopherson &

Rightor, 2010). Some have argued, however, that the "hegemony of Hollywood" may be threatened in global markets, especially as other countries increase their support for indigenous cultural production (Scott, 2002).

The debate about "runway production" has evolved over time, becoming less about major studios controlling production and forcing "independents" to work in established locations, and more about the freedom of producers to shoot wherever they found it most cost-advantageous (Christopherson & Clark, 2007c). The results, as Scott and others have found earlier, has been a continued concentration of the high-wage, high-skilled employment in Los Angeles, while shooting locations increasingly move out based on cost and aesthetic considerations (Christopherson & Clark, 2007c).

2.5.3 Need for specialized infrastructure

As the studies by Storper, Christopherson, Scott and Lukinbeal have suggested, the complex of specialized resources in the Los Angeles region, and to a somewhat lesser extent, in New York City, are a key component in building and reinforcing them as industry centers. But the sheer scale and sexiness of the industry has made it seem possible for other states to get a piece of this lucrative pie. The question is, can these remote film production centers ever become more than just an expansion of the old studio back lot? Obviously, some policymakers believe they can.

The bid for a local film industry is a challenging strategy. Lacking the labor organization so important to Hollywood, which relies on social networks, trade unions and established training institutions such as University of Southern California and UCLA (Storper & Christopherson, 1987), replicating this milieu will be a long and tedious process (Weinstein & Clower, 2000). Or as Christopherson and Rightor pointed out, "Without this infrastructure, a state that subsidizes

footloose film or TV production projects has little chance of building a sustainable local industry." (2010, p. 346)

Hong (2010) developed a series of indices to represent man-made and natural amenities deemed attractive to film industry production. Hong found that man-made infrastructure such as those cited by Christopherson and Rightor (2010) and Weinstein and Clower (2000) had the greatest positive effects on film production, along with the state's tax incentive policies (Hong, 2010).

Murphy et al. expanded on this, interviewing managers in media and computer game companies on the factors affecting their location decisions (2015). They found that so-called "hard" factors such as labor availability, communications infrastructure and agglomeration effects are still primary, "soft" factors—work environment, urban amenities and social/cultural environment—were more important when the "hard" factors were satisfactory across a variety of locations. These "soft" amenities did, however, vary in their importance relative to company size and whether they were foreign or domestic, with "hard" factors being more important in smaller indigenous firms.

2.6 Impacts of the Film Industry and MPIs

Many studies have attempted to value the effectiveness of movie production incentives, and the results have been notably varied. This may be in part because the vast majority has been conducted by or at the behest of industry representatives and/or advocates. Following is a brief summary of several studies, which fall roughly into three categories: general studies, looking at the nation as a whole or several states; state studies, usually done in advance of or following the implementation of MPIs, and academic studies in peer-reviewed journals with no sponsorship by interested parties. My research suggests that this last category represents only a handful among the dozens undertaken.

2.6.1 Previous studies: fiscal & economic impact analyses

2.6.1.1 General summaries

Reports on multiple states tend to represent entrenched interests. Of the four such reports I discovered since 2009, one represented industry interests—the Motion Picture Association of America (MPAA)—while two others represented anti-tax or anti-business research organizations—the Tax Foundation and the Center on Budget and Policy Priorities (CBPP) respectively. The fourth, a report by the National Governors Association, relied heavily on the MPAA report (Motion Picture Association of America, 2009) by as the basis for the economic impact of the motion picture and television industry. Not surprisingly it reported that

> studies have shown that the motion picture industry benefits state and local economies by attracting out-of-state investments; creating high-paying jobs; contributing to the economic and civic vitality of communities; and stimulating cultural tourism. (Pierce, 2008)

The report also cited ten state-level reports, most of which were funded by film offices or related entities, and seems to encourage states to compete for mobile film production.

The Tax Foundation and the CBPP, groups more skeptical of using tax money for industry-specific subsidies, provided two other studies in 2010. In the Tax Foundation report did not conceal its message, entitling it "Movie Production Incentives: Blockbuster Support for Lackluster Policy" (Luther, 2010). In it they give detailed breakdowns on the types of MPIs used, their growth over time, and estimates on their costs to states and their taxpayers. The report is especially critical of the transferable and/or refundable tax credits offered by (at the time) some 29 states and Puerto Rico, as well as a more recent innovation, direct cash rebates. It also suggests that jobs created are often either simply shifted from other employment, filled by out-of-state residents, or short-term, and that the revenue gains shown were either illusory or non-existent. It cites political "rent-seeking" and an "arms race" mentality with encouraging MPI growth, and ultimately recommends federal, multilateral, or if necessary, unilateral, moratoria on MPI competition. Similarly, the CBPP report is

subtitled “Not Much Bang for Too Many Bucks,” and cites many of the same problems as the Tax Foundation report (Tannenwald, 2010). This report also includes a detailed critique of one key state study, the Ernst & Young study commissioned by New Mexico to replace the earlier, less sanguine report by New Mexico State University’s Arrowhead Center, which they say exaggerated the tourism impact, counted much of the payroll spending twice, and lacked methodological transparency.

Lack of transparency and corruption are yet more reasons to be concerned with MPIs. *Governing* magazine reported that not only was it virtually impossible to get reliable data from anyone other than industry or film office sources, but that in at least two states, Iowa and Louisiana, film office officials and film producers have been convicted on charges of inflating film expenditures ("Former Iowa Film Office head gets deferred judgment, probation," 2011; "Judge sentences film producer to prison for Iowa film tax credit scandal," 2011; Patton, 2010).

2.6.1.2 Louisiana

After nearly four years of offering 25% tax credits for filmmakers, a 2006 Louisiana Film Office-commissioned report by Economics Research Associates (ERA) showed weak growth. At that point, although production activity did increase, there were no indications that a “homegrown, local film market” had been established (Christopherson & Rightor, 2010). Updates in 2009, also by ERA, and in 2011 by BaxStarr Consulting Group, showed progress toward that end. In 2009, ERA indicated that “a majority of production activity occurring in the state of Louisiana is indigenous,” meaning by local production companies and service providers (Economics Research Associates, 2009). The 2011 reported a large shift in the proportion of production budgets spent in the state, from 34% in 2006 to 64% in 2010, presumed to be a result of the change in the tax credit law which applied the credits only to in-state spending. The report went on to say that

> This shift in spending is significant because it reflects the growing maturity of the film industry in Louisiana. For example, services that once had to be performed in Los Angeles can now be secured in Shreveport, and jobs that were once found only in Burbank, CA are now based in New Orleans. (Baxter, 2011)

A 2015 study indicated that while the tax incentive did have a positive impact on the state's economy in 2014, as measured by business sales, household earnings and jobs, it cost the state over $171 in lost revenue and about $14,000/job created (Loren C. Scott & Associates, 2015).

2.6.1.3 New Mexico

As was noted earlier, controversy erupted with competing reports in New Mexico. First, the Arrowhead Center of NMSU was asked to study the impact of the film industry on the state's economy (Popp & Peach, 2008), but the results painted a very negative picture, showing only 14 cents in return for every dollar spent in state incentives. Enter Ernst & Young, brought in to "revise" the Arrowhead Center report by the state film office unhappy with the earlier report (Francis, 2009). This report showed a much more respectable 93 cents on the dollar in state taxes, and $1.50 in all taxes in the state. But the controversy continued with mutual challenges to the methodology of each (Kamerick, 2009), including a memo from the chief economist of the Legislative Finance Committee which challenged the Ernst & Young study point-by-point, ultimately showing a return of 25 cents on the dollar, much closer to the Arrowhead Center study (Francis, 2009).

More recently, a four-phase study commissioned by the New Mexico Film Office by MNP showed that the industry supported between 600-900 jobs annually from 2010-14, at the cost of $8,519/FTE job, but only returned $0.43 in state and local taxes for each dollar spent on the production incentives granted (Meyers Norris Penny LLP., 2014, 2015).

2.6.1.4 Florida

A study commissioned by The Governor's Office of Film & Entertainment showed a surprising, if somewhat obscured, moment of honesty in the section on "Growing the Indigenous

Industry": "… anecdotal evidence points to Florida as a being seen as a *poor place for industry business.*" [italics added] (Harper, 2009, p. 21) Maybe less surprising were the suggestions for improvements, which included "better, *more consistent incentives*; increased infrastructure; an improved business climate and better marketing of what the state has to offer." [italics added] (Harper, 2009, p. 21) The SWOT analysis included strengths like industry infrastructure and existing production centers, and threats by competing states and countries.

A more recent study in 2015 looked at the return on investment for tax incentives, and in all three scenarios used, the ROI was positive but less than one (0.25-0.54); i.e., for every dollar spent, between $0.25 and $0.54 was returned to the state's revenues (Florida Office of Economic & Demographic Research, 2015).

2.6.1.5 North Carolina

For some thirty years, the biggest film center outside of Los Angeles and New York had been in southeastern North Carolina. After seeing its preeminence challenged by Louisiana and other states offering MPIs, the regional film commission ordered a study from the UNCW Center for Business and Economic Services (Hall, Dumas, & Schuhmann, 2009). This fairly straightforward economic impact analysis was based on the typical cost structure of four "mid-major" film productions per year, defined as productions with budgets of approximately $25 million, and showed an estimated annual impact of $75 million in the three-county MSA, with an associated estimated $2.1 million in property taxes (p. 15).

A more recent report from Ernst & Young (2009)(Ernst & Young, 2009) showed a return-on-investment of $0.98-$1.30 for each dollar spent at the 15 percent tax credit level, with the higher number representing the addition of local tax revenues. But despite the estimate that raising the tax credit to 25 percent would lower that ROI to $0.69-0.92 in 2010 and to $0.67-0.89 in 2011, the report issued this ominous statement:

> North Carolina's 15% film credit attracted a significant number of productions in 2007, but has grown increasingly less effective as other states have adopted more competitive film credit rates ranging from 25% to 42%. (p. 13)

Not surprisingly, the state legislature promptly increased the tax credit to a capped 25 percent in July 2010 (FilmNC, 2012), before eliminating it two years later. In the interim, two conflicting reports were issued, similar to the earlier case in New Mexico, in which a film office funded report showed very positive impacts ($1.52 of state and local tax revenue and $9.10 of direct spending for every $1.00 of tax credits issued) (Handfield, 2014), while the state's Fiscal Research Division found errors in that report resulting in a negative impact of $33.1 million and an ROI of $0.61 (McHugh & Boardman, 2014).

2.6.2 Academic studies

One of the earliest academic works on the impact of the film industry and policies to promote it predated the tax credit boom of the 2000s, using Texas as a case study. In their conclusion, Weinstein and Clower (2000) answered the question "What can or should states do to attract the film and video industry?" by offering three pieces of advice: have a professional, well-funded film commission, fund the training of human resources and a "fiscal environment that is attractive to filmmakers," and focus on assisting indigenous producers (Weinstein & Clower, 2000, p. 393). They quoted Christopherson and Storper to support their view that, regarding the ability for states to attract film production, "only those states that have in place the requisite human and physical infrastructure will succeed. (Weinstein & Clower, 2000, p. 392)."

A more recent study of the New York film industry is one of the more comprehensive studies not funded by industry advocates or opponents, and like the Texas study, distinguishes between locations with existing human capital and location amenities and those lacking the same (Christopherson & Rightor, 2010). Drawing on previous state studies, they warn of weak and

variable results for states other than California and New York, and cite issues about transparency, negative impacts on state revenues, concerns about tax equity, picking industry winners and losers, and the "race-to-the-bottom mentality" that state competition creates. Because of these reasons, they warn against subsidies even when states like New York have a distinct competitive advantage already.

In addition to the peer-reviewed articles, one dissertation addressed the question of MPIs and their impact on film production activities as well. Hong (2010) used a detailed set of statewide amenities to measure the impact of these as well as tax incentives on film production locations, first for all states, and then in a quasi-experimental study of Louisiana and New Mexico. He found that nationally, tax incentives had the greatest effect on film production activity, though in the study of matched states, the overall economic impact of such policies was negligible.

2.7 Toward a Theory of Sustainable Development for Creative Industries

Given the intense interest in creative industries and their potential contribution to local economic development, the lack of theoretical and empirical analysis on the mechanisms by which industry incentives can be used to develop such industries is surprising. The primary contribution of these essays is to move toward bridging that gap. By combining elements of the previously discussed theories, I have constructed what I believe might be an effective theoretical model for the development of sustainable creative industries. By combining more traditional growth mechanisms with an emphasis on developing social networks, I believe that polices can be fashioned to build a sustainable industry. I do not mean to suggest, however, that such a theory can be applied regardless of traditional components of comparative advantage.

2.7.1 The importance of "stickiness" for a footloose industry

The mobility of talent and production makes location development a challenge for policymakers. One the one hand, offering monetary incentives should lead to increased production activity, and therefore fiscal and economic benefits, but these benefits would be at risk should the subsidies be reduced, or if other locations offered more lucrative incentives.

2.7.2 The Creative Industries Development Model

This mobility problem may be addressed by focusing efforts on not simply attraction strategies, but strategies that strengthen the networks of firms and individuals within the state's jurisdiction. As local networks become stronger and more integrated, cumulative causation and entrepreneurship models suggest a self-reinforcing virtuous circle. The causation model postulates that tax incentives will increase both local and mobile production activities within the state. Over time this will lead to increases in the number of firms and individuals working in the film industry locating within the state. Repeated interactions between local participants and mobile participants will reinforce the local growth, and make it easier for mobile productions to return to the state while creating increasing incentives to initiate local productions as well. Agglomeration and cumulative causation will continue to reinforce this activity, and as the networks are strengthened and the specialized infrastructure and services are developed, the state can then reduce or eliminate the tax incentives because the network will have created a competitive advantage that would be difficult to overcome with mere subsidies from other states. This model is diagramed in Figure 2.1.

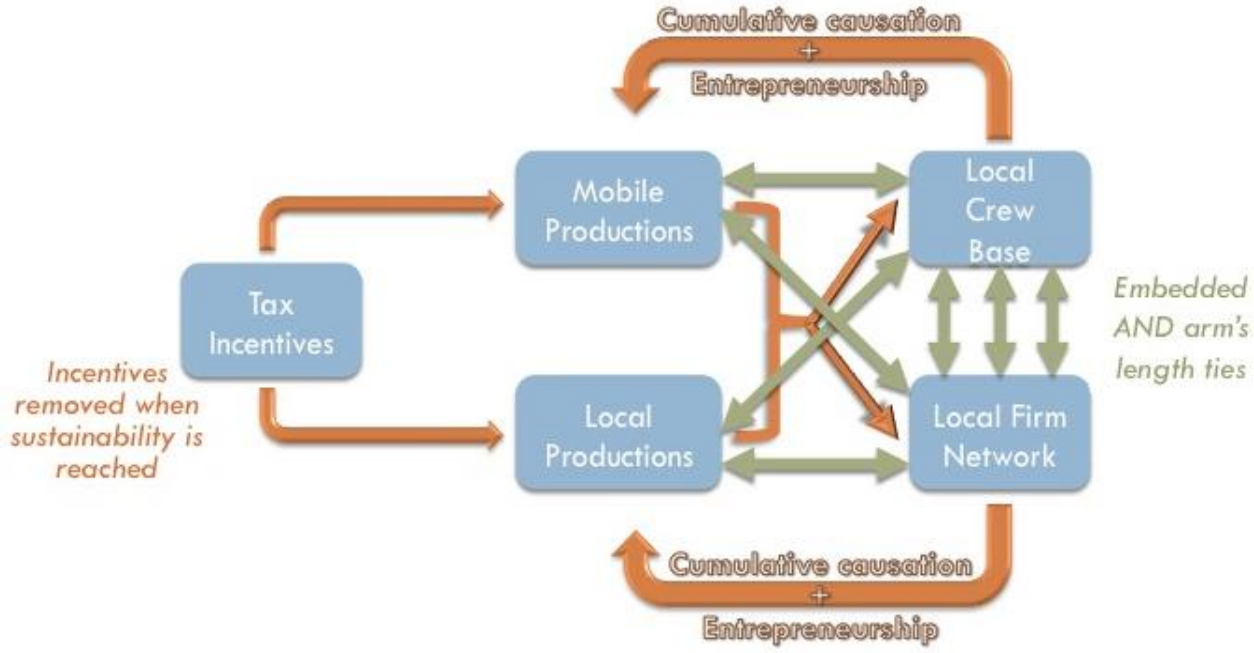


Table 2.1 The Creative Industries Development Model

This model is not universally applicable. It does require the state to have other competitive advantages as well, such as natural amenities for filming locations and a critical mass of financial assets and population to support industry development. The assumption here is that, given some competitive advantages in a specific creative industry could then allow policies to establish that industry in a sustainable way. This means that, while not all states may be able to use this model for the film industry, some states may, while others might compete for music, digital entertainment, or new media industries. Therefore, applying this model without regard for the existing advantages for a given industry is still likely to falter as a long-term strategy.

CHAPTER 3 THE BIG PICTURE: STATE MOTION PICTURE INCENTIVES IN THE U.S., 2002-2013

3.1 Introduction

After witnessing the success of Canadian strategies to attract U.S. film production in the 1990s, states and localities began offering financial incentives in an effort to lure film and video production away from their traditional hubs in California and New York (Christopherson & Rightor, 2010). This effort increased dramatically in the 2000s, both in scope and in scale. Production activity can now locate in states offering rebates of up to 40 percent of costs, even if this exceeds their actual tax bills, and all but a handful of states offer some form of tax incentives (Christopherson & Rightor, 2010; Katz & Rosenthal, 2006; National Conference of State Legislatures, 2011; Vock, 2008). While some states may be reducing incentive packages in the current climate of fiscal austerity, others are doubling down on that strategy as an effort to stimulate job growth and increased economic activity. And while most states tout many successes from these programs in both metrics, the question of whether or not such policies promote long-term sustainable economic development has not been fully answered.

In this, the first of two related studies, I will use data from the County Business Patterns (CBP), the American Community Survey[4] (ACS), and data on movie production incentives (MPIs) collected by the author over the years 2002-2013 to view changes in state-level economic activity by the level of incentives offered. Using cross-sectional and panel data for industry, employment and

[4] For the ACS data, I used the Integrated Public Use Microdata Series (IPUMS).

occupational employment as dependent variables, I will use a variety of descriptive data and regression models to view the relationship between the level of incentives and the outcomes for the film industry.

3.2 Background

3.2.1 A Brief History of State Incentives for Film Production

According to the Association of Film Commissioners International (AFCI), the first film commission was established in the late-1940s. By the mid-1970s, there were enough film offices to form the AFCI, which quickly grew to be both a medium of information exchange and the host of an annual expo for location scouting. Now virtually every state, hundreds of U.S. cities and regions, and over 30 countries, have created such commissions for the purpose of attracting and facilitating film and television production (AFCI, 2009a). What began as a liaison to help filmmakers with the legal and administrative aspects of the filmmaking process has now morphed into a one-stop resource for everything from scouting locations to, more recently, cash and in-kind incentives to promote the industry. It is these latter activities that will be discussed below.

3.2.2 The Current State of Film Incentives

As film commissions proliferated, so did the competition for a piece of the growing pie of film and television production dollars. Commissions added more and more services, but two new trends began to be seen which led to a sea change in their methods. First, a decline in manufacturing in general led state policymakers to seek high-income service industries to replace industries lost to low wage countries. The second came when Canada (and several other countries), starting in the mid-1970s and expanding dramatically in the 1980s, began offering direct economic incentives for Canadian film production (CanagaRetna, 2007; Finn, Hoskins, & McFadyen, 1996). Suddenly the

fear of "runaway production" was extended to high-end services, leading state film commissions to up the ante, beginning to offer their own cash incentives in the form of first tax credits, then direct rebates and even grants. Below each will be discussed in more detail.

3.2.2.1 Tax credits and rebates

Direct cash rebates for film and video production are the latest types of incentives to be introduced. While many states offer tax credits, some of which are transferable (see below), direct rebates are generally simpler and, understandably, preferred by producers (Vock, 2008). The difference between credits and rebates is that credits are based on taxes paid, and rebates on gross spending. Few states offer rebates, but others could join them if this proves to be an effective strategy in an increasingly competitive marketplace.

Tax credits are a more common approach, as they are used by a majority of states offering financial incentives, but they can be problematic for producers. Preferred over straight credits are transferable credits, which allow producers to trade their credits to local companies or individuals who would like to reduce their state tax liability. On the other hand, most film producers don't want to be in the business of trading tax credits (Vock, 2008).

Both rebates and credits come with lots of conditions. Typically, these may be based on the overall budget, but they also have minimum budget requirements. Sometimes they may also have minimum days of filming, and "sweeteners" attached to hiring local residents or participating in training programs (AFCI, 2009b; CanagaRetna, 2007; Pierce, 2008). Despite the rapid proliferation of these incentives, the number of states offering tax credits or rebates has declined since their peak in 2010 as a result of incidences of corruption, ineffectiveness, and perhaps most importantly, the fiscal constraints following the economic downturn of 2008.

3.2.2.2 Sales and Use Tax Exemptions

Similar to tax credits are sales and use tax exemptions. These are usually specific to certain categories of items typically associated with film production, such as film stock, videotape, equipment rentals and purchases, etc. (Harper, 2009). At least 25 states currently offer some type of sales and/or use tax exemption for film and television production.

3.2.2.3 Bed Tax Exemptions

The "bed tax" exemption, or hotel occupancy tax exemption, is another popular incentive. At least a dozen states offer this incentive, designed to somewhat offset the cost of moving cast and crew from their home base, but most states only begin the exemption after a minimum stay of 30 days or so. One exception is California, although counties and municipalities there tend to use the 30-day rule as well (Harper, 2009).

3.2.2.4 Bonuses

Many states offer bonuses for specific locations or times. Florida offers an "off-season" bonus, and many states offer bonuses for filming in rural or economically disadvantaged areas of the state. Another common bonus is offered for hiring local residents, though this is usually a bonus to the tax credits discussed earlier. Other bonuses are given for longer stays or ongoing projects (such as television series), and for participating in workforce development projects (AFCI, 2009b; CanagaRetna, 2007; Harper, 2009).

3.2.2.5 Infrastructure projects

Infrastructure development projects have been increasingly popular in recent years. As with many such innovations, Louisiana may have led the way with this type of incentive when the state began an aggressive effort to build studio space for film and video production. They have been so successful in spurring new studio development that although they could currently support fifteen

studios with current work, nine more than currently exist, plans are on the books to build another 32 studios by next year (Vock, 2008). Other states taking this approach are North Carolina, who's "Dream Stage" is scheduled for this spring (Wobbekind, Horvath, Lewandowski, DiPersio, & Willoughby, 2008, and New Mexico and Massachusetts are also putting state investments into studio infrastructure {Harper, 2009 #342).

