

**BLIND TRUST: MARKET CONTROL, STATE  
POLICY, AND THE DYNAMICS OF  
COMPETITIVE INTENSITY IN THE EARLY  
AMERICAN FILM INDUSTRY, 1893-1920**

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**Abstract**

In this paper we examine the institutional ecology of competitive dynamics by focusing on the role of the state in mediating the dynamics of competitive intensity. Our context is the early American film industry. We study the means by which a trust, The Motion Pictures Patents Corporation, was able to affect both viability and competitive intensity in its population. Specifically, we find that the trust increased population mortality rates while decreasing the mortality rate of member firms. In addition, we show that state intervention reduced the competitive intensity exerted by the trust. We go one step further and hypothesize that the compensatory fitness provided by the trust buffered MPPC members from the marketplace. We show that, as a result, these firms failed to make the transition to feature length films.

## INTRODUCTION

Under what circumstances can firms succeed in controlling markets so as to affect the dynamics of competitive intensity? What is the role of the state in affecting the ability of firms to do this? What are the longer run consequences of being buffered from competition in this way? In seeking answers to these questions, we look to history, specifically the emergence of the American film industry in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. The theoretical starting points for addressing these questions are Barnett's (1997) model