3.2.2.6 Loans and Grants

New Mexico, Michigan, New Jersey, and New York all have some type of conditional loan program for film production. These loans are at below-market rate, often 0% interest, and sometimes (in the case of New Mexico at least) contingent on profit-sharing in lieu of interest (Harper, 2009; Pierce, 2008). Washington, D.C., has a unique grant program, conditioned only on a minimum of spending and a five day stay, while other states such as Texas, South Carolina, and Louisiana offer grants for rural locations and workforce development programs (CanagaRetna, 2007; Harper, 2009; Pierce, 2008).

3.2.2.7 Other free services

Fee-waivers for a variety of permits and other governmental services are also widespread. The most common practice is "fee-free" filming, where the state waives permits and location fees for state-owned property, and even in some cases, will negotiate fees for non-state-owned locations as well. Maine offers free rental of surplus property as well.

3.3 Research Questions and Hypotheses

The primary research question of this study is that of the scale and scope of movie production incentives during the last decade. In addition to this descriptive question, I will consider the relationship between MPIs and the growth of local motion picture industry firms and employment.

Based on the theory behind industrial economic incentives generally, I would expect that the number of firms and employees in each state would be positively correlated with the tax credit offered. However, I also hypothesize that since the states are competing for this business, that the relative effort over time would also contribute to the employment and firm frequency outcomes.

The key independent variable will be the MPI itself, expressed as a lagged dummy variable. I also looked at the level of the MPIs as a factor, but they tend to be in a narrow range of values, and have not changed much over time. Other independent variables will include total employment and establishments for the state in all industries and several other factors for production location choice.

Dependent variables will be the number of employees and establishments in the film industry from the County Business Patterns and, and the number of individuals employed in film-related occupations from the American Community Survey.

It is important to note that this study will not consider employment and firms working in projects in states other than their home states. But while this may be an important consideration for the overall economic impacts of film industry incentives, my purpose here is only to view the impact on sustainable economic development of the industry cluster, which I am defining as the growth of in-state workers and firms.

This leads to the following hypotheses:

- H_1: The number of film industry firms, employees and occupations in each state is positively correlated with the existence of tax credits.
- H_2: The persistence of these subsidies over the years contributes to the employment, firm and occupational outcomes.
- H_3: MPIs and their persistence contributes to the growth of film industry employment, firms and occupations.
- H_4: MPIs and their persistence increase the relative concentration of film industry employment (location quotient) in the state.

3.4 Data and Methodology

The key data used was a combination of state-by-state movie production incentive (MPI) levels for the years 2002-2013, and employment, establishment and occupation data for the same years. The annual MPI level will serve as the independent variable (IV), with the others serving as the key dependent variables (DVs). Other data will be used as controls, as indicated below.

3.4.1 Movie Production Incentives (MPIs)

The collection of MPI data was a bit of a challenge. While several sources offer up-to-date web-based information, either individually at state film commission web sites or aggregators of current information (Motion Picture Association of America, 2012; National Conference of State Legislatures, 2011) or that collected at an often-unspecified point in time (Harper, 2009; Luther, 2010), getting good data over several years was surprisingly difficult. In addition to the above sources, I spent a good deal of time finding and reading enabling legislation, much of which lacks good information on changes over time, and news articles about the passage of and/or amending of MPI legislation. Ultimately, I was able to compile a complete set of data from 2002 to 2013, though it is possible that data from a few states and/or years could have fallen through the cracks of my rather porous dragnet. I am engaged in an ongoing process of updating this data, as well as managing it in years subsequent to those represented in this study.

The next challenge was determining what rate to use, since many states offer a variety of incentives based on specific criteria. For this study, I chose to use only one rate: that of the state income tax credit or rebate for general expenditures. This means I did *not* include add-ons for local hiring, expenditures in economically troubled areas of a state, variations of rates based on total expenditure or production type, or a handful of others. I did, however add credits that were both applied to general expenditures *and* relatively easy to get. One notable example is the extra ten-

percent credit offered by Georgia for adding a "Filmed in Georgia" logo to the credits of a production.

Ten states and the District of Columbia had no fixed, funded tax incentive for film production, and since these states also had low film industry concentration, making them less than ideal control observations, they were dropped from the data set. Table 3.1 shows the 22 states in the final sample with their MPIs by year.

Since MPIs are not immediately effective in attracting film production, I calculated both a lagged variable, such that the MPI for the previous year would be associated with the employment and establishment level of the current year. And given the relative stability of MPI levels over the period, I also created contemporaneous and lagged dummy variables, where 0 indicates no MPI, and 1 indicates an MPI in effect. And finally, to assess the cumulative effects of MPIs over time, I included a variable for the number of years the MPI was in effect. This variable was calculated by beginning with the previous year, and adding one for every year prior to that year; e.g., for 2010, a state with MPIs in effect from 2007-2010 would have a score of three, one for each year from 2007-2009. The panel for the following year, 2011, would have a score of four, one for each year from 2007-2010.

3.4.2 Employment and Establishment Data

For the employment and establishment data, I used the County Business Patterns (CBP), an annual series of national and subnational economic data by industry. The number of establishments and employment is reported from the week of March 12. While this single point in time might be a problem for some inquiries, in this case it might be advantageous, because while film production takes place throughout the year, the winter months are more likely to reflect more permanent patterns of employment, rather than seasonal booms in the more temperate times of the year. This

also makes it somewhat more likely that film industry workers will be employed in their state of residence, since the CBP only counts workers based on the location of the establishment for which they are working. In other words, while the establishments are located in the states with which they are associated in the data, the employees may or may not reside in that state. I did consider using the American Community Survey (ACS) or Current Population Survey (CPS), which do count workers in their state of residence, but the industry codes are neither comparable nor granular enough to separate employment in video production and distribution from that in exhibition.

To measure data specifically for the motion picture industry, I chose to use four six-digit NAICS codes under the heading of 5121, "Motion Picture and Video Industries" (see Table 3.2). Since around half of this higher-level category is employed in the exhibition portion of the industry (i.e., movie theaters), I subtracted this category from the total for 5121. The reason for choosing this method of calculation was that much of the data for the appropriate subcategories was suppressed, therefore making it difficult to get enough direct observations for meaningful analysis of each subcategory separately.

The County Business Patterns data includes full- and part-time employees working at this establishment whose payroll was reported to the Internal Revenue Service. It does not include:

- Temporary staffing obtained from a staffing service.
- Contractors, subcontractors, or independent contractors.
- Full- or part-time leased employees whose payroll was filed under an employee leasing company's EIN.
- Purchased or managed services, such as janitorial, guard, or landscape services.
- Professional or technical services purchased from another firm, such as software consulting, computer programming, engineering, or accounting services.[5]

[5] From the Economic Census questionnaire retrieved from https://www2.census.gov/programs-surveys/economic-census/2012/questionnaires/forms/in51204.pdf on May 22, 2017.

One concern with this data is that many values, especially in areas of smaller employment numbers, are suppressed for reasons of confidentiality. This was even true, as it turned out, for relatively highly aggregated cells at the state and 4-digit NAICS levels. Therefore, in addition to the 11 observations dropped due to lack of MPIs, another 12 were dropped due to lack of employment data. Observations were dropped if either more than 3 years total or two or more consecutive years were unavailable. After this, there remained five states with one or two missing employment data: Iowa, Massachusetts, Oregon, Utah and Washington. These missing values were imputed using the midpoint of the employment flags given in the CBP data. Table 3.3 shows the location quotients and differential shifts for the 22 states in the remaining sample from 2002 to 2013, while Tables 3.4 and 3.5 show employment and establishment growth for the same period respectively.

3.4.3 Occupation Data

For the occupation data, I used the 1% Sample of the IPUMS microdata based on the American Community Survey (ACS), an annual survey conducted by the U.S. Census Bureau. While the ACS microdata does include industry codes for employment, these codes are only at the NAICS 4-digit level, making them less useful than the more detailed 6-digit codes from the County Business Patterns data. The occupations chosen are based on those used in a few studies by Christopherson et al. (Christopherson, 2008a, 2008b; Christopherson et al., 2006) as "key occupations" in the motion picture industry. The four key occupations chosen are Actors (2700), Producers & Directors (2710), Broadcast and Sound Engineering Technicians and Radio Operators (2900), and Television, Video, and Motion Picture Camera Operators and Editors (2920) (Bureau of Labor Statistics, 2002-2013).

3.4.4 Control Variables

3.4.4.1 Macro Control Variables

1. Growth in total annual state employment
2. Location quotient for state motion picture industry employment

3.4.4.2 Random-Effects Control Variables

3.4.4.2.1 Climate

3. Average Temperature: State Average Annual Temperature, 60 months ending 12/2012
4. Maximum Temperature: State Maximum Annual Temperature, 60 months ending 12/2012
5. Minimum Temperature: State Minimum Annual Temperature, 60 months ending 12/2012
6. Rainfall: State Total Annual Rainfall, 60 months ending 12/2012

3.4.4.2.2 Accessibility

7. Number of non-stop cities serviced
8. Number of Flights to Los Angeles airports
9. Distance from LA (Distance group, 1-6, 500 miles per segment)

3.4.4.2.3 Geography

10. Highest Point
11. Elevation Span: Difference of highest and lowest points
12. Coastal: Borders on an ocean
13. MSAs >1 mil.: Number of MSAs over 1 mil. (2010), all or partial

3.4.5 Descriptive Statistics

After culling the states with no tax credits and suppressed employment values, I was left with 22 states for my analysis. Since my goal is to look at long-term growth in the motion picture industry, I chose to report primarily on the net changes between the base year (2002) and the final year for which I have data (2013). For a few cases, I do show annual changes as well. Note that I am only looking at employment, establishments and occupations in the state; I am not evaluating overall economic impact, nor do I use an input-output or benefit cost analysis approach to this subject.

3.4.5.1 Key Variables

As stated earlier, the key independent variable will be the MPI level for each state. This well be represented by the highest rate in place in that year. Dependent variables will be the employment and establishment level of motion picture establishments, and the number of occupations in film-industry associated occupations.

3.4.6 Regression analysis

Again, since I am looking at long-term employment growth, for this study I chose to use a combination of Standard linear, Arellano-Bond linear dynamic, fixed-effects and random effects panel-data estimations. The dependent variables used are the employment growth rate for the motion picture industry between 2002 and 2013, using NAICS 5121 "Motion Picture and Video Industries" without 512130 Motion Picture & Video Exhibition category.

I began by attempting a simple set of models, with the natural log of employment in the state's motion picture industry as the dependent variable, and the MPI level and annual change for all twelve years as the key independent variables, with the state's overall employment growth and motion picture industry location quotient as a control variables[6], using robust standard errors to account for heteroscedasticity. Model 1 used contemporaneous MPI variables and year dummies, Model 2 adds the MPI Change and Year variables, and Models 3 and 4 are Arellano-Bond linear dynamic models, which mirror 1 and 2 respectively, but add a lagged employment variable as well. The coefficients are all exponentiated. Each set of four models was run using motion picture employment (Table 3.6), establishments (Table 3.7) and occupations (Table 3.8). The models can be specified with the following form:

[6] I also used the employment growth in the US film industry, but this was automatically dropped due to collinearity.

$$MP\mathbf{x}_{it} = \beta_0 + \beta_1 MPI_{it} + \beta_2(MPI_{it} - MPI_{i(t-1)}) + \beta_3 SEG_{it} + \beta_4 LQ_{it} + \beta_5 Y_{it} + \varepsilon$$

where $MP\boldsymbol{x}_{it}$ is the motion picture industry employment, establishments or occupations for each state, $\beta_1 MPI_{it}$ is the MPI level for each year, $\beta_2(MPI_{it} - MPI_{i(t-1)})$ is the change in MPI from the previous year, $\beta_3 SEG_{it}$ is the overall employment growth for the state, $\beta_4 LQ_{it}$ is the motion picture industry location quotient for the state, and $\beta_5 Y_{it}$ is the year of the observation.

The second set of models use fixed effects estimations on the same panel data, but uses a fixed-effects model to address unobserved time-invariant variables and their effects. In this case, the models can be specified as follows:

$$MP\mathbf{x}_{it} = \beta_0 + \beta_1 MPI_{it} + \beta_2 SEG_{it} + \beta_3 LQ_{it} + \beta_4 Y_{it} + \alpha_i + \varepsilon$$

where α_i is the unobservable time-invariant factors for each state. There are no lagged dependent variables in these models.

And finally, the third set of models used random effects estimations on the panel data as a check on the fixed effects model. The random-effects models attempt to estimate known time-invariant variables and their effects. In this case, the models can be specified as follows:

$$MP\mathbf{x}_{it} = \beta_0 + \beta_1 MPI_{it} + \beta_2(MPI_{it} - MPI_{i(t-1)}) + \beta_3 SEG_{it} + \beta_4 LQ_{it} + \beta_5 Y_{it} + \beta_6 EF_{it} + \varepsilon$$

where $\beta_6 EF_{it}$ is a set of unobservable time-invariant environmental factors for each state, including climate factors, accessibility, geography, and urban centers. Again, there are no lagged dependent variables in these models.

3.5 Findings

3.5.1 Movie production incentives

Beginning with the MPI and motion picture production statistics, Table 3.1 shows the states with MPIs and the typical rate of the tax credit from 2002-2013. It is clear from this table that,

among the 22 states for which I have data, there was a dramatic increase in the number of states offering such incentives over that period, and several states increased these rates during that period as well. Louisiana was the early adopter here, and has been consistently in the top tier of incentive offers, having increased them from 15% to 25% in 2005, and again raising them to 30% in 2009, matching southeastern neighbor Georgia, which increased its top rate to 30% in 2008. Louisiana did cap their program after 2013.

Table 3.1 State Motion Picture Incentives, 2002-2013

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
AZ			20	20	20	20	20	20	20	0	0	0
CA								20	20	20	20	20
CO					10	10	10	10	10	10	20	20
FL			20	20	20	20	20	20	20	20	20	20
GA				9	9	9	30	30	30	30	30	30
IL								30	30	30	30	30
IA						25	25	25	25	0	0	0
LA	15	15	15	25	25	25	25	30	30	30	30	30
MD						25	25	25	25	25	25	25
MA					25	25	25	25	25	25	25	25
MI							42	42	42	32	32	32
MN					25	25	25	25	25	25	25	25
NJ					20	20	20	20	20	a	a	a
NY			10	10	10	10	30	30	30	30	30	30
NC					8.1	15	15	15	15	25	25	25
OK				15	15	15	15	35	35	35	35	35
OR				20	20	20	20	20	20	20	20	20
PA			20	20	20	25	25	25	25	25	25	25
TN					32	32	32	32	32	25	25	25
TX								17.5	17.5	25	25	25
UT				15	15	15	15	15	20	25	25	25
WA					30	30	30	30	30	30	0	0

Another trend of note is the use of incentives for states traditionally strong in the film industry. California, still dominant in both employment and establishments, started offering incentives in 2009, and New York significantly increased their incentive from 10% to 30% in 2008.

And finally, some states did begin to reduce, suspend or discontinue their incentive programs toward the end of the period observed and beyond.

Table 3.2 Selected NAICS for MP Industry

NAICS	Industry
512110	Motion Picture & Video Production
512120	Motion Picture & Video Distribution
512191	Teleproduction & Other Postproduction Services
512199	Other Motion Picture & Video Industries

3.5.2 Employment, establishment and occupation growth

3.5.2.1 Descriptive data

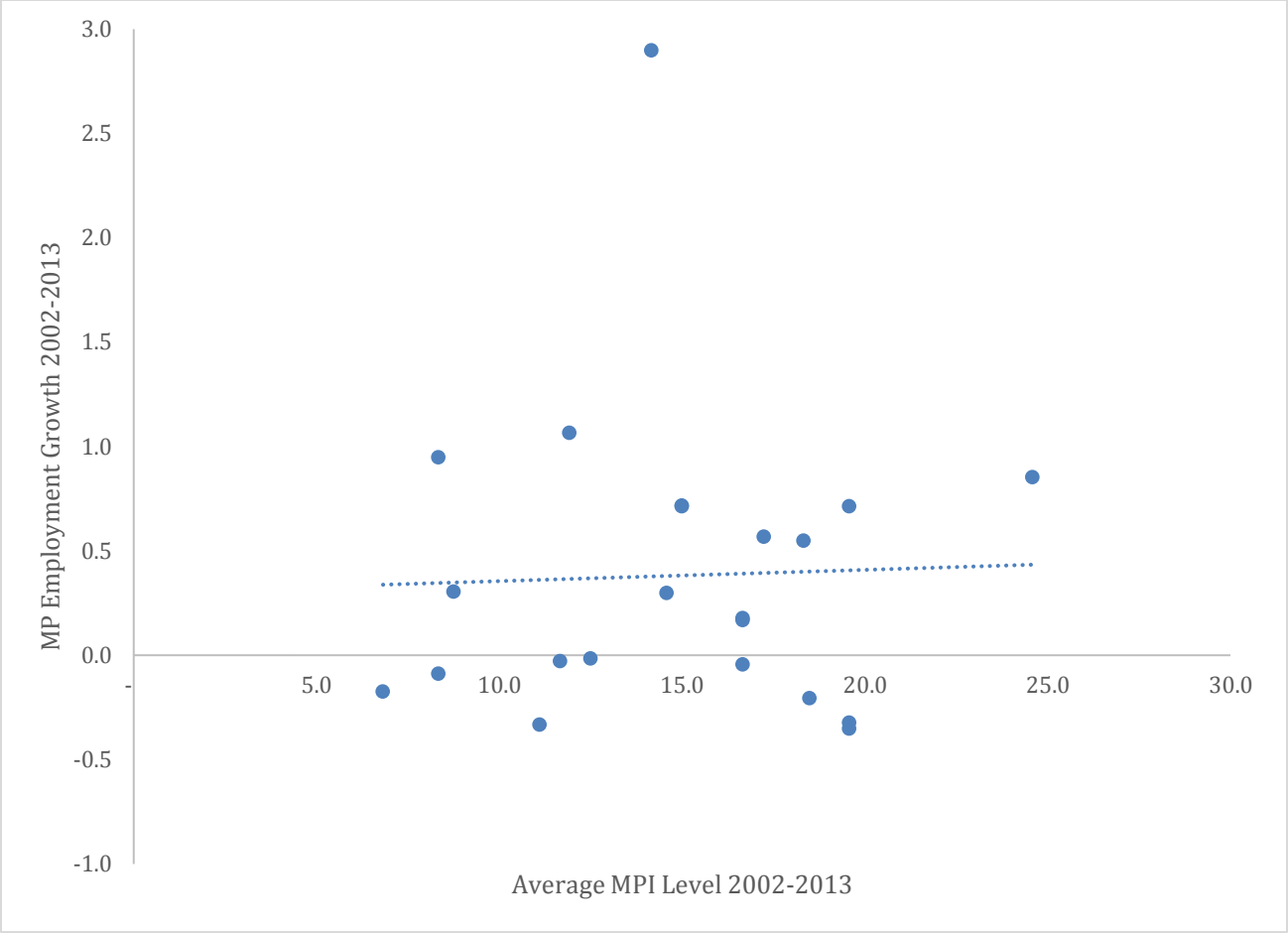


Figure 3.1 Film Industry Employment Growth by Average MPI, 2002-13

Figure 3.1 shows the rather tenuous relationship between MPIs and film employment growth. By viewing the relationship between the average MPI and the motion picture employment growth during the period, I would expect to see a positive trend line develop, and though the fitted trend line shows a very slight upward slope, the distribution of the data show that this would be a very loose fit at best.

Table 3.3 Location Quotients and Shift-Share by State, 2002-2013

Local Economy					National Economy					
State	2002 Emp	2013 Emp	Change	% Change	2002 Emp	2013 Emp	Change	% Change	2013 LQ	Differential Shift
AZ	507	492	-15	-3.0%	119,323	194,271	74,948	62.8%	0.14	-65.8%
CA	66,785	130,132	63,347	94.9%	119,323	194,271	74,948	62.8%	5.91	32.0%
CO	1,290	1,173	-117	-9.1%	119,323	194,271	74,948	62.8%	0.34	-71.9%
FL	3,552	4,144	592	16.7%	119,323	194,271	74,948	62.8%	0.35	-46.1%
GA	2,733	4,282	1,550	56.7%	119,323	194,271	74,948	62.8%	0.75	-6.1%
IL	3,435	3,376	-59	-1.7%	119,323	194,271	74,948	62.8%	0.39	-64.5%
IA	319	263	-56	-17.6%	119,323	194,271	74,948	62.8%	0.12	-80.4%
LA	297	550	253	85.2%	119,323	194,271	74,948	62.8%	0.20	22.4%
MD	1,165	1,511	346	29.7%	119,323	194,271	74,948	62.8%	0.42	-33.1%
MA	1,212	1,425	213	17.6%	119,323	194,271	74,948	62.8%	0.28	-45.2%
MI	1,433	1,137	-296	-20.7%	119,323	194,271	74,948	62.8%	0.20	-83.5%
MN	1,165	1,112	-53	-4.5%	119,323	194,271	74,948	62.8%	0.27	-67.4%
NJ	2,148	1,432	-716	-33.3%	119,323	194,271	74,948	62.8%	0.25	-96.1%
NY	12,550	19,412	6,862	54.7%	119,323	194,271	74,948	62.8%	1.54	-8.1%
NC	538	1,111	573	106.5%	119,323	194,271	74,948	62.8%	0.20	43.7%
OK	402	260	-142	-35.3%	119,323	194,271	74,948	62.8%	0.12	-98.1%
OR	785	1,348	563	71.7%	119,323	194,271	74,948	62.8%	0.59	8.9%
PA	1,462	2,502	1,040	71.1%	119,323	194,271	74,948	62.8%	0.29	8.3%
TN	1,672	1,128	-544	-32.5%	119,323	194,271	74,948	62.8%	0.29	-95.3%
TX	2,472	3,219	747	30.2%	119,323	194,271	74,948	62.8%	0.20	-32.6%
UT	917	3,573	2,657	289.9%	119,323	194,271	74,948	62.8%	1.97	227.0%
WA	797	1,366	569	71.4%	119,323	194,271	74,948	62.8%	0.34	8.6%

Source: County Business Patterns

Furthermore, the location quotients (LQs) and shift shares do not support a positive relationship with MPI levels (and Table 3.3). In addition, 2013 location quotients only show three states with the percentage of industry employment greater than that of the U.S. as a whole, two of them being California (5.91) and New York (1.54), with the third being Utah (1.97). The differential shifts for the period 2002-13 were positive for only seven states, one of which was California (32%). The balance consisted of Utah (227%), North Carolina (43.7%), Louisiana (22.4%), Oregon (8.9%), Washington (8.6%) and Pennsylvania (8.3%).

Table 3.4 Employment Growth by State, 2002-2013

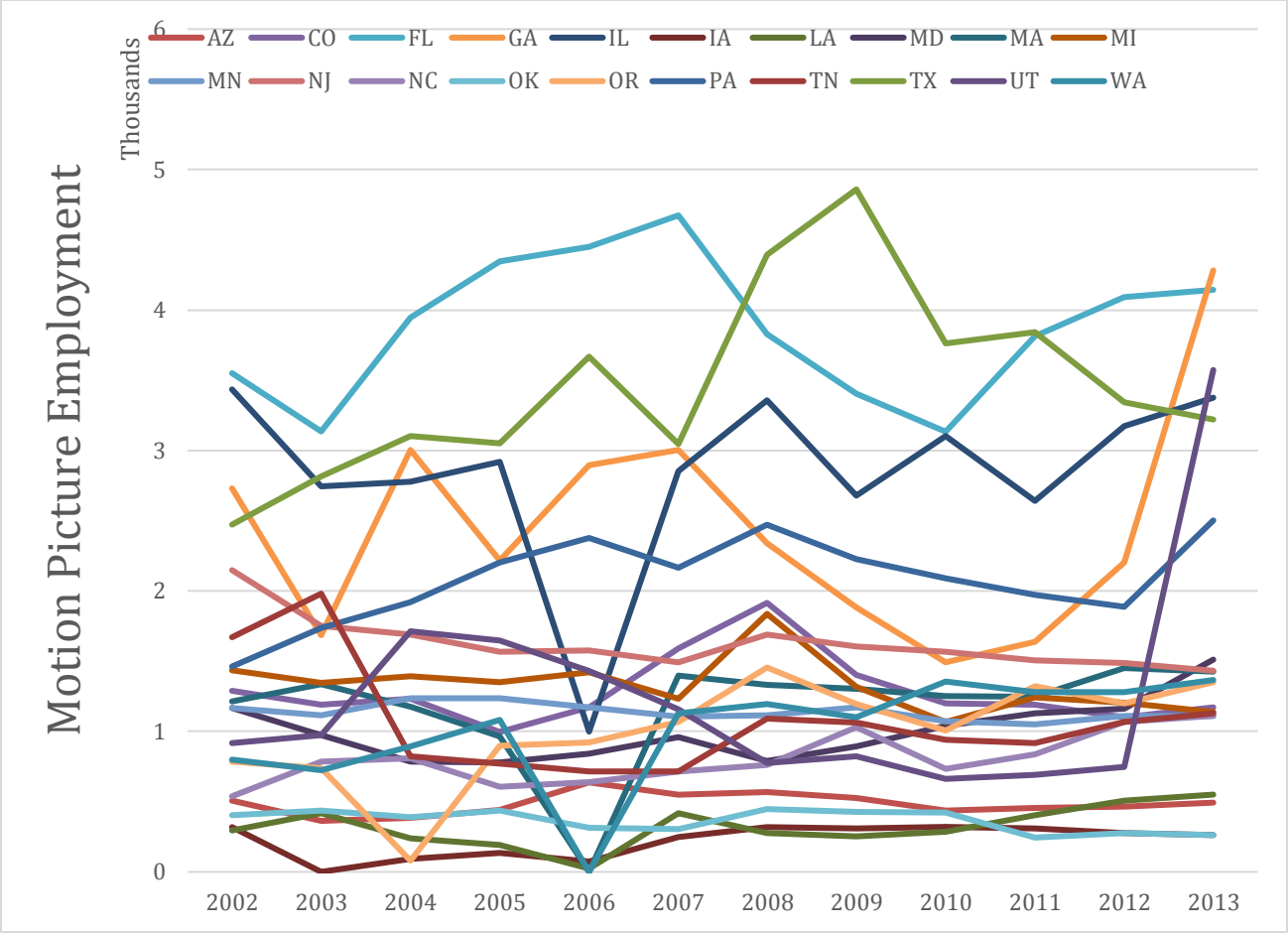
	Motion Picture Employment Growth				All Employment Growth				Growth
ST	**2002**	**2013**	**Net**	**Growth**	**2002**	**2013**	**Net**	**Growth**	**Difference**
UT	917	3,573	2,657	289.9%	900,428	1,101,557	201,129	22.3%	267.5%
NC	538	1,111	573	106.5%	3,322,004	3,421,195	99,191	3.0%	103.5%
CA	66,785	130,132	63,347	94.9%	12,856,426	13,401,863	545,437	4.2%	90.6%
LA	297	550	253	85.2%	1,583,308	1,687,956	104,648	6.6%	78.6%
PA	1,462	2,502	1,040	71.1%	5,046,442	5,180,805	134,363	2.7%	68.5%
OR	785	1,348	563	71.7%	1,329,235	1,396,563	67,328	5.1%	66.7%
WA	797	1,366	569	71.4%	2,185,658	2,444,098	258,440	11.8%	59.6%
GA	2,733	4,282	1,550	56.7%	3,381,244	3,458,050	76,806	2.3%	54.4%
NY	12,550	19,412	6,862	54.7%	7,234,915	7,688,492	453,577	6.3%	48.4%
MD	1,165	1,511	346	29.7%	2,062,515	2,182,260	119,745	5.8%	23.9%
MA	1,212	1,425	213	17.6%	3,023,126	3,062,689	39,563	1.3%	16.3%
TX	2,472	3,219	747	30.2%	7,993,559	9,663,567	1,670,008	20.9%	9.3%
FL	3,552	4,144	592	16.7%	6,366,964	7,134,644	767,680	12.1%	4.6%
IL	3,435	3,376	-59	-1.7%	5,224,293	5,209,070	-15,223	-0.3%	-1.4%
MN	1,165	1,112	-53	-4.5%	2,359,593	2,518,268	158,675	6.7%	-11.3%
MI	1,433	1,137	-296	-20.7%	3,889,825	3,535,685	-354,140	-9.1%	-11.6%
AZ	507	492	-15	-3.0%	1,945,472	2,173,205	227,733	11.7%	-14.7%
CO	1,290	1,173	-117	-9.1%	1,912,152	2,090,975	178,823	9.4%	-18.4%
IA	319	263	-56	-17.6%	1,229,609	1,305,216	75,607	6.1%	-23.7%
NJ	2,148	1,432	-716	-33.3%	3,596,919	3,492,216	-104,703	-2.9%	-30.4%
TN	1,672	1,128	-544	-32.5%	2,291,504	2,394,068	102,564	4.5%	-37.0%
OK	402	260	-142	-35.3%	1,200,477	1,325,927	125,450	10.5%	-45.8%
U.S.	119,323	194,271	74,948	62.8%	112,400,654	118,266,253	5,865,599	5.2%	57.6%

Source: County Business Patterns

Table 3.5 Establishment Growth by State, 2002-2013

	Motion Picture Establishments Growth				All Establishments Growth				Growth
ST	**2002**	**2013**	**Net**	**Growth**	**2002**	**2013**	**Net**	**Growth**	**Difference**
UT	143	177	34	23.8%	58,788	71,887	-13,099	22.3%	267.5%
NC	192	251	59	30.7%	207,562	218,285	-10,723	5.2%	103.5%
CA	5,627	6,658	1,031	18.3%	820,997	874,243	-53,246	6.5%	90.6%
LA	67	117	50	74.6%	101,885	104,375	-2,490	2.4%	78.6%
PA	273	304	31	11.4%	297,257	297,692	-435	0.1%	68.5%
OR	126	172	46	36.5%	101,933	108,527	-6,594	6.5%	66.7%
WA	211	274	63	29.9%	165,933	176,815	-10,882	6.6%	59.6%
GA	290	419	129	44.5%	206,323	217,559	-11,236	5.4%	54.4%
NY	1,940	2,414	474	24.4%	498,921	532,669	-33,748	6.8%	48.4%
MD	214	210	-4	-1.9%	131,815	135,421	-3,606	2.7%	23.9%
MA	251	287	36	14.3%	175,991	172,533	3,458	-2.0%	16.3%
TX	492	571	79	16.1%	482,169	547,190	-65,021	13.5%	9.3%
AZ	136	161	25	18.4%	119,740	132,762	-13,022	10.9%	7.5%
FL	770	929	159	20.6%	450,188	510,389	-60,201	13.4%	4.6%
IL	491	530	39	7.9%	309,980	315,364	-5,384	1.7%	-1.4%
MN	222	233	11	5.0%	143,953	146,354	-2,401	1.7%	-11.3%
MI	259	228	-31	-12.0%	237,616	217,494	20,122	-8.5%	-11.6%
CO	240	283	43	17.9%	142,247	154,875	-12,628	8.9%	-18.4%
IA	50	54	4	8.0%	81,042	80,581	461	-0.6%	-23.7%
NJ	303	303	0	0.0%	237,505	230,281	7,224	-3.0%	-30.4%
TN	158	171	13	8.2%	130,556	130,819	-263	0.2%	-37.0%
OK	72	89	17	23.6%	86,029	91,717	-5,688	6.6%	-45.8%
U.S.	14,454	16,792	2,338	62.8%	7,200,770	7,488,353	-287,583	62.8%	57.6%

Source: County Business Patterns



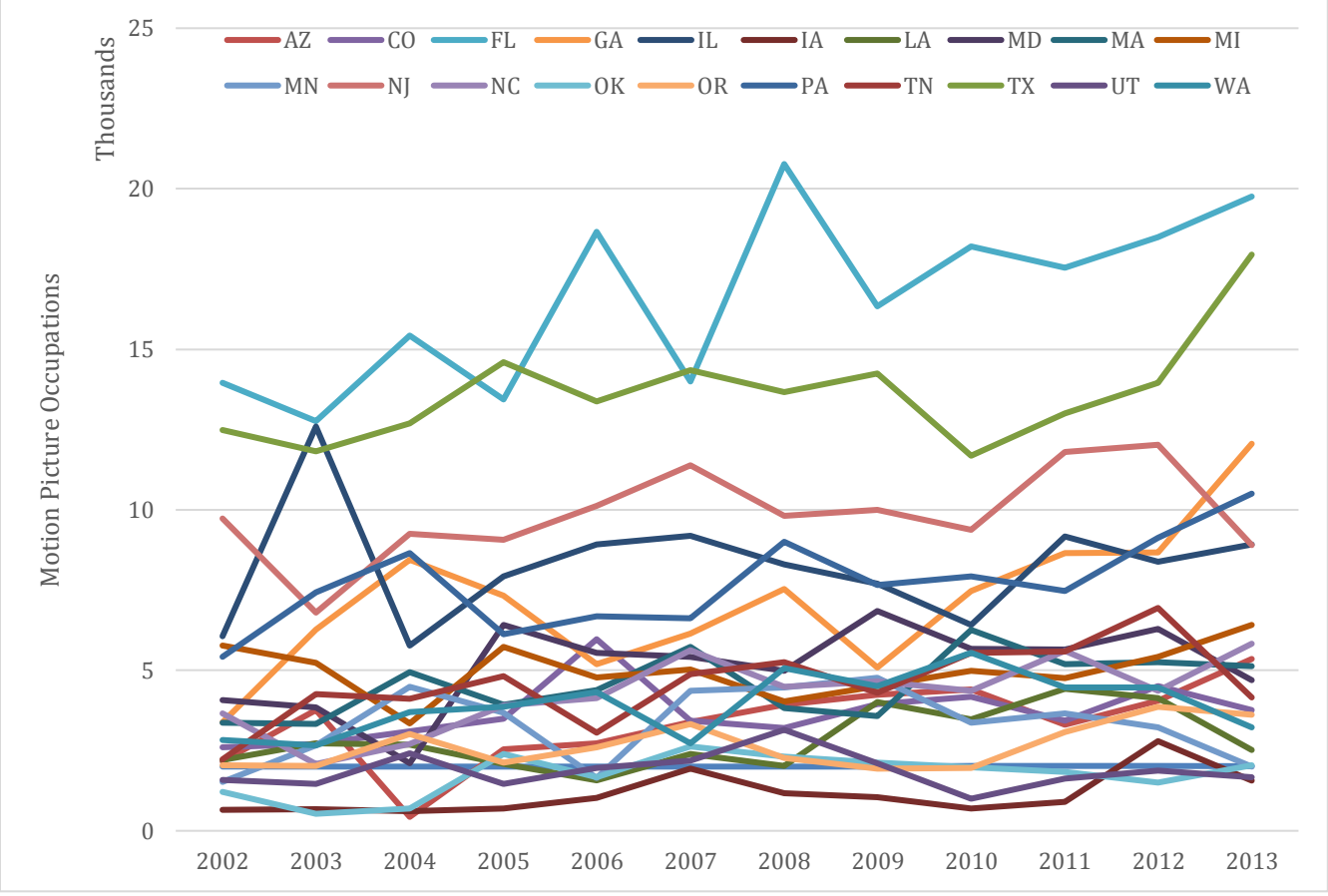
Source: County Business Patterns

Figure 3.2 Motion Picture Employment (Except CA & NY), 2002-2013

It is worth noting that the numbers for the period do not reflect changes on an annual basis. In this case, the latter part of this period, from 2008-2013, saw the "Great Recession" and its relatively slow recovery (Figure 3.3). However, while some states like Florida, Texas and Georgia saw a large dip in employment during this time, most states were relatively flat before the recovery. And while there appears to be precipitous drops in 2006 for Illinois, Massachusetts and Washington, these are merely points at which data was either estimated, or unable to be estimated based on the County Business Patterns.

Turning to employment and establishment numbers, Tables 3.4 and 3.5 show the diversity of growth among the states offering MPIs. Table 3.4 shows that while 13 of the 22 states offering

incentives showed positive growth in film industry employment, and 13 states grew film employment faster than other industries in their states, only seven had motion picture industry growth at a faster rate than the US as a whole. Film industry establishments (Table 3.5) fared a bit better, with again 16 states showing growth, and 13 states showing growth greater than other all industries, and 12 states beating out film establishment growth nationally. It may also be worth noting that the employment growth numbers were more widely distributed, with a high of 290% for Utah and a low of -35% for Oklahoma, while Oregon showed the greatest growth in film establishments at 23.6% and Michigan the least at -6.1%.



Source: IPUMS ACS 1% Sample

Figure 3.3 Motion Picture Occupations (Except CA & NY), 2002-2013

I also looked at four film occupations: actors, producers and directors, broadcast and sound engineers, and camera operators and editors. While the overall trend is largely rising, this trend does not seem to reflect the rise in MPIs, especially in key states like Louisiana and North Carolina, though Florida, Texas and Georgia saw notable growth in the last two to three years of this period (Figure 3.4).

3.5.2.2 Panel data regression models

Before finalizing my panel data regression models, I wanted to eliminate as much as possible concerns about multicollinearity. My first step was to run correlation tables all the variables. The only correlation coefficient over 0.8 was Highest Point and Elevation Span, so I dropped the Highest Point from the fixed effects regression models (See Table 3.7). Also dropped were variables for maximum and minimum temperature, which were highly correlated with average temperature.

3.5.2.2.1 Panel-data fixed-effect estimations for employment models

First, I looked at three different measures of the effects on employment in the motion picture industry: a log-transformed employment variable, the growth in motion picture industry employment and the location quotient for the industry in each state and period. For the independent variables, I used a dummy variable for MPIs (since MPI levels rarely change, and are all within a fairly narrow range of values), lagged by one year; the number of years MPIs have been in effect, not including the current year; and the overall employment growth for the state. For each of these three dependent variables I ran three different models: models (1), (4) and (7) with only the lagged MPI, (2), (5) and (8) with only the number of previous years the MPI was in effect, and (3), (6) and (9) with both. All models also included overall state employment growth as a control variable. As can be seen in Table 3.7, the lagged MPI variable was only significant in one model. The only model in which the lagged MPI was significant was (1), showing that an MPI would increase employment by 15 percent. Also,

model (2) suggested that employment would increase by three percent for each year the MPI was in effect. However, neither of these effects were significant when both variables were included in the model (3), nor were they significant alone or together for the other two employment-based dependent variables. The only other significant relationship in this set of models was that of state employment growth with state motion picture employment growth. Models (4), (5) and (6) indicate that motion picture employment grew at over four times the rate of all employment (417 percent, 461 percent, and 421 percent respectively). I suspect that, while this relationship may hold true in general, it was only revealed in this model because of the scale of variables were the same, with both being growth percentages. Finally, it is notable that none of the independent variables showed any significant effect on the motion picture employment location quotient for each state. This suggests that while employment may increase with MPIs, especially after they have been in effect for multiple years, that there is little evidence of the states gaining a competitive advantage from these gains.

3.5.2.2.2 Fixed-effects models for establishments and occupations

The picture changed somewhat when I used establishments and occupations instead of employment as the dependent variables. In Table 3.8, the years the MPIs were in effect was positive and significant in all the models in which it was included, including those with the lagged MPI dummy variable [(3) and (6)]. And while the MPI variable was significant when years were not included, it was not significant when they were. The coefficients were smaller in these models, with MPIs showing an eight percent and 18 percent increase in establishments and workers in film-related occupations respectively, while each year in effect was predicted to increase them by one to two percent and three to four percent respectively. State employment growth overall was significant for establishments, but the coefficients were effectively zero, suggesting very little effect.

Table 3.6 Correlation Coefficients for Regression Variables

	MP Emp	MPI Lag	MPI Yrs	State Emp	LQ MP	Year	Avg Temp	Rain-fall	N/S Flights	LA Flights	Dx to LA	High Pt.	Elev Span	Coast	MSAs >1 mil
MP Emp	1.0														
MPI Lag	-0.1	1.0													
MPI Yrs	-0.1	0.7	1.0												
State Emp	0.0	-0.2	-0.1	1.0											
LQ MP	0.8	-0.1	-0.1	0.0	1.0										
Year	0.0	0.7	0.8	-0.1	0.0	1.0									
Avg Temp	0.0	0.0	0.1	0.1	0.0	0.0	1.0								
Rainfall	-0.1	0.2	0.1	-0.1	-0.3	0.0	0.2	1.0							
N/S Flights	0.8	-0.1	-0.1	0.0	0.5	0.0	0.4	-0.1	1.0						
LA Flights	0.7	-0.2	-0.2	0.1	0.8	0.0	0.2	-0.5	0.6	1.0					
Dx to LA	0.0	0.1	0.1	-0.1	-0.4	0.0	0.1	0.8	0.0	-0.6	1.0				
Highest Pt.	0.2	-0.1	-0.1	0.1	0.4	0.0	-0.2	-0.7	0.1	0.6	-0.8	1.0			
Elev Span	0.3	-0.1	-0.1	0.1	0.4	0.0	-0.1	-0.6	0.1	0.7	-0.8	1.0	1.0		
Coastal	0.4	0.0	0.0	-0.1	0.2	0.0	0.3	0.5	0.4	0.1	0.3	-0.2	-0.1	1.0	
MSAs >1 mil	0.8	-0.1	-0.1	0.0	0.7	0.0	0.4	0.0	0.8	0.7	0.0	0.2	0.2	0.4	1.0

Table 3.7 9 Fixed Effects Employment Models with lagged MPI

VARIABLES	(1) MP Emp	(2) MP Emp	(3) MP Emp	(4) State MP Growth	(5) State MP Growth	(6) State MP Growth	(7) LQ MP	(8) LQ MP	(9) LQ MP
MPI lagged 1 yr.	1.15**		1.07	0.01		0.03	0.99		0.98
MPI Yrs. in Effect		1.03**	1.02		0.50	0.79		1.00	1.00
State Emp Growth	1.01	1.01	1.01	516.80*	561.38*	520.70*	1.00	1.00	1.00
Constant	1,403.19***	1,427.66***	1,396.96***	1,594,495.99*	576,274.53**	1,680,701.07*	1.91***	1.89***	1.90***
Observations	239	239	239	239	239	239	242	242	242
R-squared	0.035	0.039	0.044	0.018	0.018	0.018	0.004	0.003	0.004
Number of FIPS	22	22	22	22	22	22	22	22	22

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

Table 3.8 6 Fixed Effects Establishment & Occupations Models with lagged MPI

VARIABLES	(1) MP Est	(2) MP Est	(3) MP Est	(4) MP Occs	(5) MP Occs	(6) MP Occs
MPI lagged 1 yr.	1.08***		1.03	1.18***		1.06
MPI Yrs. in Effect		1.02***	1.01**		1.04***	1.03***
State Emp Growth	1.00**	1.00**	1.00**	1.01	1.00	1.01
Constant	270.41***	271.85***	269.54***	5,017.06***	5,077.37***	4,982.50***
Observations	242	242	242	242	242	242
R-squared	0.221	0.307	0.321	0.069	0.094	0.099
Number of FIPS	22	22	22	22	22	22

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

Table 3.9 9 Random-effects Models with temporal and time-invariant DVs

VARIABLES	(1) MP Emp	(2) MP Emp	(3) MP Emp	(4) MP Est	(5) MP Est	(6) MP Est	(7) MP Occs	(8) MP Occs	(9) MP Occs
MPI lagged 1 yr.	1.15***		1.08	1.08***		1.03**	1.19***		1.07
MPI Yrs. in Effect		1.03***	1.02		1.02***	1.01***		1.04***	1.03***
State Emp Growth	1.01	1.01	1.01	1.00**	1.00*	1.00**	1.01	1.00	1.01
Avg Temp	0.94***	0.94***	0.94***	0.96***	0.96***	0.96***	0.97**	0.97**	0.97***
Rainfall	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
N/S Flights	1.00**	1.00**	1.00**	1.00***	1.00***	1.00***	1.00**	1.00**	1.00***
LA Flights	1.00	1.00	1.00*	1.00*	1.00*	1.00**	1.00	1.00	1.00**
Dx to LA	1.23	1.23	1.23	1.23	1.23	1.23*	1.19	1.20	1.20
Elev Span	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Coastal	1.20	1.20	1.20	1.24	1.24	1.24	1.24	1.24	1.24
MSAs >1 mil	1.49*	1.48	1.48*	1.26	1.25	1.25**	1.34*	1.34*	1.34**
Constant	1,999.43***	2,083.30***	2,047.54***	199.83***	204.53***	203.10***	1,770.69***	1,862.80***	1,832.94***
Observations	239	239	239	242	242	242	242	242	242
Number of FIPS	22	22	22	22	22	22	22	22	22

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

Because I am using log-transformed dependent variables for employment, establishments and occupations, the coefficients have been exponentiated, and therefore represent the percent change of the dependent variable for each percent change of the independent variable. For example, in model (2) of Table 3.7, the coefficient for the number of years the MPIs were in effect is 1.03, meaning that for each year that the MPIs were in effect before the previous year, there will be a three percent increase in motion picture employment. This explains why many of the coefficients are 1.00, meaning that there is less than a one percent change in the log-transformed dependent variable.

It is also worth noting that the R-squared values for the standard linear regressions are quite low for employment (0.04) and occupations (0.19), and only a bit higher for establishments (0.22 - 0.32).

3.5.2.2.3 Random-effects models

Having seen some effect from MPIs and the number of years they were in effect, I used a number of random-effects models to see what other variables may have an impact on film industry outcomes. Here I added several factors known to be important to production location decisions from the literature. Among these I looked at environmental factors (temperature and rainfall), transportation factors (number of non-stop flights, number of flights to Los Angeles, and distance from Los Angeles), and geographic factors (elevation, coastal location, and number of large cities). As with the fixed effects models, I included variations on the lagged MPI dummy and the number of years in effect, using them individually and in combination to gauge the effects of each.

For employment, as with the fixed-effects models above, the MPIs and the number of years they were in effect were significant by themselves, but not together, with the same coefficients for each (1.15 and 1.03 respectively). Also of note were average temperature, though this had a negative effect (for each degree, employment declined by six percent); and the number of non-stop flights available at the state's major airport(s). In the case of non-stop flights, the effect was negligible, if

significant, with less than one percent change in employment for each flight. This is probably due to the scale issue, which might suggest the need to transform the variable to a more comparable scale to employment. The significance and coefficients of these two variables was consistent across all nine models for employment, establishments and occupations.

Distance had an impact in one of the establishment models (6), showing that for every 500-mile distance segment from Los Angeles, there was a 23 percent increase in film employment. This is somewhat counterintuitive, but may be explained by the bi-coastal nature of film employment.

As with employments, both establishments and occupations had similar results in the random effects model, with even more of the lagged MPI dummy variables being significant, both alone and in combination with the years in effect. These are the strongest evidence yet for impacts of MPIs and their years in effect being significant factors in growing the local industry; especially since establishments are especially tied to the local geography.

3.6 Conclusions and Policy Implications

Based on the findings presented here, there is relatively strong evidence supporting the hypothesis that a positive correlation between the existence of and persistence of movie production incentives and growth in the local film industry. While the descriptive statistics failed to show a strong relationship between MPIs and either film industry employment levels, the number of establishments, or the number of people working in film-related occupations, the linear regression models told a different story. And while the strength of lagged variables shows some evidence for a path-dependence argument, suggesting that growth in the industry is largely dependent on the previous levels of film industry activity, the panel data tell a different story. This may be due to the effects of the 2008 recession on some of the larger filmmaking states, because the panel data allows analysis of year-to-year data, rather than cross-sectional data at the beginning and end of the period.

In addition, other factors such as climate, geography and accessibility to the primary film industry hub in Los Angeles also seem to play a part in determining growth.

To review, my research questions going in were the following:

H_1: The number of film industry firms, employees and occupations in each state is positively correlated with the existence of tax credits.

The evidence as presented above seems to largely support this hypothesis.

H_2: The persistence of these subsidies over the years contributes to the employment, firm and occupational outcomes.

Again, the evidence as presented above seems to largely support this hypothesis.

H_3: MPIs and their persistence contributes to the growth of film industry employment, firms and occupations.

And yet again, the evidence as presented above seems to largely support this hypothesis.

H_4: MPIs and their persistence increase the relative concentration of film industry employment (location quotient) in the state.

This is the only hypothesis that does not seem to be supported by the evidence here.

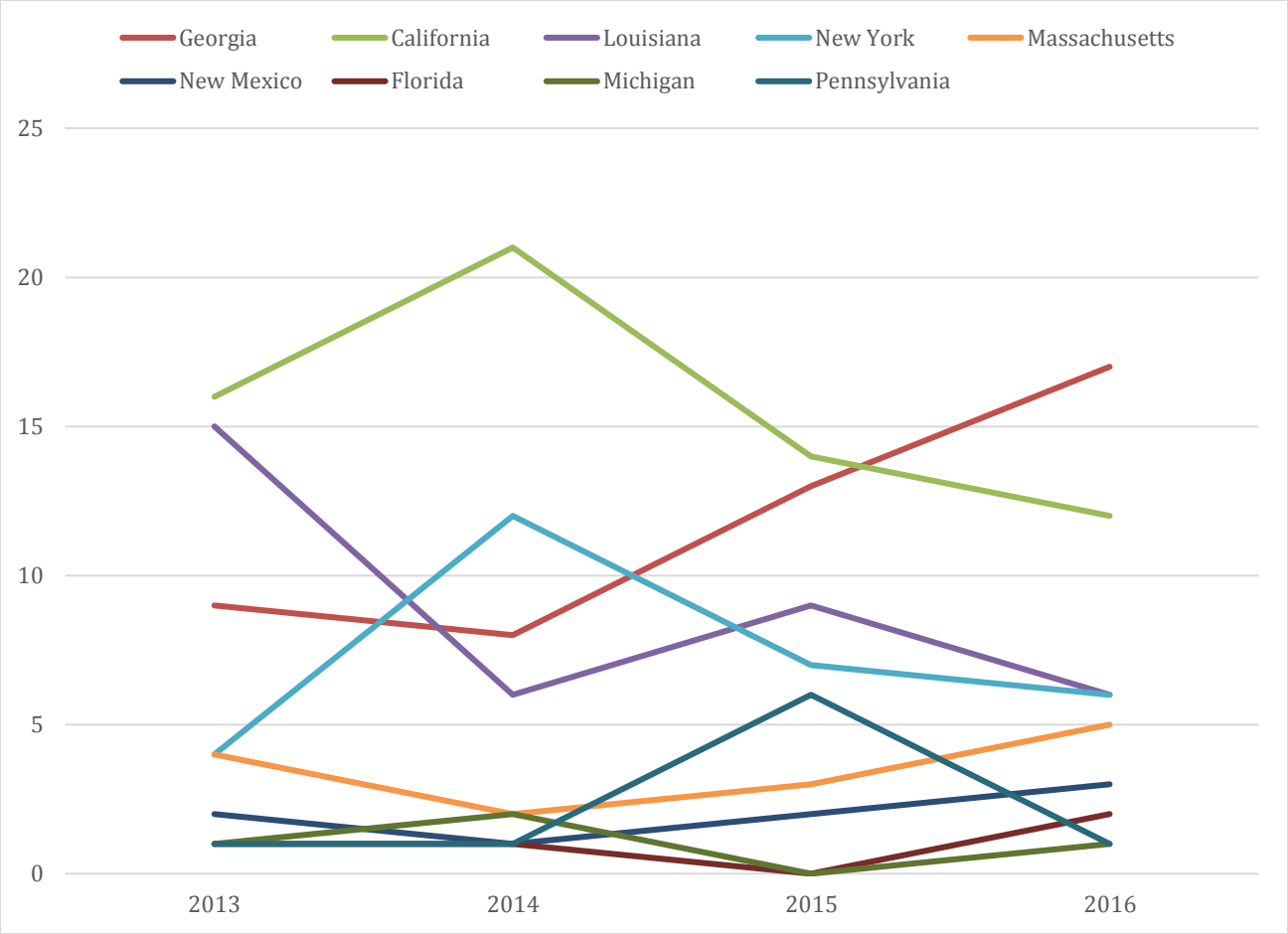
This does not in itself prove or disprove that the other primary rationale for such incentives—the economic effects of footloose production in the short-term—might in fact justify such tax expenditures, though several state studies have suggested otherwise[7]. Nor does it necessarily prove that MPIs, even when sustained over several years, work to build a local industry in all cases. Therefore, especially in light of the increasing costs of MPI programs, further evaluation of these subsidies should be done, and policymakers should in general consider implementing means by which more benefits can be achieved, and to reduce the dependence on the policy. At the very least,

[7] See Chapter 2, Previous studies: fiscal & economic impact analyses, for details.

there should be more transparency in the implementation and administration of such programs in order to avoid the corruption and/or just poor outcomes in the future.

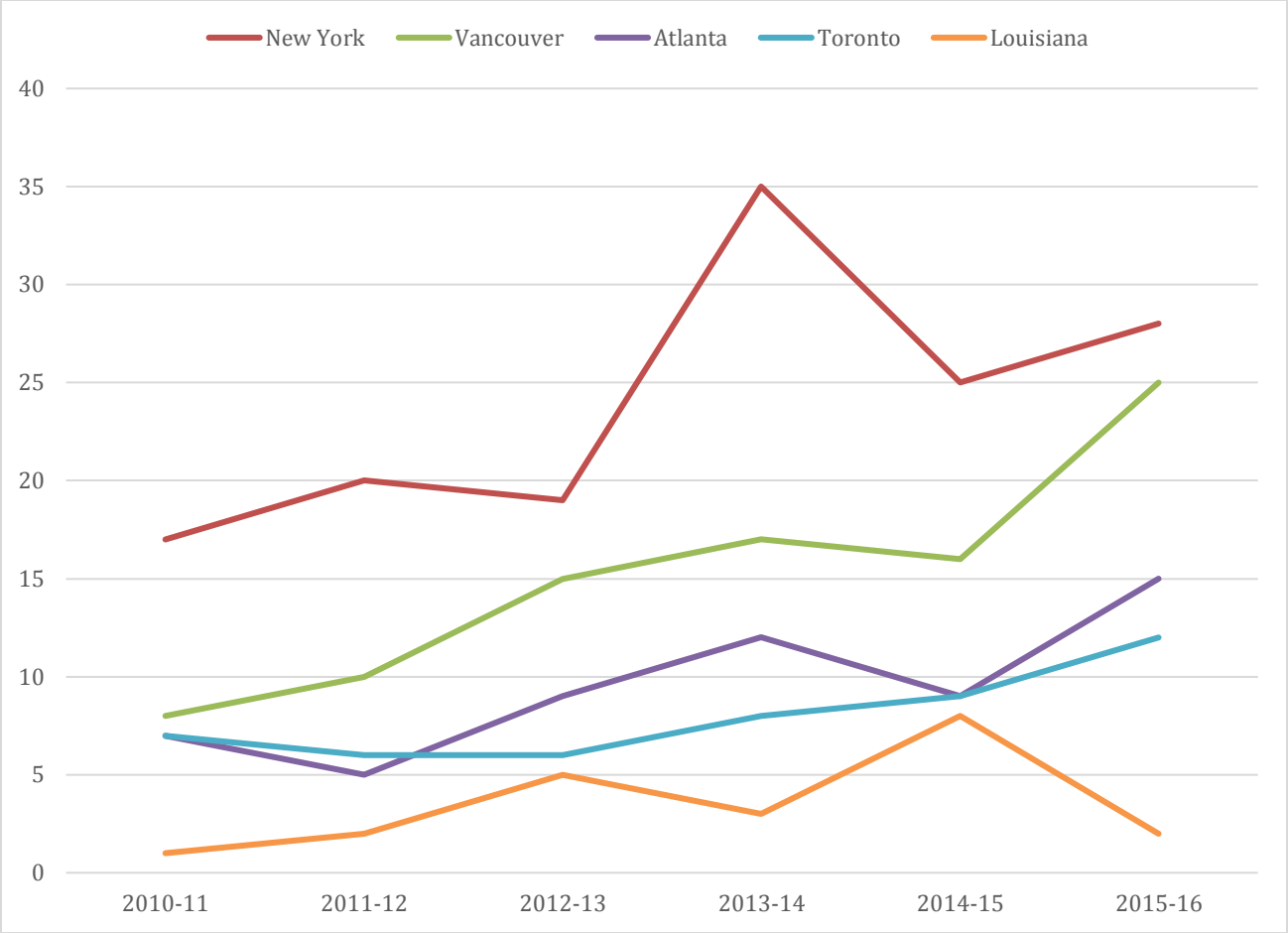
3.6.1 Recent updates

Data since 2013 may help us understand the long-term implications of MPI policies. FilmL.A. has done a series of studies (McDonald, 2014, 2015, 2016, 2017) over the past few years that suggest there is more to the story; or in Hollywood terminology, a twist ending. Four states emerge as key characters in this story: California, Georgia, Louisiana and North Carolina. These studies are limited, as they only look at the top 100 or so feature films by box office sales produced anywhere in the world, but they may offer some insight.



Source: FilmL.A. 2016 Feature Film Study

Figure 3.4 U.S. Feature Film Locations, Top 100 Films



Source: FilmL.A. 2016 Pilot Production Report

Figure 3.5 Pilot Production Locations (Not Including Los Angeles)

3.6.1.1 What we can see in four states

Among the states highlighted in the FilmL.A. reports, four states emerge as notable. First, California, as the first and still reigning leader of the film and television business, has seen its dominance degraded over the last several years, especially among the feature film "blockbusters." After reaching the high of 21 of the top 100 films in 2014, California has dropped to second place over the last couple of years. The new leader? Georgia, which has been gaining in recent years. Even the dominance of Los Angeles as the producer of television pilots has been challenged, with even ones set there moving to other locations—again, most notably, Georgia, as well as Louisiana and Canada.

Georgia, which is covered in depth in Chapter 4, is especially notable in the last few years. As could be seen in the data from IMDb Pro, productions have increased, but employment levels have mostly only returned to those of the pre-MPI era. This started to change dramatically in the last few years, as the number of top box office features and pilots has increased. Employment nearly doubled between 2012 and 2013. And while there was a drop-off in 2014, 2015 showed strong growth again[8]. Figure 3.5 shows that Georgia has also been gaining in television pilots, especially at the expense of Louisiana.

Louisiana may be the best example of the importance of persistence. Beginning in 2002 (after a number of years of other efforts to attract filmmakers), the state's generous incentives have helped to grow an industry nearly from the ground up. Lacking many of the natural and infrastructural advantages of Georgia and other neighbors, nevertheless Louisiana made a great effort to build not only the production base, but also to invest in the infrastructure to support it.

North Carolina does not get a lot of attention in the FilmL.A. reports, but it is important in a different way. Known for decades as "Hollywood East," with the largest studio between California and New York, North Carolina began to see productions move to Louisiana after 2002, and struggled to maintain its status for several years before and after starting their own more modest MPI program. It wasn't until their incentive rose from 15 to 25 percent in 2011 that they began to see results. But the real lesson of North Carolina may be more recent, and the reason they don't receive the notoriety of Georgia and Louisiana. After all, but eliminating the program in 2014, there was a virtual exodus of film production from the state; even before the business-killing effects of the state's now infamous HB-2 was conceived (though that has not helped). The new governor, elected in 2016, has pledged to bring back the MPI program, and hopefully, film production jobs with it.

[8] From author's calculations from County Business Patterns.

3.6.2 Focus on a single state

One way to move this research forward is too look more closely the year-to-year data. As my research continues, I plan to use a variety of time-series and panel data analyses to do just that. In the following chapter, I plan to do a detailed analysis of one state, Georgia, where incentives have been in place for several years, and where state officials feel the policy has been successful in growing an indigenous motion picture industry; a conclusion in alignment with that of the recent FilmL.A. studies discussed above.

CHAPTER 4 EMBEDDEDNESS AND ITS IMPACT ON LOCAL ECONOMIC DEVELOPMENT: THE CASE OF THE GEORGIA FILM INDUSTRY

4.1 Introduction

Much attention has been given to the attraction of film and other entertainment industries as a means to local economic development. To this end, policymakers at the state and local level have used traditional and non-traditional attraction strategies, including most significantly, tax credits and other financial incentives.

The theoretical basis for these attraction strategies brings together components of several traditional and more contemporary theories of regional economic development: *location* theories (comprised themselves of *growth-pole* and *cumulative causation* theories), the *product-cycle theory*, and *entrepreneurship* theories (Blakely & Leigh, 2009; Malizia & Feser, 1999). The cumulative causation and entrepreneurship explain how regions can gain a competitive advantage in economic development, while the growth-pole and product-cycle theories focus on the specific industries targeted. The competitive advantage in this case derives from combining an entrepreneurial environment with increased agglomeration within the industry sector.[9] Entertainment industries are targeted here because they are growing industries with innovative products. I will focus here on only the theories related to regional advantage.

Therefore, these theories conclude, attracting entertainment industries will lead to long-term employment growth. One challenge unique to these industries is the mobile nature of film and

[9] For a more detailed explication of these theories, see Malizia & Feser (1999) and Blakely & Leigh (2009, pp. 76-98)

entertainment production. This mobility leads to both short-term projects spending and fierce competition between state and municipal entities. One theory as to why financial incentives work despite this mobility is that local networks of qualified workers are built up over time, and become an attracting force for more production (Christopherson & Rightor, 2010). These local networks attract production in two ways: by offering mobile productions a qualified, stable crew base that doesn't need to be imported to the production site, and by creating contacts leading to bringing and basing production in the area.

I test these theories by analyzing data from the IMDb Pro database, supplemented by the *2012 Georgia Film, Video & Digital Entertainment Sourcebook* (Georgia Department of Economic Development, 2010), cross-checking it with the Covered Employment Where Wages (CEW) data, the CBP establishment data and *Oz Magazine's* "Creative Index 2011-2012" [10], (Powell & Powell, 2011) to measure the number of films, firms, and individuals comprising the state's motion picture industry. The results may suggest whether the hypothesis of attracting mobile productions to generate long-term employment in a region has some validity, at least in Georgia.

In fact, a decade after adopting their first MPI in 2005, Georgia has become one of the top six production locations in the world, along with California, Canada, the U.K., New York and Louisiana (McDonald, 2016). Six of the world's top grossing films of 2015 were produced primarily in the state, more than any location other than the U.K., and it had the fourth largest production spend that same year.

[10] The *2012 Georgia Film, Video & Digital Entertainment Sourcebook* will henceforth be referred to simply as the *"Sourcebook,"* and the "Creative Index 2011-2012" simply as the "Creative Index."

4.2 Research Questions and Hypotheses

So, given what we know about the film and new media industries, what might make Georgia competitive in this mobile, project-based industry? After over 10 years of subsidies, most of them since the 2008 increase, I look at the established networks of firms and workers currently operating in the state to gauge the likelihood of sustainable growth for Georgia. More specifically, I investigated the number of Georgia-based employees and establishments, and map the size and geography of the industry over an 11-year period from 2002-2012.

More specifically, I consider three overarching questions regarding the film industry in Georgia. First, what does the Georgia film industry network look like? I have attempted to get a sense of the scale, connectedness, and geography of the industry in the state. Second, does the Georgia film industry possess the "critical components" for a sustainable industry, or is it likely to in the near future? By assessing the size and geography of the industry network in the state, I hope to answer these questions using Christopherson and Rightor's criteria. And finally, I will address the question of the role of public policy in building and sustaining the film industry. More specifically, can tax incentives build a self-sustainable film industry that can *remain* competitive even when the incentives are removed?

My research focuses on four questions:

1. Will a steady growth in the number of productions, and direct local employment, establishments and occupations, create a sustainable film industry in Georgia?
2. Does the Georgia film industry have a network of organizations and individuals geographically clustered in one or more regions of the state?[11]
3. Does the size and geographic proximity of a firm network create spillover effects even for non-participating organizations; i.e., does proximity matter?
4. Do the critical components required for a sustainable local industry exist in Georgia?

[11] Question 2 is loosely adapted from Uzzi (1996, pp. 345-346)

4.3 Data and Methodology

I use a combination of data from the previously collected data on employment and firm growth, the MPI Impact Factor developed in the first essay, the Covered Employment Where Wages (CEW) data, and the IMDb Pro database of films and film-related companies and individuals, and the Georgia *Sourcebook* directories.

I had intended to use the IMDb Pro and *Sourcebook* data to view connections between the various actors by film or video project. Because IMDb Pro allows me to view all participants by project, I can get a list of individual and company names associated with each project, their location, and their role in the production. Theoretically, this could then be cross-checked with the *Sourcebook* and CEW data to confirm location and other information about the participants.

4.4 Data Sources

My primary resources for constructing my social network map will be the Covered Employment Where Wages (CEW) data, the IMDb Pro database, the *2012 Georgia Film, Video & Digital Entertainment Sourcebook* (Georgia Department of Economic Development, 2012) and *Oz Magazine's* "Creative Index 2011-2012" [12] (Powell, Powell, & Harless). The Covered Employment Where Wages (CEW) data, formerly known as ES202, provides county-level data at full NAICS code detail from 2001 to 2012, with imputations for undisclosed data. The Internet Movie Database (IMDb) has a fee-based professional version called IMDb Pro that, among other things, has listings for individuals and firms for hire. IMDb Pro has become the *de facto* industry standard for professional contacts since the service began in 2001, claiming to have data on over two million movies, television and entertainment programs and over four million cast and crew members

[12] The *2012 Georgia Film, Video & Digital Entertainment Sourcebook* will henceforth be referred to simply as the *"Sourcebook,"* and the "Creative Index 2011-2012" simply as the "Creative Index."

(IMDb.com, 2012). What I had hoped to be most useful about this service is that, in addition to being able to search by location and project, searching by project shows all participants on that project, and therefore might have allowed me to make connections between individuals and firms who work together over time. As it turned out, this data was not able to be used in this way, because first, it was mostly individual credits, where the CEW listed only establishments; and second, I was unable to automate neither the process nor the output of these searches to use them in this way.

The *Sourcebook* and "Creative Index," combined with IMDb Pro and the online database of the former, provide the most comprehensive listings of individuals and companies in the film and digital entertainment industries. Because the *Sourcebook* is the official publication of the Georgia Office of Film, Video and Digital Entertainment, virtually everyone in the industry provides a listing. That being said, the printed versions (also available online) are only published annually, and therefore may become outdated quickly, but can provide useful information for historical analysis. The online database version of the *Sourcebook* is more up-to-date, but requires specific searches to retrieve information, making it a bit more cumbersome to use as a data source.

Finally, the *Sourcebook* and "Creative Index" may underreport smaller organizations and individuals who may be unwilling or unable to pay the listing fees for inclusion. This is still the best data source available, however. Other options could include "Yellow Pages" style telephone directories, Internet searches, and personal references.

In addition to these sources, I will also use the County Business Patterns (CBP) for some state- and county-level establishment and employment data. This source is limited mostly because getting geographic and/or industry detail is difficult because of undisclosed data. However, I will use this data for multi-state analyses, and to cross-check against the other sources. The CBP is currently available through 2015, so I could use the more recent data to suggest trends beyond what could be shown using the 2012 data available for the other sources.

The CBP is the only source available that allowed a comparison across several states for several years. For this reason, it was important to impute values for the suppressed values in the data. For my purposes, I wanted to use all motion picture industries *except* those for motion picture exhibition (movie theaters and drive-ins). In most cases this could be done by subtracting NAICS code 51213 (Motion picture and video exhibition) from four-digit code 5121 (Motion picture and video industries), but in some cases one of these values was suppressed. I could estimate these suppressed values using a combination of the employment values for NAICS codes 512110 (Production), 512120 (Distribution), 512191 (Teleproduction and other postproduction services), and 512199 (Other) with mid-point estimates of data suppression flags for any of these values that were suppressed. For these estimates, I calculate and include the variance in the estimate for estimated values.

Finally, I use IPUMS 5% and 1% microdata to look at four film-related occupations. This data is self-reported by Georgia residents. This data also includes industry data, but this data is less useful, because the definitions are somewhat different than that of the NAICS codes, and it does not allow the disaggregation of motion picture production and exhibition employees.

It is also worth noting two subscription-fee-based data sets I did not use. As I was beginning to collect data, I became aware of the possible availability of the National Establishment Time-Series (NETS) database for the state of Georgia. Upon further exploration, I was informed that the data was in the process of being cleaned and normalized, and would not be available when I needed it. I also became aware of another potentially useful data set—and the source of the NETS data—the Dunn and Bradstreet Million Dollar Database, but ultimately was unable to access this data, though it is apparently available through Georgia Institute of Technology.

4.4.1 CEW and IMDb Data Issues

There were several issues with the CEW which ultimately made it difficult to use for its originally intended purposes. I had hoped to use this data to both map the geographic clustering of the film industry in Georgia, and to link it to the IMDb data, which would theoretically allow the mapping of a network of collaborators on various film and video productions. The first issue was the lack of good geographic information from the CEW database. Only a few records and quarterly data sets had geographic information below the zip code or county level, and many records lacked addresses, zip codes, census tract and block information, or geographic coordinates. In the end, I chose to use zip codes, and their geographic centroids, as well as counties, to represent establishment locations.

Even more problematic was the lack of overlap in the three key data sets, together with the limitations of the IMDb database for mapping connections between individuals and establishments on various productions. My attempts to manually match records from the CEW to either the IMDb or *Sourcebook* data, a process necessitated by the many correct and incorrect variations of establishments' names, yielded frustratingly low hit rates across data sets. Given the small numbers to begin with, a five to ten percent non-random sample of the CEW was not deemed adequate for my analysis. In addition, there was no way to easily map the connections between productions. There were two reasons for this: the fact that most crew listings were for individuals, not establishments, and they required specific online searches.

Another issue was the incomparability of the 2012 CEW data extracts. This set, extracted after the previous years' data, lacked a unique establishment identifier common to the earlier data, which limited the opportunity for longitudinal analysis to data prior to 2012.

And finally, there seems to be a notable discrepancy between the CEW data and the CBP, despite the fact that I chose to use CEW data for March of each year, to coincide with the timing of the CBP survey (See Appendix 2). As of now, I have not been able to get a satisfactory explanation for this discrepancy, but the following observations are worth noting:

- The criteria for what constitutes an employee are different for each survey, with the CEW data being more specific about employees and the states in which their services are rendered. This might have a bigger impact on employment in the motion picture industry, since it often involves employment in states different from those of the employer. This discrepancy seems to be borne out by the data, as the percentage of the difference is greater for the motion picture industry than for employment generally.

- The difference varies dramatically between years and industries. While the difference is quite consistent for all employment (11-13% lower for the CBP), it varies between -29% and 82% for the motion picture industry; i.e., the CBP is as much as 29% greater than the CEW employment and as little as 82% less (or nearly half) that of the CEW employment.

- The discrepancies for the motion picture industry are greatest in the most recent years, 2009-2011, while in 3 of the 4 differences in the years when estimates were required for the CBP (2002-2005) were within the estimate range used for the March CEW, and in 2 of the 4 when using quarterly average employment.

All of this suggests that more research may be needed to understand these discrepancies, but my best guess is that the rules for the different surveys have tended to enlarge the film industry employment since 2009 in the CEW data, making comparisons between states difficult. The key question may be, which of the two estimates better reflects the impact of film industry employment on the growth and embeddedness of the industry in Georgia? Unfortunately, that is a question that cannot be answered in this report.

It is important to note that all firm level and employment data from the CEW and County Business Patterns are based on the establishments' primary identification as being in film production and distribution related industries. This means that not all workers for each establishment will be doing film-related jobs, nor will they include all individuals doing jobs related to the film industry,

thus these numbers represent the actual financial impact of the motion picture industry on the state, rather than the narrower question of the impact on film-production-specific occupations. The questions I am attempting to answer here relate to growth and concentrations over time and location.

4.4.2 Secondary Data Sources

In addition to the primary data collected from the above three sources, I used the following secondary sources:

- U.S. Bureau of the Census, ACS 2012 IPUMS
- Bureau of Labor Statistics, Occupational Employment Statistics (OES)
- 2017 Reel-Crew Production Directory
- County Business Patterns (CBP)

The IPUMS ACS microdata sample was used for some occupational analysis, as was the BLS Occupational Employment Statistics (OES). The CBP was primarily used as a check on the CEW (see note above), as noted above.

I had also planned to use some or all of the following secondary sources, but was unable to do so. The Longitudinal Business Database (LBD) required access to the confidential microdata, and I was unable to get that in a timely fashion for this study. There is some non-confidential data, but only at the sector level (2-digit SICs). Another option may have been the use of longitudinal microdata from a recently created experimental data set based on the LBD: The Synthetic Longitudinal Business Database (SynLBD). Unfortunately, this is still quite limited, only including 3-digit SIC codes from 1976 – 2000. I also had planned to look at business dynamics, but the Center for Economic Studies' Business Dynamics Statistics (BDS) again only included sector-level data (2-digit SIC).

4.4.3 Data Analysis Plan

The data analysis will use two basic types of analysis. The IMDb Pro data is used to identify the production activity and growth. I also had intended to use this data to map the social network that comprises the industry, but the inability to combine this data with CEW and *Sourcebook* data made that impossible. The employment and firm location data from the CEW is used to map clusters and potential networks of production activity, as well as being used as a check on overall scale and growth in employment and number of establishments in both the core industries and support services. The *Georgia Sourcebook* and *Reel-Crew Production Directory* are used to look at the presence of critical components of a sustainable film industry.

This analysis will answer the three questions which are the basis for the hypotheses: First, what is the scale and geography of the industry in the state? Second, does the Georgia film industry possess the "critical components" for a sustainable industry. Third, have tax incentives contributed to building a self-sustainable film industry that can *remain* competitive even when the incentives are removed? I use a variety of descriptive data and a locational cluster analysis to answer the first two questions. The third is difficult to assess, since there is no sign of the MPI going away any time soon.

4.5 Findings

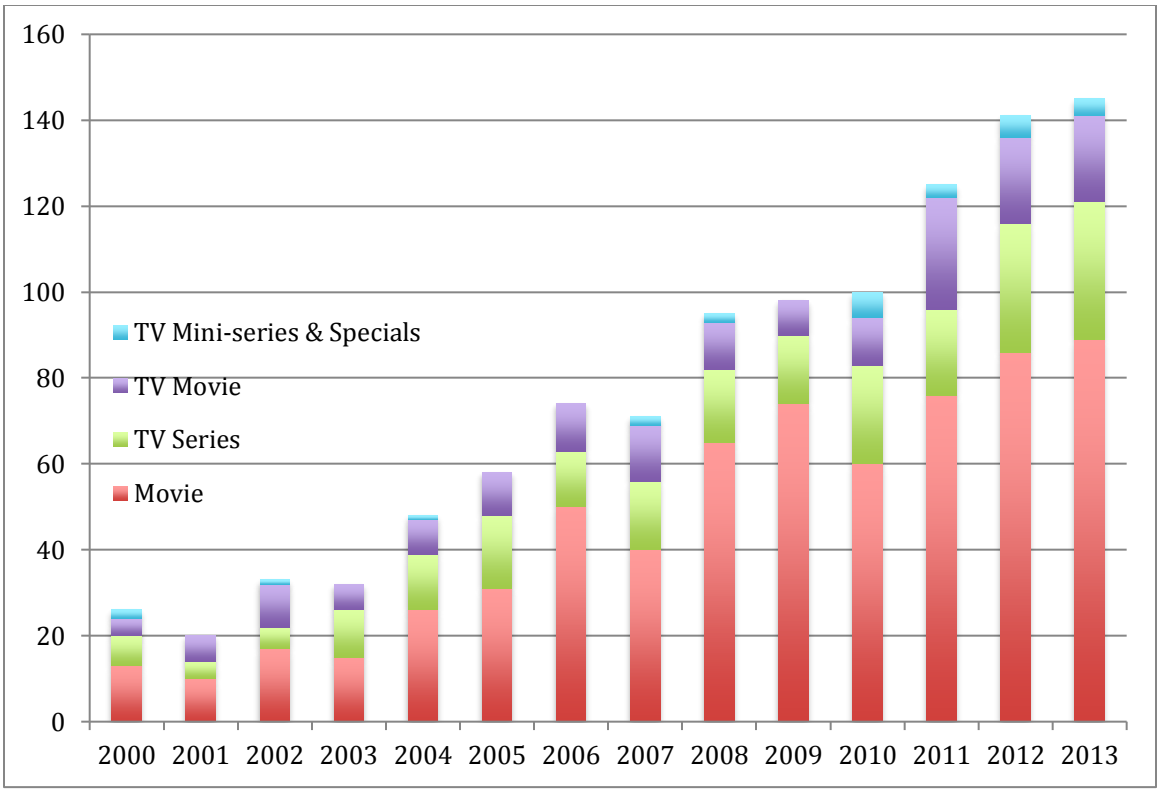
4.5.1 The Scope and Scale of the Georgia Film Industry

First, the scope, scale and distribution of the film industry in Georgia should be established. I will do this using production activity, Georgia film occupations from the IPUMS ACS microdata, and employment and establishment data from the CEW.

4.5.1.1 Film Production Activity in Georgia

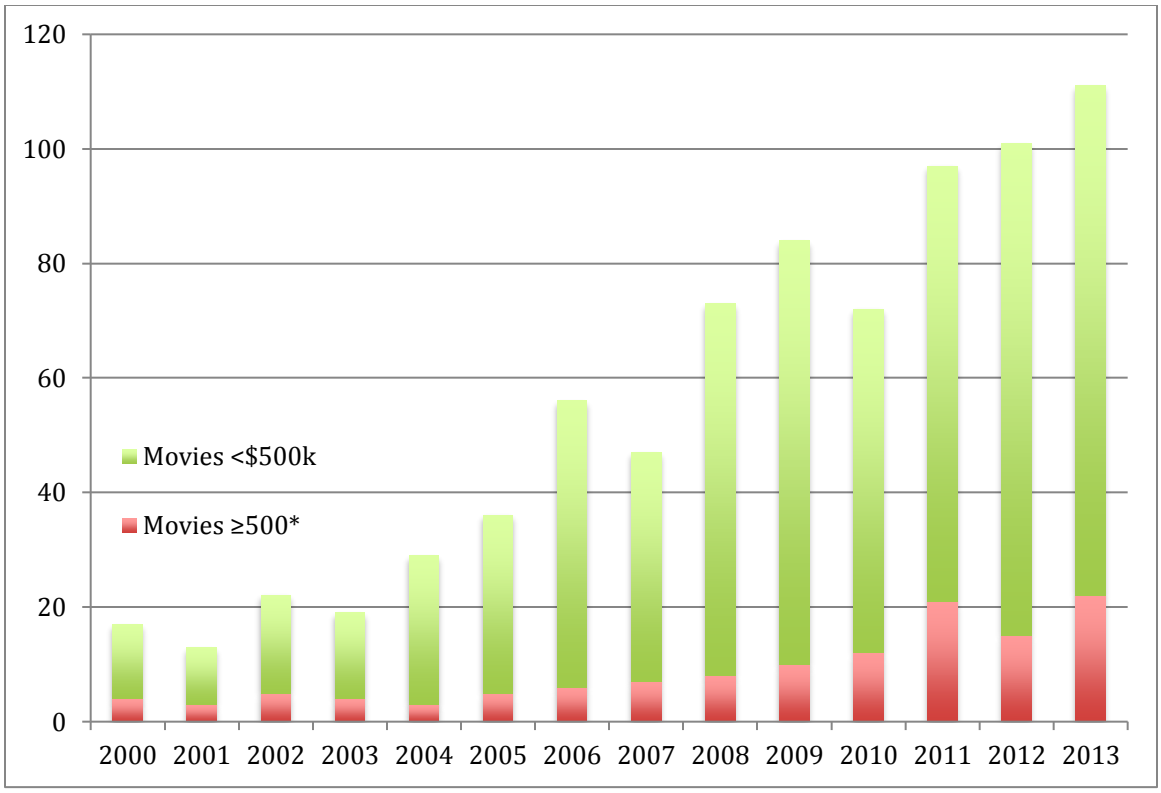
The first measure of the effectiveness of film tax incentives is the quantity and growth of film and television productions in Georgia. Based on location searches in IMDb Pro, the number of productions by production release year has grown steadily for overall productions and for feature films. The growth rate for feature films, however, especially those with budgets over $500,000—the minimum qualifying budget for spending in the state—has been more dramatic than productions as a whole. Given the longer period of time between feature film production and release time, the lag is understandable. Television production has increased more recently, showing strong growth in 2012 and 2013 in particular. The difference between the growth in feature films, and more recently in television production, and that for other types of productions, is likely the direct result of state incentives.

Maybe more interesting, while films with budgets over $500,000 have grown over 500%, films that do not qualify for the state incentive grew by nearly 700%, suggesting that the growth is not only due to the transferable tax break.



Source: IMDb Pro

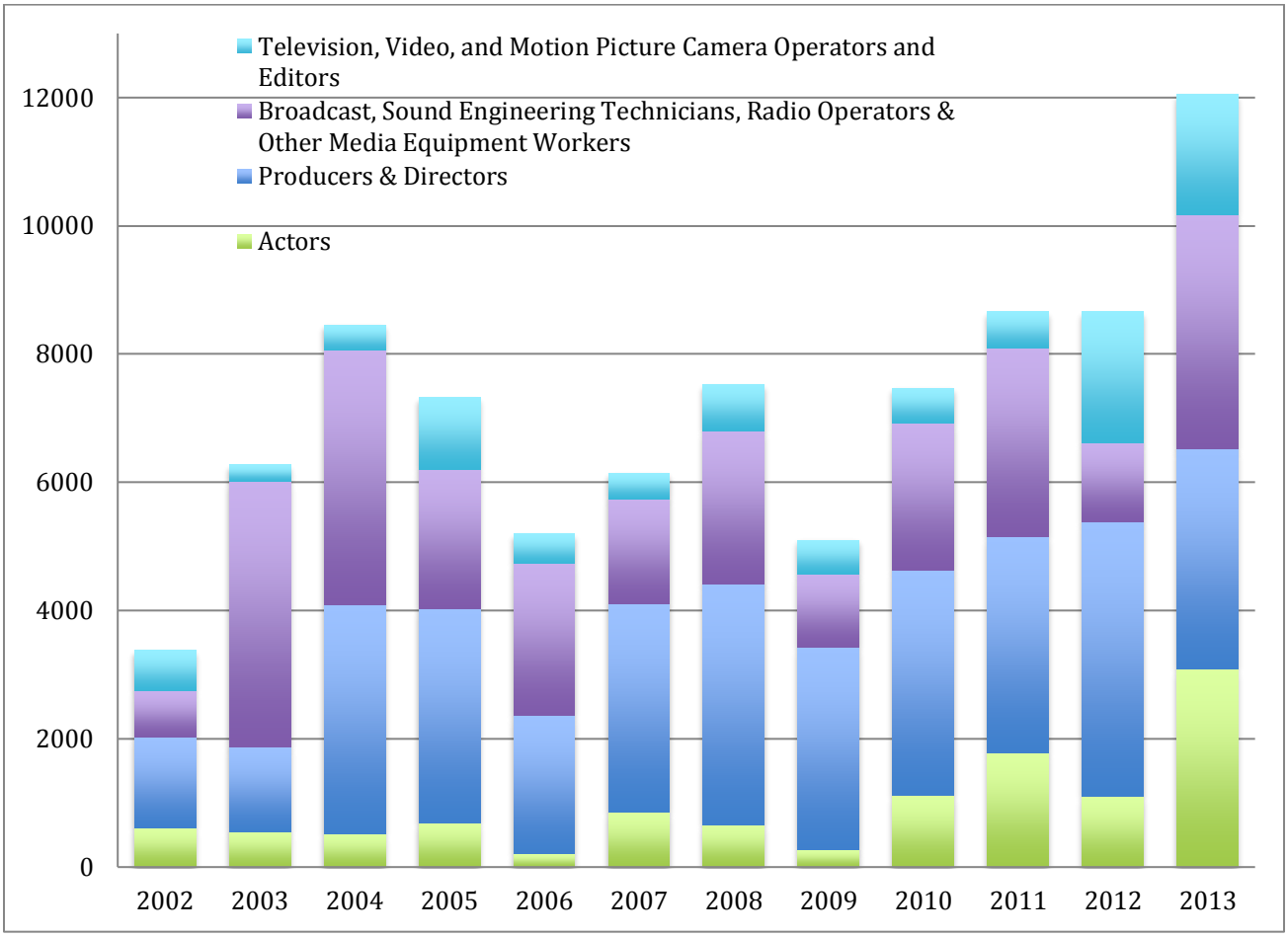
Figure 4.1 Georgia Feature Film Productions by Year, 2000-2013



Source: IMDb Pro

Figure 4.2 Georgia Feature Film Productions by Year, 2000-2013

4.5.1.2 Selected Film Occupations



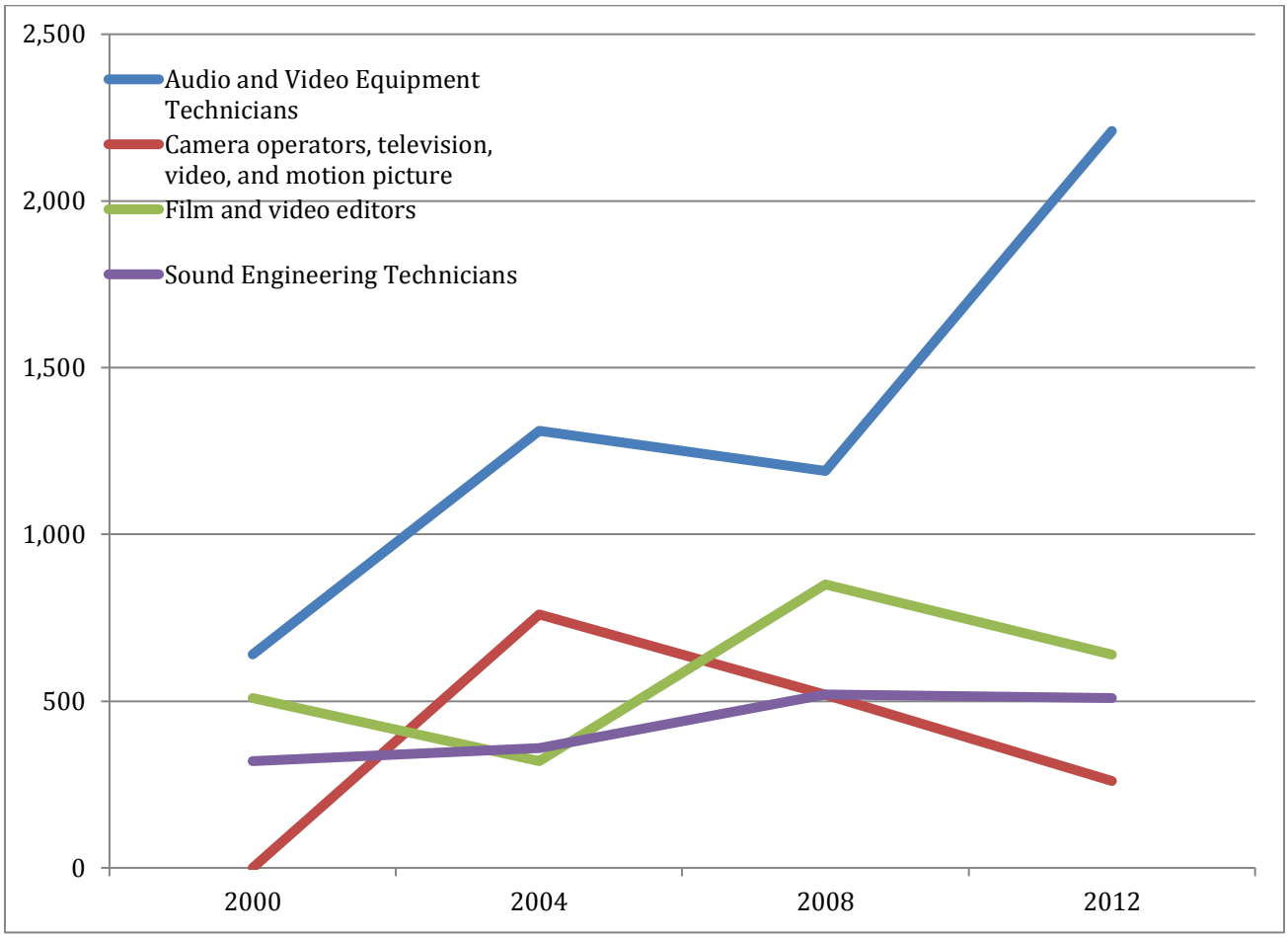
Source: U.S. Bureau of the Census, Census 2000 IPUMS 5% Sample and ACS 2012 IPUMS

Figure 4.3 Selected Film & Video Occupations, 2002-13

First I look at occupations from the ACS microdata for several key film- and video-related occupations for Georgia.[13] Figure 4.3. shows selected occupations for 2000 and 2013. These figures show how overall, growth in these occupations was inconsistent before the post-recession period of 2010-2013. During that period, all but one of the occupations showed growth, with only broadcast sound engineers declining or showing slower growth. This may be a function of the movement from

[13] I based the selected occupations used in previous work by Christopherson et al. (2006)

live broadcasting, typified by organizations such as Turner Broadcasting, to more recorded film and video production.



Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES)

Figure 4.4 Georgia Selected "Below-the-Line" Occupations for Four Years Between 2000-2012

In addition to looking at occupations from the ACS, I used the BLS OES data to study employment by occupation for several key film- and video-related occupations for Georgia. Figure 4.4 shows four common "below-the-line" occupations—typically more technical, non-creative roles—for four years between 2000 and 2012. Here, while most showed fairly flat growth, Audio

and Video Equipment Technicians did show marked growth over the 12-year period; the growth was also steady, except for the year of the "Great Recession." The recession also may have impacted camera operators and audio technicians, but 2008 was apparently a good year for film and video editors, although this category did decline again in the following years.

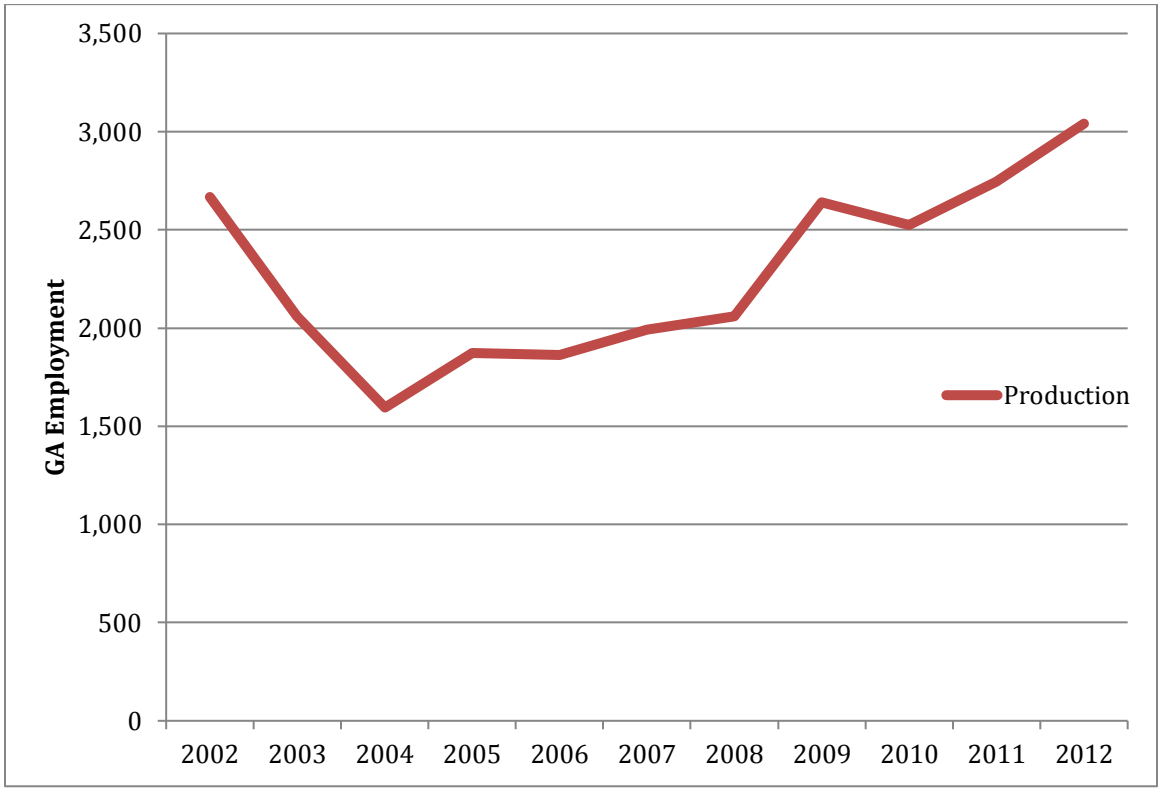
4.5.1.3 Georgia Film Employment and Establishments by Industry

Based on a summary of all film industry NAICS codes, industry employment peaked in 2002, but then grew fairly steadily from 2004 through 2012. The pre-incentive peak may be at least in part due to the fact that this is the year other states, most notably Louisiana, began offering tax incentives to attract productions. It is especially interesting to note that the largest growth rates took place in the years in which tax incentive packages being implemented (2005 and 2008).

While production jobs have accounted for virtually all jobs and growth, and therefore tracked closely to the total, Figure 4.5 shows that they did peak above the 2002 peak in 2012, suggesting a shift from non-production to production jobs in the industry mix. During that period, the converse was true of the non-production jobs. Teleproduction and Other Postproduction (512191 in Figure 4.6 declined sharply in 2004, and has been gradually declining since, while Distribution (512120) and Other Motion Picture Industries (512199) have been largely flat during the entire period, with the former declining bit in 2007 and the later rising a bit at around the same time. It is also worth noting that this growth was consistent throughout the 2008 recession and its recovery period, except for a slight dip in 2010.

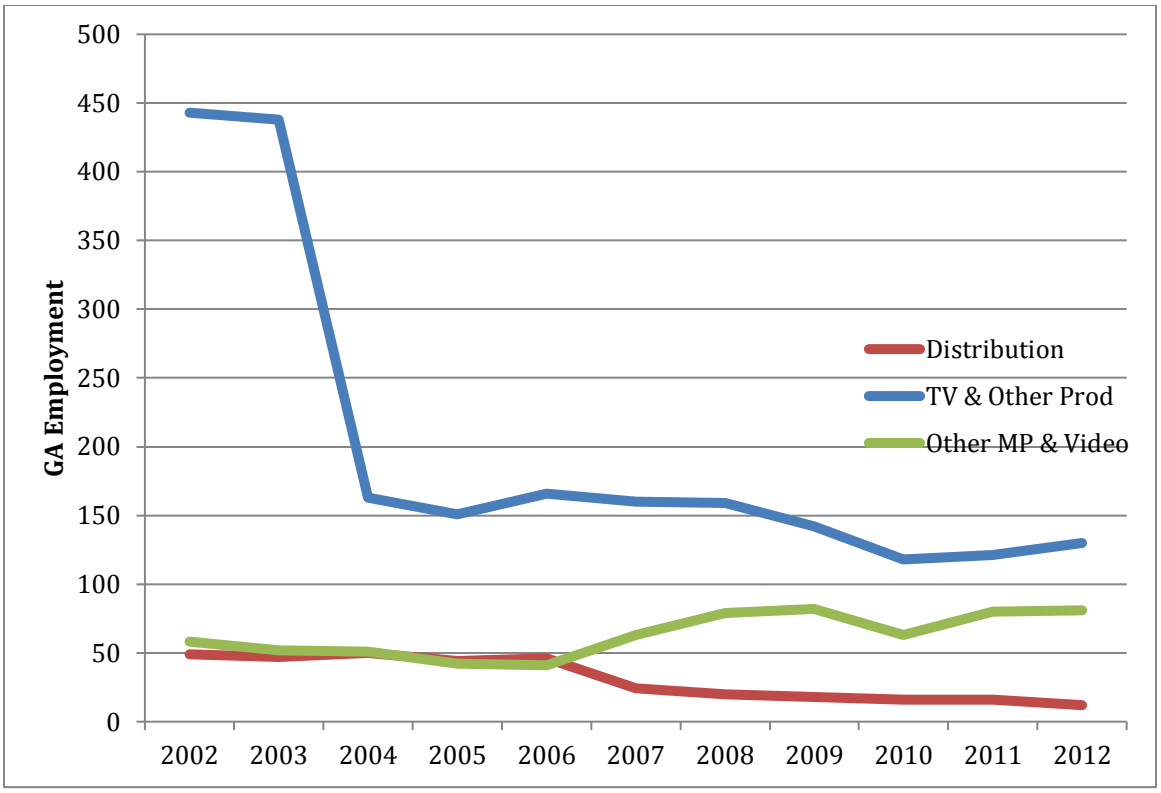
The findings for establishments were similar to those for employment in some respects, but surprising in others. Table 4.7 shows that production establishments declined from 2002 to 2005, when the first incentive package was implemented, then a steady rise to a 2009 peak, followed by a slight drop in 2010, and a return to slightly surpass 2009 levels in 2012. One might expect less variability in the establishment numbers, so this is not terribly surprising, but it is interesting to note

the similarities between the trends here and in film production (Figure 4.5), which similarly peaked in 2007 before flattening out. Figure 4.8 shows a similar trend for Teleproduction and Other Postproduction, while the other categories were more similar to the employment numbers for those industries. And as with employment, this growth continued throughout the 2008 recession and its recovery period.



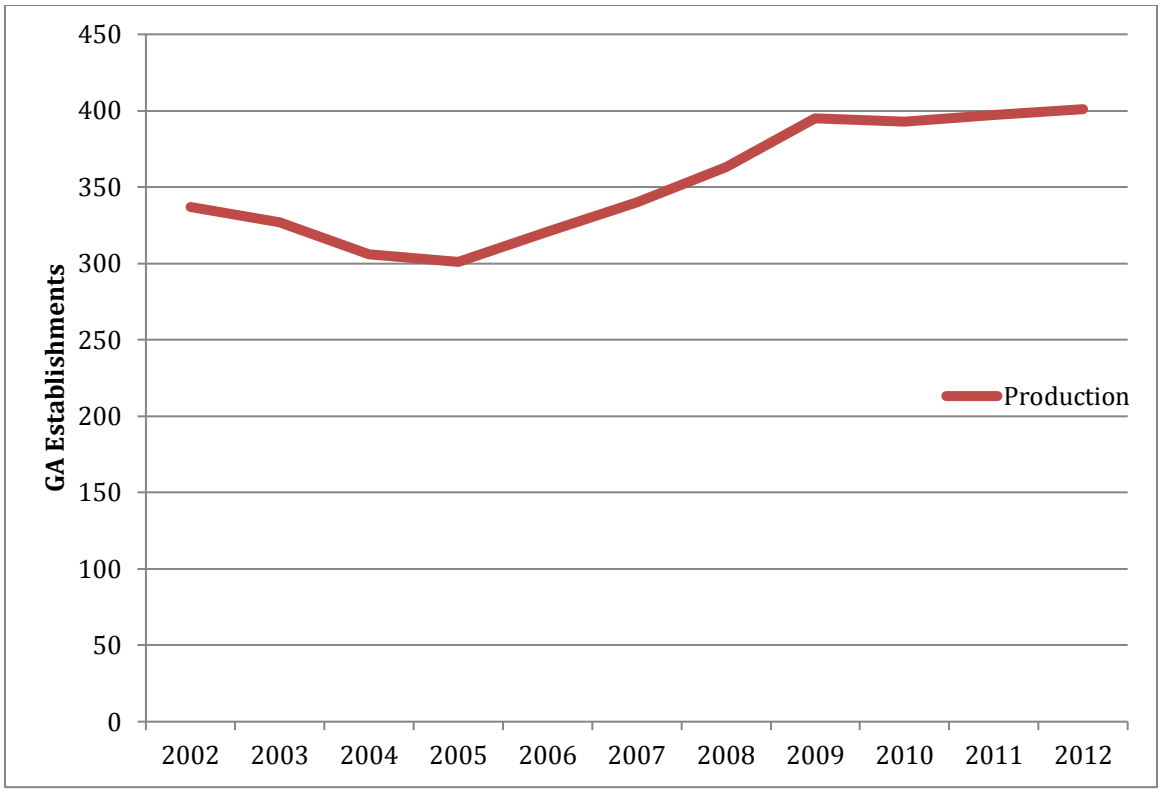
Source: Georgia CEW

Figure 4.5 Georgia Film & Video Production Employment, 2002-2012



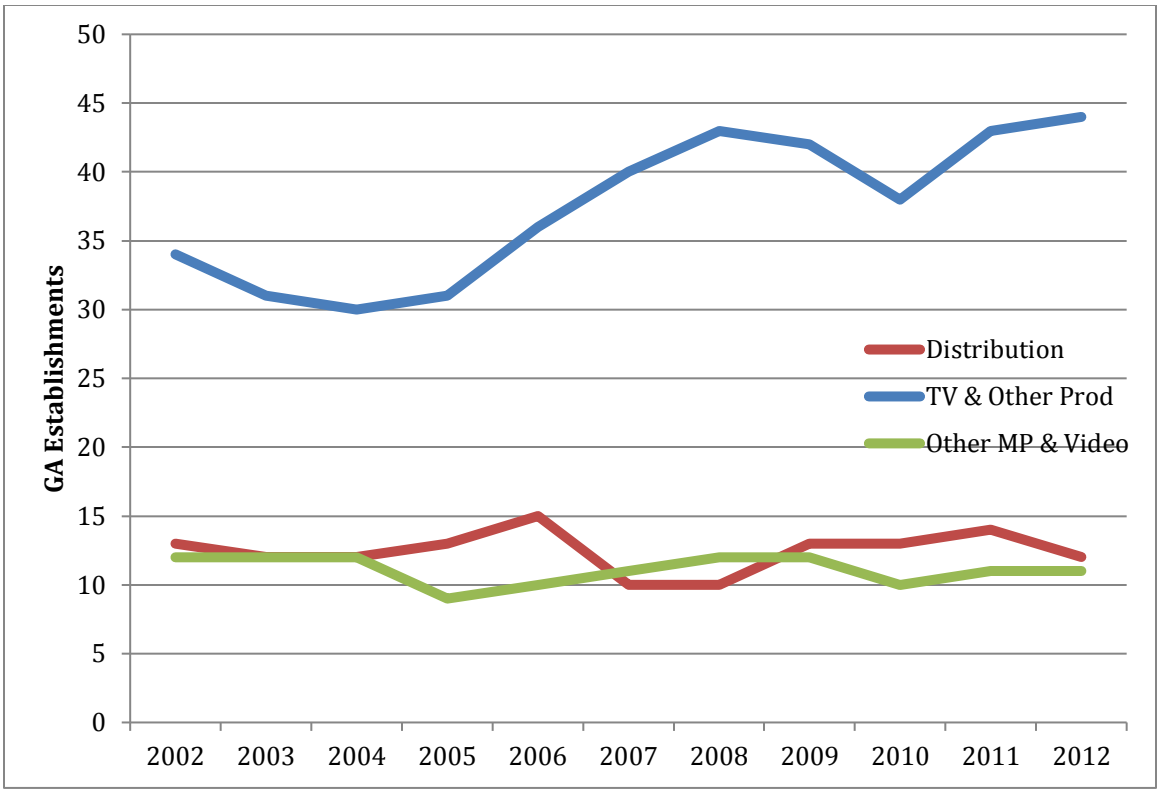
Source: Georgia CEW

Figure 4.6 Georgia Non-Production Film & Video Employment, 2002-2012



Source: Georgia CEW

Figure 4.7 Georgia Film & Video Production Establishments, 2002-2012



Source: Georgia CEW

Figure 4.8 Georgia Non-Production Film & Video Establishments, 2002-2012

4.5.2 The Geographic Distribution of the Georgia Film Industry

The geography of the Georgia film industry is broken down by county and zip code.

4.5.2.1 The Georgia Film Industry Employment by County

Table 4.3 shows that nearly 95 percent of Georgia's film industry employment is in the ten counties, eight of which are in the Atlanta MSA, but these two counties (Whitfield and Candler) accounted for only about one percent of the total. In fact, the two Atlanta counties (Fulton and DeKalb) and two of the three adjacent counties (Gwinnett and Cobb) contained nearly 90 percent (89.1%). This concentration shows both the urban nature of film employment, and the relative concentration of the industry. Figures 4.8 and 4.9 show the locations and growth of film employment

through the state. Again, this shows a large concentration in the Atlanta metropolitan areas, with small concentrations in mostly urban areas near Savannah and a few other smaller cities.

4.5.2.2 The Georgia Film Industry Employment by Zip Code

Using the address in the Georgia CEW, I was also able to further drill down into this geographic concentration. Table 4.4 shows the top 20 zip codes by film employment. Similar to the employment by county, these 20 zip codes account for over 80 percent of total film employment in the state (81.2%), and all but one is not in the Atlanta MSA (30721 in Whitfield County). In fact, the top five zip codes contained about 55% of the state's total. Also, eight of the top ten, accounting for nearly 50 percent of the total, are in the city of Atlanta, with the other two in neighboring Decatur (DeKalb County) and Norcross (Gwinnett County). So even more than the county data, this indicates a high degree of concentration in the film industry.

Table 4.1 Top 10 Counties for Motion Picture Employment

County Name	MP Emp 2002	MP Emp 2012	% Growth 2002-12	Tot Emp 2002	Tot Emp 2012	% Growth 2002-12	Pct MP Emp 2002	Pct MP Emp 2012	Pct GA Emp 2002	Pct GA Emp 2012	Cum MP Emp 2002	Cum MP Emp 2012	Cum MP Emp 2002	Cum MP Emp 2012
DeKalb County	388	1,070	175.8%	301,517	284,516	-5.6%	21.3%	44.9%	0.129%	0.376%	388	1,070	21.3%	44.9%
Fulton County	1,081	728	-32.7%	746,315	723,732	-3.0%	59.2%	30.5%	0.145%	0.101%	1,469	1,798	80.5%	75.4%
Gwinnett County	94	186	97.9%	291,900	306,609	5.0%	5.2%	7.8%	0.032%	0.061%	1,563	1,984	85.6%	83.2%
Cobb County	124	141	13.7%	295,337	303,502	2.8%	6.8%	5.9%	0.042%	0.046%	1,687	2,125	92.4%	89.1%
Forsyth County	18	57	216.7%	36,964	57,276	55.0%	1.0%	2.4%	0.049%	0.100%	1,705	2,182	93.4%	91.5%
Whitfield County	0	27	-	60,924	52,096	-14.5%	0.0%	1.1%	0.000%	0.052%	1,705	2,209	93.4%	92.7%
Candler County	0	17	-	2,747	2,866	4.3%	0.0%	0.7%	0.000%	0.593%	1,705	2,226	93.4%	93.4%
Walton County	2	13	550.0%	15,037	18,211	21.1%	0.1%	0.5%	0.013%	0.071%	1,707	2,239	93.5%	93.9%
Bartow County	2	12	500.0%	31,210	30,873	-1.1%	0.1%	0.5%	0.006%	0.039%	1,709	2,251	93.6%	94.4%
Cherokee County	7	10	42.9%	36,670	44,665	21.8%	0.4%	0.4%	0.019%	0.022%	1,716	2,261	94.0%	94.8%

Source: Georgia CEW

Table 4.2 Top 10 Zip Codes for Motion Picture Establishments & Employment

Zip	City	County	Est Core	March Emp Core	Emp Rank Core	Cum. Pct.	Est Support	March Emp Support	Emp Rank Support
30030	Decatur	DeKalb	15	522	1	22.2%	9	7	
30303	Atlanta	Fulton	2	329	2	36.1%	8	36	15
30340	Atlanta	DeKalb	4	225	3	45.7%	2	1	
30329	Atlanta	DeKalb	9	116	4	50.6%	7	16	
30093	Norcross	Gwinnett	2	101	5	54.9%	3	1	
30306	Atlanta	Fulton	12	101	5	59.2%	8	1	
30318	Atlanta	Fulton	16	68	7	62.1%	23	99	7
30324	Atlanta	Fulton	14	61	8	64.6%	11	28	19
30339	Atlanta	Fulton	3	53	9	66.9%	10	151	5
30307	Atlanta	Fulton	20	48	10	68.9%	8	4	
30062	Marietta	Cobb	7	45	11	70.8%	12	22	
30005	Alpharetta	Fulton	5	34	12	72.3%	3	2	
30326	Atlanta	Fulton	2	33	13	73.7%	5	25	20
30080	Smyrna	Cobb	4	29	14	74.9%	14	63	9
30312	Atlanta	Fulton	10	28	15	76.1%	9	14	
30721	Dalton	Whitfield	1	27	16	77.2%			
30331	Atlanta	Fulton	2	26	17	78.4%	3	4	
30076	Roswell	Fulton	3	24	18	79.4%	8	7	
30308	Atlanta	Fulton	10	24	18	80.4%	4	4	
30309	Atlanta	Fulton	10	19	20	81.2%	12	13	

Source: Georgia CEW

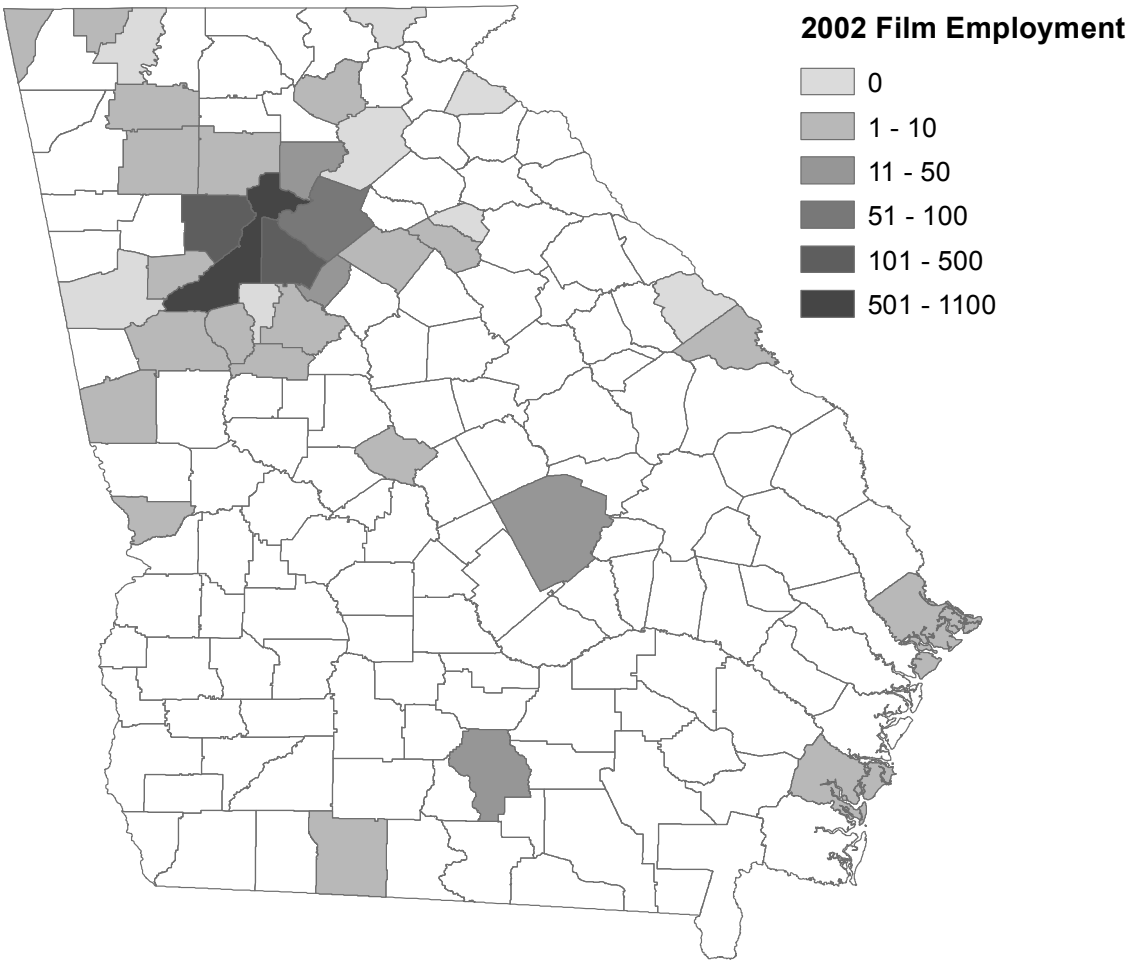


Figure 4.9 Georgia Motion Picture Employment by County, 2002

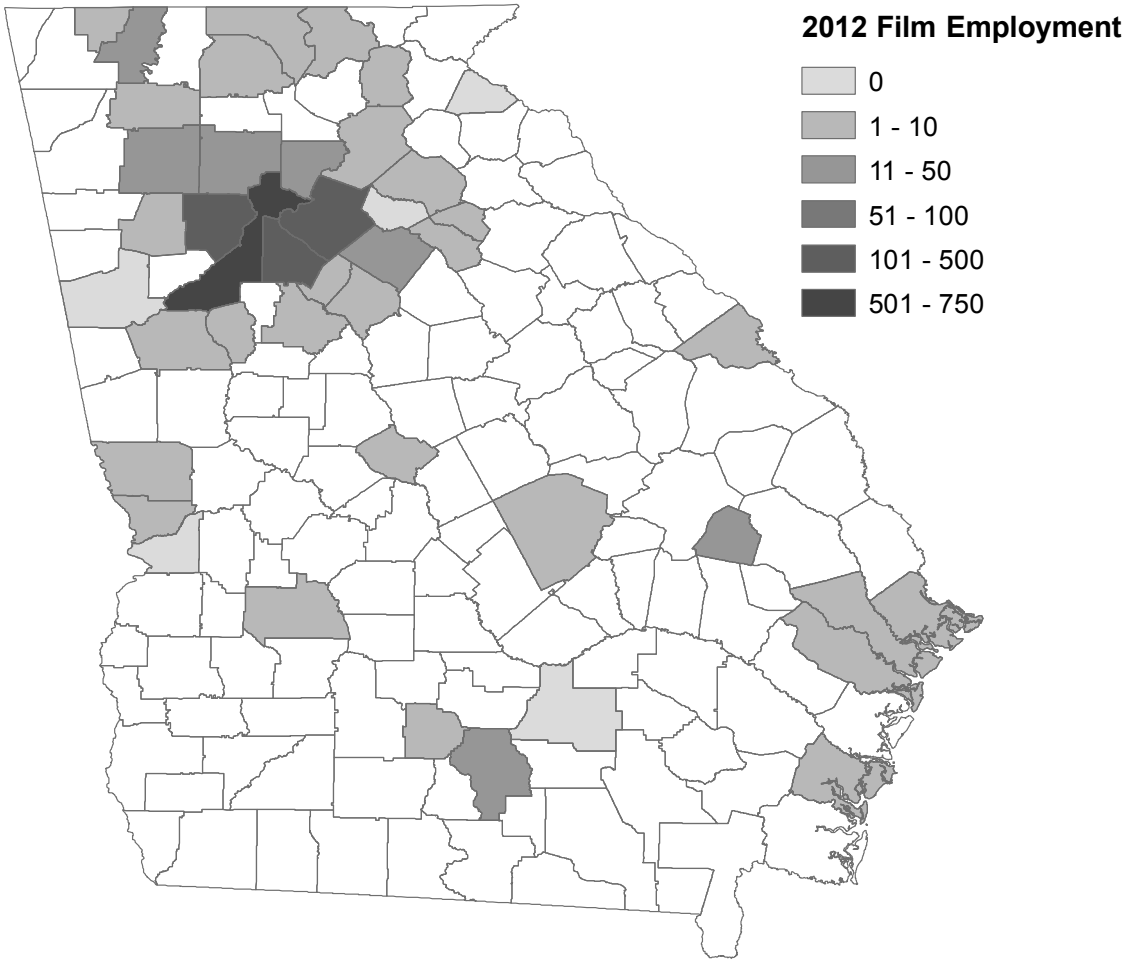


Figure 4.10 Georgia Motion Picture Employment by County, 2012

4.5.3 Critical Components

As suggested in Chapter 2, and to some degree validated in Chapter 3, specialized infrastructure is an important factor in creating and sustaining a state's film industry. So how does Georgia stack up based on Christopherson and Rightor's six critical components of a sustainable film industry. Here they are again:

- The presence of the ***industry decision makers*** (studio executives, producers, etc.),
- ***specialized business services*** such as attorneys, investment bankers, location scouts, and agents,
- smaller ***service businesses*** catering to the film industry,

- training and education programs in specialized fields,
- studios and other production, rehearsal, and sound-recording spaces,
- and the research and development that comes from ***industry-specific events*** and programs such as ***trade shows*** and ***film festivals*** (Christopherson & Rightor, 2010, pp. 345-346, emphasis added).

Table 4.3 Selected Listings from 2017 Reel-Crew Production Directory

	GA	LA	NC	MI
2010 Population	9,687,653	4,533,372	9,535,483	9,883,640
Crew Category	7,557	a	6,790	4,335
Producers (Feature & TV)	136	48	189	121
Directors	97	48		69
Support Services Category	3,038	a	1,479	2,530
Sound Stages/Studios	15	14	12	16
Talent Agencies	15	8	37	18
Casting Agencies	20	9	17	0
Entertainment Attorneys (firms)	25	22	20	32
Craft Services	27	25	32	47
Total Crew & Services	10,595	2,944	8,269	6,865

Source: Compiled from the four states' online Reel-Crew Production Directory

a. Louisiana's database combines crew & support services, so it was not possible to get a breakdown between the two.

First, it should be noted that the Georgia film industry ecosystem has become quite rich in recent years. In 2012, when I collected the data from that year's online *Sourcebook*, there were already over 2,200 unique entries under Support Services. A recent check revealed that number is now up to well over 3,000 entries, all of which are required to have a Georgia tax ID and street address to qualify for entry (Georgia Department of Economic Development, 2017). That does not include the over 7,500 individual crew members also listed in that directory. As for specialized service business, the site lists everything from Animal Wranglers to Transportation specialists.

Table 4.5 shows a comparison of key roles, specialized support services, and studio infrastructure across a number of key filmmaking states. I have not included California or New York, since they do not offer comparable directories, and the scale is quite different, with states 2-3 times large than Georgia and its closest competitors.

Also, the number of film and video education programs has risen dramatically, with the state taking a leading role. One statewide effort that is particularly notable is Georgia Film Academy, a collaborative effort of the University System of Georgia and Technical College System of Georgia (that partners ten four-year and community colleges to provide practical training that includes both classroom and on-set learning (Georgia Film Academy, 2017). In addition, private for- and non-profit institutions such as Savannah College of Art, Emory University and the Art Institute of Atlanta have added and/or expanded their offerings in recent years.

One thing not listed among these attributes is transportation access, though this is frequently mentioned as a key reason for Georgia's success in attracting production. With the busiest airport in the world, the cost and convenience of air travel, especially to Southern California and New York, make Georgia particularly appealing. Combine this with location offering that include mountains and plains, subtropical ocean beaches and northern winters, and a large city, small towns and rural areas, all with moderate year-round temperatures, and Georgia becomes even more attractive than many competitors.

However, given the large MPI offered to productions, and the lack of transparency in reviewing it, it remains to be seen whether this ecosystem would survive either a reduction or removal of the tax incentive, or more aggressive incentives elsewhere.

4.6 Conclusions and Policy Implications

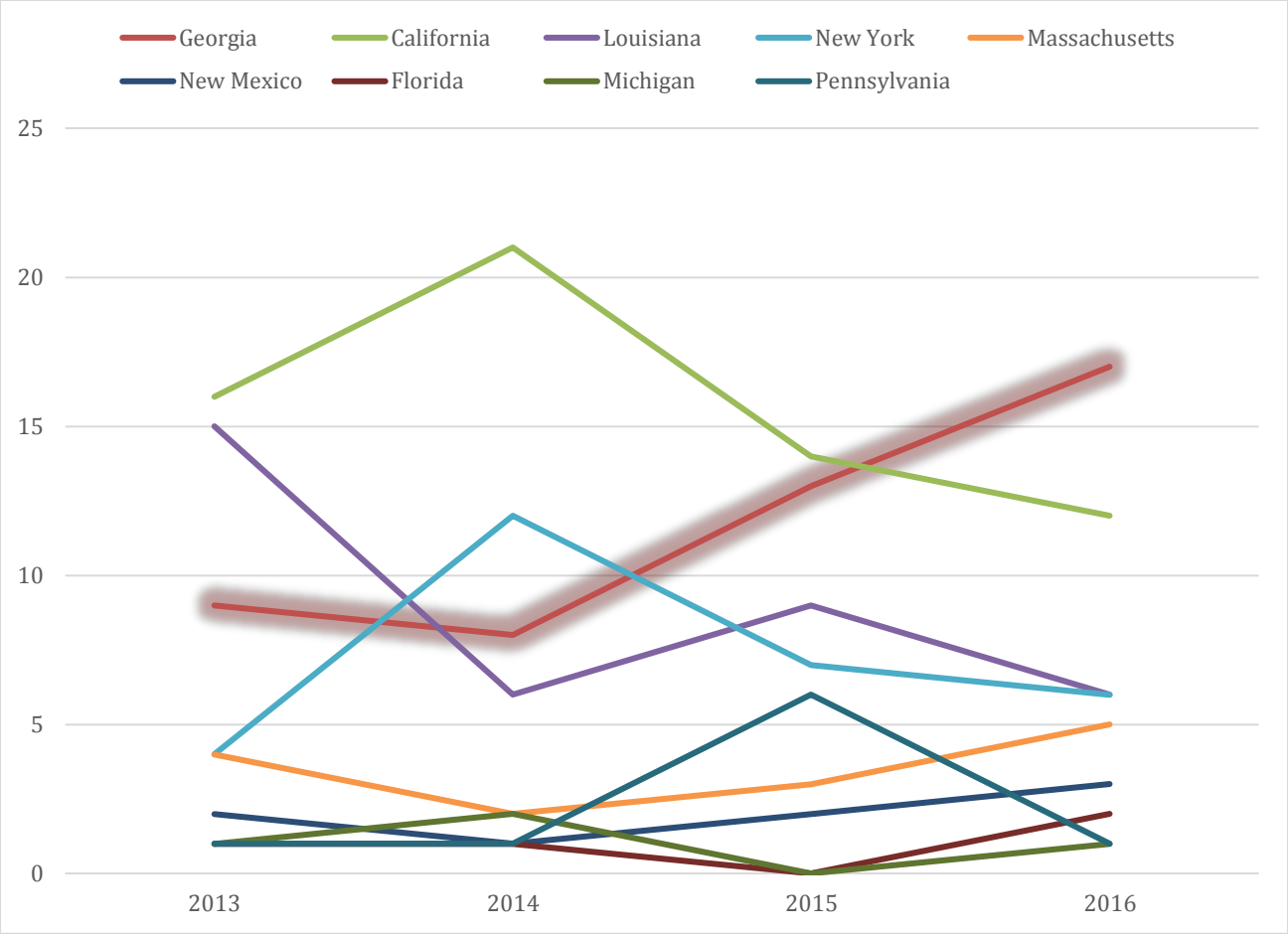
Returning to the theory, and the research questions from which they sprang, what does this evidence show? In considering the first question, that growth over several years in key metrics, is inconsistent, though some preliminary data show signs of production & employment growth in the few after those in the IMDb and CEW data.

Based on the findings presented here, the evidence suggests a positive correlation between implementation and level of movie production incentives and growth in the film industry, especially in later years. Using the metrics of productions, employment by industry, and employment by occupation, there is evidence to support the hypothesis that the incentives implemented in 2005 and expanded in 2008 have had some impact on the growth of the film and video cluster in Georgia.

It is interesting to note that, though the overall number of Georgia-based productions slowed in the years following their earlier peak in 2006, feature films and television series have shown especially strong growth since 2010. This phenomenon may be interpreted in more than one way, based on earlier studies, large feature films, with their commensurately large budgets, might be more likely to base production location based on budgetary considerations such as refundable tax incentives. However, they are also more likely to import crew, and to use subcontractors not based in the production location. The other big takeaway from the production numbers is the growth of smaller films, which may support the cluster theory regarding a sustainable industry.

At the same time, both film production employment and establishments showed some signs growth since the first MPIs were introduced in 2005, which was at a low point at that time.

In terms of production, Georgia seems to be gaining ground since 2013, according FilmL.A. (McDonald, 2017). In their study of the top 100 feature films by box office sales produced anywhere in the world, Georgia was number one in 2016, up from number five in 2013, the first year of the study (See Table 4.4). Georgia saw steady growth in this study since 2014.



Source: FilmL.A. 2016 Feature Film Study

Figure 4.11 U.S. Feature Film Locations, Top 100 Films (Featuring Georgia)

However, motion picture employment tells a somewhat more nuanced story. Based on CBP data, film employment more than doubled between 2010 and 2015 (118%). However, the state's location quotient actually dropped between 2013 and 2015, from 0.75 to 0.42, while states like California and Louisiana saw theirs grow. Occupations showed less steady growth, but a spike in 2013 and solid growth in film and video technicians corroborate these findings.

Questions two and three, that a competitive film industry will be characterized by a network of organizations and individuals geographically clustered in one or more regions of a state, and that this network will have impact beyond its direct members, also seems to be true in Georgia based on

the degree of geographic concentration and the growth of non-MPI-qualifying films, suggesting a functional, if not a formal, network cluster and its less-connected beneficiaries.

And finally, hypothesis four on critical components is supported by evidence of many ancillary establishments and activities making up these components. The presence of this increasingly established ecosystems of firms, workers and support services make sustainability seem more likely. Recent data from the FilmL.A. studies[14] bolster this conclusion with data on production through 2016, as does the growth in employment since 2013.

All of this present a somewhat mixed message, with many signs pointing to the benefits of MPIs, but others that question their efficacy.

[14] See Chapter 3, "Conclusions and Policy Implications," for more details.

CHAPTER 5 CONCLUSIONS AND DISCUSSION

Tying the two studies together, we can see that in general, MPIs may have a modest effect, but that in Georgia specifically, this effect has been exaggerated. At this point, Georgia does benefit from some of the things that do seem to matter, however. With ten years of solid growth in film and video production, path dependence favors them over many less successful states going forward. In addition, other factors such as access to Los Angeles (as measured by time and number of non-stop flights).

5.1.1 Some General Conclusions

So, given the evidence from both the multistate study, and the case study of Georgia, should state policymakers implement and/or double down on MPIs. Returning to the theory may be helpful in answering this question.

First, the literature discussed in Chapter 2 above suggests caution. Economic development theory generally cautions against incentives for several reasons, many of which are applicable here. The biggest concerns are around state competition leading to rent seeking behavior and a "race to the bottom," while the effects of labor hysteresis are likely to be modest.

Second, attributes of the motion picture industry suggest that incentives should be even less effective based on the lack of permanent physical investment relative to other industry sectors such as manufacturing. That said, the networked nature of production projects requires a different kind of infrastructure; one which requires a larger ecosystem within which the production functions. In addition, some degree of both general (e.g., transportation access) and industry-specific

infrastructure (e.g., large film studios) are also important, and can be developed in conjunction with public policy decisions.

5.1.2 Policy Implications

Combining these observations with the findings in both studies, one might conclude that, while MPIs have resulted in positive outcomes in many states, these theory-based caveats should give policymakers pause when considering incentives for the film industry. First, there are the fiscal and economic studies showing often large net costs, including costs per job created, and that opportunity costs might offer the possibility of more effective policies for creating good jobs for state workers. Second, few states have ended their MPI programs, and those which have have usually seen a dramatic drop in production activities. While this may be fine if the purpose is to merely take advantage of the multiplier effect of production spending, this does not bode well for building a local film industry.

All of this suggests caution as policymakers consider implementing, expanding, or in some cases, reinstating, their film tax incentives. North Carolina is having this debate now, after witnessing losses in production following the major downsizing of its program a two years ago.(Handfield, 2014; McHugh & Boardman, 2014) There are certainly always many of voices calling for this form of rent-seeking behavior, but any consideration should include a detailed analysis of what to expect, and transparency in the programs that are implemented.

On the other hand, for states who commit to MPIs for long periods, there do seem to be payoffs. I would argue, however, that based on what happened with North Carolina, and nearly happened to Maryland a couple years ago, these payoffs may be fleeting if the state either lacks other key features attractive to filmmakers, or fails to invest in building the infrastructure and ecosystem without which producers will merely seek out the best deal (rent-seeking).

5.1.3 Suggestions for Future Research

One possible reason for the outcomes may be the effects of extra-jurisdictional actors. Other states have been implementing and altering tax incentive programs of their own, in many cases in direct reaction to those of competing states. I saw some evidence of that with the employment drop after 2002, when the first states began implementing incentives. A more complex model would be needed to assess the competition effects of states' policies.

Another way to move this research forward is too look more closely the year-to-year data. As my research continues, I plan to use a variety of time-series and panel data analyses to do just that.

I also found it difficult to assess the motivations of location decisions. I was able to find no academic research on film location decisions that didn't discuss more than the effects of MPIs on attraction strategies. Interviews with decision-makers would be a good way answer this question.

I had also hoped to use social network analysis to assess the networked nature of the industry, but between my weakness with the methodology and lack of good network data, this was not possible in this dissertation.

And finally, I plan to continue exploring the components of sustainability by doing some comparative study with a few other states with existing industry clusters, most notably California and New York.

APPENDIX A

Table A.1 Georgia Employment Discrepancies between CEW & CBP, 2002-2012

MP Employment	2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010	2011	2012
GA CEW Mar	3,218	2,597	1,859	2,111	2,117	2,239	2,317	2,883	2,721	2,963	3,264
GA CEW Avg[15]	3,051	2,519	2,136	2,212	2,063	2,120	2,190	2,830	2,690	2,940	
GA CBP[16]	3,205	2,335	3,003	2,215	2,897	3,004	2,340	1,883	1,492	1,637	2,204
CEW Mar - CBP	13	262	-1,144	-104	-780	-765	-23	1,000	1,229	1,326	1,060
CEW Avg - CBP	-154	184	-867	-3	-834	-884	-150	947	1,198	1,303	-2,204

All Employment	2002*	2003*	2004*	2005*	2006	2007	2008	2009	2010	2011	2012
GA CEW Mar	3,218	2,597	1,859	2,111	2,117	2,239	2,317	2,883	2,721	2,963	3,264
GA CEW Avg[15]	3,051	2,519	2,136	2,212	2,063	2,120	2,190	2,830	2,690	2,940	
GA CBP[16]	3,205	2,335	3,003	2,215	2,897	3,004	2,340	1,883	1,492	1,637	2,204
CEW Mar - CBP	13	262	-1,144	-104	-780	-765	-23	1,000	1,229	1,326	1,060
CEW Avg - CBP	-154	184	-867	-3	-834	-884	-150	947	1,198	1,303	-2,204

[15] The average is calculated by taking the means of monthly data for each quarter, then taking the mean of the four quarters.

[16] Note: The Motion Picture Employment from the CBP data had to be estimated for 2002-2005, with the following tolerances:

2002 +/- 40
2003 +/- 10
2004 +/- 1250
2005 +/- 1250

Table A.1 Georgia Employment Discrepancies between CEW & CBP, 2002-2012 (continued)

MP Employment	2002[16]	2003[16]	2004[16]	2005[16]	2006	2007	2008	2009	2010	2011	2012
CEW Mar / CBP	0.41%	11.22%	-38.10%	-4.70%	-26.92%	-25.47%	-0.98%	53.11%	82.37%	81.00%	48.09%
CEW Avg / CBP	-4.81%	7.87%	-28.88%	-0.15%	-28.80%	-29.42%	-6.40%	50.31%	80.28%	79.60%	-100.00%

All Employment	2002[16]	2003[16]	2004[16]	2005[16]	2006	2007	2008	2009	2010	2011	2012
CEW Mar / CBP	13.11%	11.35%	10.97%	11.07%	10.06%	11.15%	11.83%	12.03%	12.01%	13.88%	63.75%
CEW Avg / CBP	13.41%	11.84%	11.32%	12.66%	11.07%	11.72%	10.96%	11.35%	13.21%	14.58%	-100.00%

APPENDIX B

Table B.1 Annual Georgia Establishment Data by 6-Digit NAICS

NAICS	NAICS Description	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Core Motion Picture Industries												
512110	Motion Picture and Video Production	337	327	306	301	321	340	363	395	393	397	401
512120	Motion Picture and Video Distribution	13	12	12	13	15	10	10	13	13	14	12
512191	Teleproduction and Other Postproduction	34	31	30	31	36	40	43	42	38	43	44
512199	Other Motion Picture and Video Industries	12	12	12	9	10	11	12	12	10	11	11
Total Core MP & Video Industries		**396**	**382**	**360**	**354**	**382**	**401**	**428**	**462**	**454**	**465**	**468**
Motion Picture Supportive Industries												
423410	Photographic Equipment and Supplies Merchant Wholesalers	57	50	48	44	37	38	37	38	34	30	32
512240	Sound Recording Studios	67	66	74	67	72	75	79	67	62	57	59
541110	Offices of Lawyers*	5	5	5	5	5	5	5	5	5	5	5
541214	Payroll Services (selected)	14	16	16	22	22	29	28	27	29	30	25
711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	68	70	77	73	75	80	87	98	100	103	101
711510	Independent Artists, Writers, and Performers	342	367	421	438	451	472	490	510	514	521	534
Total MP Supportive Industries		**553**	**971**	**940**	**919**	**975**	**1,029**	**1,092**	**1,159**	**1,138**	**1,155**	**1,158**
Total MP & Supportive Industries		**949**	**1,353**	**1,300**	**1,273**	**1,357**	**1,430**	**1,520**	**1,621**	**1,592**	**1,620**	**1,626**
All Industries in GA		**241,143**	**239,633**	**248,553**	**252,190**	**259,080**	**266,465**	**276,415**	**270,946**	**265,950**	**264,144**	**268,927**

Source: Georgia CEW

* Only counted Entertainment Lawyers from the *Sourcebook*.

Table B.2 Annual Georgia Employment Data by 6-Digit NAICS

NAICS	NAICS Description	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Core Motion Picture Industries												
512110	Motion Picture and Video Production	2,668	2,060	1,595	1,874	1,864	1,992	2,059	2,641	2,524	2,746	3,041
512120	Motion Picture and Video Distribution	49	47	50	44	46	24	20	18	16	16	12
512191	Teleproduction and Other Postproduction	443	438	163	151	166	160	159	142	118	121	130
512199	Other Motion Picture and Video Industries	58	52	51	42	41	63	79	82	63	80	81
Core MP & Video Industries		**3,218**	**2,597**	**1,859**	**2,111**	**2,117**	**2,239**	**2,317**	**2,883**	**2,721**	**2,963**	**3,264**
Motion Picture Supportive Industries												
423410	Photographic Equipment and Supplies Merchant Wholesalers	628	607	525	443	426	756	713	618	632	1,060	933
512240	Sound Recording Studios	155	151	160	171	185	188	175	153	142	123	177
541110	Offices of Lawyers*	134	150	153	171	215	255	249	232	242	263	276
541214	Payroll Services (selected)	159	234	289	662	532	1,646	1,087	1,212	2,237	2,684	1,509
711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	97	127	109	122	130	169	207	159	235	291	343
711510	Independent Artists, Writers, and Performers	642	810	1,118	1,097	1,310	1,430	1,448	1,268	1,231	1,229	1,323
MP Supportive Industries		**1,815**	**6,463**	**4,954**	**5,791**	**5,722**	**7,492**	**7,065**	**8,140**	**8,930**	**10,347**	**9,766**
All MP & Supportive Industries		**5,033**	**9,060**	**6,813**	**7,902**	**7,839**	**9,731**	**9,382**	**11,023**	**11,651**	**13,310**	**13,030**
All Industries in GA		**241,143**	**239,633**	**248,553**	**252,190**	**259,080**	**266,465**	**276,415**	**270,946**	**265,950**	**264,144**	**268,927**

* Only counted Entertainment Lawyers from the *Sourcebook*.

APPENDIX C

Table C.1 Georgia Film Employment by County, 2002-2012

FIPS	County Name	2002	2012
15	Bartow County	2	12
19	Berrien County	16	8
21	Bibb County	6	10
29	Bryan County	0	3
43	Candler County	0	17
47	Catoosa County	4	3
51	Chatham County	4	10
57	Cherokee County	7	10
59	Clarke County	0	5
67	Cobb County	124	141
77	Coweta County	1	3
83	Dade County	1	0
89	DeKalb County	388	1,070
95	Dougherty County	0	4
97	Douglas County	4	0
111	Fannin County	0	1
113	Fayette County	2	1
117	Forsyth County	18	57
121	Fulton County	1,081	728
123	Gilmer County	0	1
127	Glynn County	9	1
129	Gordon County	1	0
135	Gwinnett County	94	186
139	Hall County	0	4
145	Harris County	0	9
151	Henry County	4	9
157	Jackson County	0	2
175	Laurens County	13	0
179	Liberty County	0	7
187	Lumpkin County	1	0
215	Muscogee County	9	8
217	Newton County	0	9
219	Oconee County	3	5
223	Paulding County	0	3
245	Richmond County	3	9
247	Rockdale County	13	2
255	Spalding County	2	0
261	Sumter County	0	3
275	Thomas County	8	0
277	Tift County	0	1
285	Troup County	5	0
291	Union County	0	1
297	Walton County	2	13
311	White County	0	1
313	Whitfield County	0	27

Source: Georgia CEW

*Taken using March employment numbers for each year;
Only included counties with motion picture production employment.

REFERENCES

AFCI. (2009a). About AFCI - History. Retrieved from http://www.afci.org/about/history.htm

AFCI. (2009b). Production Incentives - North America. Retrieved from http://www.afci.org/incentives/north_america.htm

Bartik, T. J. (1991). *Who Benefits from State and Local Economic Development Policies?* Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Bartik, T. J. (2007). Solving the Problems of Economic Development Incentives. In A. Markusen (Ed.), *Reining in the Competition for Capital* (pp. 103-141). Kalamazoo, MI: WE Upjohn Institute.

Batt, R., Christopherson, S., Rightor, N., & Van Jaarsveld, D. (2001). *Net Working: Work Patterns and Workforce Policies for the New Media Industry*. Washington, DC: Economic Policy Institute.

Baxter, C. L. (2011). *Fiscal and Economic Impact Analysis of Louisiana's Entertainment Incentives*. Retrieved from Baton Rouge, LA:

Blair, J. P., & Carroll, M. C. (2009). *Local Economic Development: Analysis, Practices, and Globalization*. Los Angeles: Sage.

Blair, J. P., & Premus, R. (1993). Location Theory. In R. D. Bingham & R. Mier (Eds.), *Theories of Local Economic Development: Perspectives from Across the Disciplines* (Vol. 20, pp. 3-26). Newbury Park, CA: Sage Publications, Inc.

Blakely, E. J., & Bradshaw, T. K. (2002). *Planning Local Economic Development: Theory and Practice* (Third Edition ed.). Thousand Oaks, CA: Sage Publications, Inc.

Blakely, E. J., & Leigh, N. G. (2009). *Planning Local Economic Development: Theory and Practice* (Fourth Edition ed.). Thousand Oaks, CA: Sage Publications, Inc.

Bradshaw, T. K., & Blakely, E. J. (1999). What Are the "Third-Wave" State Economic Development Efforts? From Incentives to Industrial Policy. *Economic Development Quarterly, 13*(3), 229-244.

Bureau of Labor Statistics. (2002-2013). *Occupational Employment Statistics*. Occupational Employment Statistics. Retrieved from: http://www.bls.gov/oes/

Buss, T. F. (2001). The Effect of State Tax Incentives on Economic Growth and Firm Location Decisions: An Overview of the Literature. *Economic Development Quarterly, 15*(1), 90-105. doi:10.1177/089124240101500108

CanagaRetna, S. M. (2007). *Lights! Camera! Action!: Southern States Efforts to Attract Filmmakers' Business*. Retrieved from Atlanta, GA:

Choi, B.-R. (2003). *High technology development in regional economic growth: policy implications of dynamic externalities*. Hampshire, UK: Ashgate Publishing, Ltd.

Christopherson, S. (2008a). Beyond the Self-expressive Creative Worker: An Industry Perspective on Entertainment Media. *Theory Culture Society, 25*(7-8), 73-95. doi:10.1177/0263276408097797

Christopherson, S. (2008b). Labor: The Effects of Media Concentration on the Film and Television Workforce. In P. McDonald & J. Wasko (Eds.), *The contemporary Hollywood film industry* (pp. 155-166). Malden, MA: Blackwell Publishing.

Christopherson, S., & Clark, J. (2007a). The politics of firm networks: How large firm power limits small firm innovation. *Geoforum, 38*(1), 1-3.

Christopherson, S., & Clark, J. (2007b). Power in firm networks: what it means for regional innovation systems. *Regional Studies, 41*(9), 1223-1236.

Christopherson, S., & Clark, J. (2007c). *Remaking Regional Economies: Power, Labor, and Firm Strategies in the Knowledge Economy*. Oxon, U.K.: Routledge.

Christopherson, S., Figueroa, M. C., Gray, L. S., Parrott, J., Richardson, D., & Rightor, N. (2006). *New York's big picture: Assessing New York's role in media production. Report to The New York Film, Television, and Commercial Initiative*. Retrieved from New York: http://www.fiscalpolicy.org/publications2006/FPI_TelevisionFilmCommercial_Aug2006.pdf

Christopherson, S., & Rightor, N. (2010). The Creative Economy as "Big Business": Evaluating State Strategies to Lure Film Makers. *Journal of Planning Education and Research, 30*(1).

Christopherson, S., & Storper, M. (1986). The city as studio; the world as back lot: The impact of vertical disintegration on the location of the motion picture industry. *Environment and Planning D: Society and Space, 4*(3), 305-320.

Christopherson, S., & Storper, M. (1989). The Effects of Flexible Specialization on Industrial Politics and the Labor Market: The Motion Picture Industry. *Industrial and Labor Relations Review, 42*(3), 331-347.

Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology, 94*, S95-S120.

Currid, E., & Williams, S. (2010). Two Cities, Five Industries: Similarities and Differences within and between Cultural Industries in New York and Los Angeles. *Journal of Planning Education and Research, 29*(3), 322-335. doi:10.1177/0739456x09358559

Economics Research Associates. (2009). *Louisiana Motion Picture, Sound Recording and Digital Media Industries*. Retrieved from Baton Rouge, LA:

Ernst & Young. (2009). *Economic and fiscal impacts of the North Carolina film credit program*. North North Carolina.

FilmNC. (2012). North Carolina Film Office - 25% Incentive. Retrieved from http://www.ncfilm.com/new-25-tax-credit.html

Finn, A., Hoskins, C., & McFadyen, S. (1996). Telefilm Canada Investment in Feature Films: Empirical Foundations for Public Policy. *Canadian Public Policy / Analyse de Politiques, 22*(2), 151-161.

Fiscal Research Center. (2010). *Georgia Tax Expenditure Report for FY2012*. Retrieved from Atlanta:

Fisher, P. S. (2007). The Fiscal Consequences of Competition for Capital. In A. Markusen (Ed.), *Reining in the Competition for Capital* (pp. 57-86). Kalamazoo, MI: WE Upjohn Institute.

Fisher, P. S., & Peters, A. H. (1997). Measuring Tax and Incentive Competition: What Is the Best Yardstick? *Regional Studies, 31*(8), 751-764. doi:10.1080/713693398

Fitzgerald, J., & Leigh, N. G. (2002). *Economic Revitalization: Cases and Strategies for City and Suburb*. Thousand Oaks, CA: Sage Publications, Inc.

Florida Office of Economic & Demographic Research. (2015). *Return on Investment for the Entertainment Industry Incentive Programs*. Retrieved from Tallahassee, FL: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwj_3JuSv5PUAhVr2oMKHevqCgEQFggsMAE&url=http%3A%2F%2Fedr.state.fl.us%2FContent%2Freturnoninvestment%2FEntertainmentIndustryIncentivePrograms.pdf&usg=AFQjCNEgWj5CKsCs5wiRoh52Nr2yv6u96g

Florida, R. (2012). *The Rise of the Creative Class Revisited* (Paperback ed.). New York, NY: Basic Books.

Florida, R., Mellander, C., & Stolarick, K. (2009). *That's Entertainment: Scale and Scope Economies in the Location and Clustering of the Entertainment Economy*. Retrieved from Toronto: http://www.martinprosperity.org/research-and-publications/publication/thats-entertainment-scale-and-scope-economies-in-the-location-and-clustering-of-the-entertainment-economy

Florida, R., Mellander, C., & Stolarick, K. (2012). Geographies of scope: an empirical analysis of entertainment, 1970–2000. *Journal of Economic Geography, 12*(1), 183-204. doi:10.1093/jeg/lbq056

Former Iowa Film Office head gets deferred judgment, probation. (2011, October 18). *The Gazette*. Retrieved from http://thegazette.com/2011/10/18/former-iowa-film-office-head-gets-deferred-judgment-probation/

Francis, N. (2009). *Ernst & Young Film Study - REVISED*. Memorandum. New Mexico Legislative Finance Committee. Santa Fe, NM.

Georgia Department of Economic Development. (2010). 2010 Georgia Film, Video & Digital Entertainment Sourcebook. from Oz Group http://www.ozonline.tv/oz_sourcebooks1_gfvs.html

Georgia Department of Economic Development. (2012). 2012 Georgia Film, Video & Digital Entertainment Sourcebook. from Oz Group http://www.ozonline.tv/oz_sourcebooks1_gfvs.html

Georgia Department of Economic Development. (2017). Reel-Crew. Retrieved April 26, 2017, from Georgia Department of Economic Development, http://www.georgia.org/industries/entertainment/georgia-film-tv-production/reel-crew-production-directory/

Goldstein, H. A., & Luger, M. I. (1993). Theory and Practice in High-Tech Economic Development. In R. D. Bingham & R. Mier (Eds.), *Theories of Local Economic Development: Perspectives from Across the Disciplines* (Vol. 20, pp. 147-172). Newbury Park, CA: Sage Publications, Inc.

Gordon, I. R., & McCann, P. (2000). Industrial Clusters: Complexes, Agglomeration and/or Social Networks? *Urban Studies, 37*(3), 513-532. doi:10.1080/0042098002096

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology, 78*(6), 1360-1380.

Granovetter, M. (1983). The Strength of Weak Ties: A Network Theory Revisited. *Sociological Theory, 1*, 201-233.

Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *The American Journal of Sociology, 91*(3), 481-510.

Hall, W. W., Jr., Dumas, C. F., & Schuhmann, P. W. (2009). *Economic Impact Study of the Production of a 'Mid-Major' Motion Picture on the Economy of Southeastern North Carolina*. Retrieved from Wilmington, NC:

Handfield, R. (2014). *A Supply Chain Study of the Economic Impact of the North Carolina Motion Picture and Television Industry*. Retrieved from Raleigh, NC:

Harper, R. (2009). *Analysis of the Florida Film and Entertainment Industry*. Retrieved from Pensacola, FL:

Hissong, R. (2003). The Efficacy of Local Econonmic Development Incentives. In S. B. White, R. D. Bingham, & E. W. Hill (Eds.), *Financing Economic Development in the 21st Century* (pp. 131-144). New York: M.E. Sharpe, Ince.

Holmes, T. (1995). Analyzing a Proposal to Ban State Tax Breaks to Businesses. *Federal Reserve Bank of Minneapolis Quarterly Review, 19*(2), 29-39.

Hong, J. (2010). *Three Essays on the Role of Amenities as an Economic Development Strategy.* (Doctor of Philosophy (Ph.D.) Dissertation), Louisiana State University, Baton Rouge, LA. Retrieved from http://etd.lsu.edu/docs/available/etd-04162010-111826/ (etd-04162010-111826)

Iannone, D. T. (1997). Commentary on Industry Targeting. In R. D. Bingham & R. Mier (Eds.), *Dilemmas of Urban Economic Development: Issues in Theory and Practice* (pp. 195-196). Thousand Oaks, CA: Sage Publications, Inc.

IMDb Pro. (2011). IMDb Pro. Retrieved March 14, from Amazon.com https://secure.imdb.com/signup/index.html?d=IMDbFooter

IMDb.com, I. (2012). Press Room - About IMDb. Retrieved from http://www.imdb.com/pressroom/about

Judge sentences film producer to prison for Iowa film tax credit scandal. (2011, May 17). *WCFCourier.com*. Retrieved from http://wcfcourier.com/news/local/article_3d1dd51c-80a6-11e0-8414-001cc4c03286.html

Kamerick, M. (2009, March 13, 2009). Analysis contends film study overstates industry's economic impact in New Mexico. *New Mexico Business Weekly*. Retrieved from http://albuquerque.bizjournals.com/albuquerque/stories/2009/03/16/story8.html

Katz, S. M., & Rosenthal, M. A. (2006). *The global success of production tax incentives and the migration of feature film production from the U.S. to the world: Year 2005 Production Report*. Retrieved from Los Angeles: http://www.ceidr.org/

Ledebur, L. C., & Woodward, D. (1990). Adding a Stick to the Carrot: Location Incentives with Clawbacks, Recisions, and Recalibrations. *Economic Development Quarterly, 4*(3), 221-237. doi:10.1177/089124249000400305

LeRoy, G. (2007). Nine Concrete Ways to Curtail the Economic War among the States. In A. Markusen (Ed.), *Reining in the Competition for Capital* (pp. 183-198). Kalamazoo, MI: WE Upjohn Institute.

Loren C. Scott & Associates, I. (2015). *The Economic Impact of Louisiana's Entertainment Tax Credit Programs*. Retrieved from Baton Rouge, LA:

Lukinbeal, C. (2004). The rise of regional film production centers in North America, 1984–1997. *GeoJournal, 59*(4), 307-321.

Luther, W. (2010). *Movie Production Incentives: Blockbuster Support for Lackluster Policy*. Retrieved from Washington, DC: http://www.taxfoundation.org/news/show/25706.html

Mackay, J. W. (1994). The evolving importance of incentives. *Economic Development Review, 12*(4), 4.

Malecki, E. J. (2002). Hard and Soft Networks for Urban Competitiveness. *Urban Studies, 39*(5-6), 929-945. doi:10.1080/00420980220128381

Malizia, E. E., & Feser, E. J. (1999). *Understanding Local Economic Development*. New Brunswick, NJ: Center for Urban Policy Research.

Markusen, A., & McCurdy, K. (1989). Chicago's Defense-Based High Technology: A Case Study of the "Seedbeds of Innovation" Hypothesis. *Economic Development Quarterly, 3*(1), 15-31. doi:10.1177/089124248900300103

Markusen, A., & Nesse, K. (2007). Institutional & Political Determinants of Incentive Competition. In A. Markusen (Ed.), *Reining in the Competition for Capital* (pp. 1-42). Kalamazoo, MI: WE Upjohn Institute.

Martin, R. (2012). Regional economic resilience, hysteresis and recessionary shocks. *Journal of Economic Geography, 12*(1), 1-32. doi:10.1093/jeg/lbr019

McCann, P. (2009). Location theory. In J. E. Rowe (Ed.), *Theories of Local Economic Development: Linking Theory to Practice* (pp. 127-144). Surrey, UK: Ashgate Publishing Limited.

McDonald, A. (2014). *2013 Feature Film Study*. Retrieved from Los Angeles, CA: https://www.filmla.com/our-services/research/

McDonald, A. (2015). *2014 Feature Film Study*. Retrieved from Los Angeles, CA: https://www.filmla.com/our-services/research/

McDonald, A. (2016). *2015 Feature Film Study*. Retrieved from Los Angeles, CA: https://www.filmla.com/our-services/research/

McDonald, A. (2017). *2016 Feature Film Study*. Retrieved from Los Angeles, CA: https://www.filmla.com/our-services/research/

McHugh, P., & Boardman, B. (2014). *Preliminary Review of Handfield Film Study*. Retrieved from Raleigh, NC: https://www.heartland.org/_template-assets/documents/publications/frdhandfieldreview.pdf

Meyers Norris Penny LLP. (2014). *New Mexico Film Production Tax Incentive Study, Phase 1 Report*. Retrieved from http://www.nmfilm.com/uploads/files/Phase 1 Report - Final Report (July 21%2C 2014).pdf

Meyers Norris Penny LLP. (2015). *New Mexico Film Production Tax Incentive Study, Phase 2 Report*. Retrieved from http://www.nmfilm.com/uploads/files/Phase 1 Report - Final Report (July 21%2C 2014).pdf

Motion Picture Association of America. (2009). *The Economic Impact of the Motion Picture and Television Industry on the United States*. Retrieved from Washington, DC:

Motion Picture Association of America. (2012). State by State Statistics. Retrieved from http://www.mpaa.org/policy/state-by-state

Motoyama, Y. (2008). What Was New About the Cluster Theory? What Could It Answer and What Could It Not Answer? *Economic Development Quarterly*. doi:10.1177/0891242408324373

Murphy, E., Fox-Rogers, L., & Redmond, D. (2015). Location Decision Making of "Creative" Industries: The Media and Computer Game Sectors in Dublin, Ireland. *Growth and Change, 46*(1), 97-113.

National Conference of State Legislatures. (2011). State Film Production Incentives & Programs. Retrieved from http://www.ncsl.org/issues-research/budget-tax/state-film-production-incentives-and-programs.aspx

Neff, G. (2005). The Changing Place of Cultural Production: The Location of Social Networks in a Digital Media Industry. *The ANNALS of the American Academy of Political and Social Science, 597*(1), 134-152.

Neff, G., Wissinger, E., & Zukin, S. (2005). Entrepreneurial Labor among Cultural Producers: "Cool" Jobs in "Hot" Industries. *Social Semiotics, 15*(3), 307-334. doi:10.1080/10350330500310111

Parr, J. B. (1999). Growth-pole Strategies in Regional Economic Planning: A Retrospective View: Part 1. Origins and Advocacy. *Urban Studies, 36*(7), 1195-1215. doi:10.1080/0042098993187

Patton, Z. (2010). The Value of Movie Tax Incentives. *Governing*. Retrieved from http://www.governing.com/topics/economic-dev/The-Value-of-Movie-Tax-Incentives.html

Perry, M. (2009). The theory behind business clusters. In J. E. Rowe (Ed.), *Theories of Local Economic Development: Linking Theory to Practice* (pp. 145-168). Surrey, UK: Ashgate Publishing Limited.

Peters, A. H., & Fisher, P. S. (1995). Measuring the competitiveness of state and local economic development incentives. *Computers, Environment and Urban Systems, 19*(4), 261-274. doi:10.1016/0198-9715(95)00027-5

Pierce, S. C. (2008). *Promoting Film and Media to Enhance State Economic Development*. Retrieved from Washington, DC: http://www.nga.org/portal/site/nga/menuitem.9123e83a1f6786440ddcbeeb501010a0/?vgnextoid=8c4e61a2ef62b110VgnVCM1000001a01010aRCRD&vgnextchannel=4b18f074f0d9ff00VgnVCM1000001a01010aRCRD

Popp, A. V., & Peach, J. (2008). *The Film Industry in New Mexico and the Provision of Tax Incentives*. Retrieved from Las Cruces, NM:

Porter, M. E. (1998, November). Clusters and the New Economics of Competition. *Harvard Business Review,* 77-90.

Powell, T., & Powell, G. W. (2011, August/September). Oz Magazine's Creative Index 2011-2012. *Oz Magazine,* 47-80.

Powell, T., Powell, G. W., & Harless, K. (2010, July/August). Creative Index - 2010. *Oz Magazine, 2010,* 37-78.

Congress Should End the Economic War Among the States, U.S. House of Representatives, (2007).

Scott, A. J. (2002). A New Map of Hollywood: The Production and Distribution of American Motion Pictures. *Regional Studies, 36*(9), 957.

Storper, M., & Christopherson, S. (1987). Flexible Specialization and Regional Industrial Agglomerations: The Case of the U.S. Motion Picture Industry. *Annals of the Association of American Geographers, 77*(1), 104-117.

Tannenwald, R. (2010). *State Film Subsidies: Not Much Bang For Too Many Bucks*. Retrieved from Washington, DC:

Thomas, K. P. (2007). The Sources & Processes of Tax and Subsidy Competition. In A. Markusen (Ed.), *Reining in the Competition for Capital* (pp. 43-56). Kalamazoo, MI: WE Upjohn Institute.

Uzzi, B. (1996). The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect. *American Sociological Review, 61*(4), 674-698. doi:citeulike-article-id:168533

Uzzi, B. (1997). Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly, 42*(1), 35-67. doi:citeulike-article-id:1189141

Vock, D. C. (2008). Star-struck States Sweeten Film Incentives. Retrieved from http://www.stateline.org/live/details/story?contentId=283782

Voytek, K. P., & Ledebur, L. (1997). Is Industry Targeting a Viable Economic Development Strategy? In R. D. Bingham & R. Mier (Eds.), *Dilemmas of Urban Economic Development: Issues in Theory and Practice* (pp. 171-194). Thousand Oaks, CA: Sage Publications, Inc.

Weinstein, B. L., & Clower, T. L. (2000). Filmed Entertainment and Local Economic Development: Texas as a Case Study. *Economic Development Quarterly, 14*(4), 384-394.

Wobbekind, R., Horvath, G., Lewandowski, B., DiPersio, C., & Willoughby, L. (2008). *Summary of the Impact of Film Incentives on the Colorado Economy and on Public Revenues*. Retrieved from Boulder, CO:

Woolcock, M. (1998). Social capital and economic development: Toward a theoretical synthesis and policy framework. *Theory and Society, 27*(2), 151-208. doi:10.1023/a:1006884930135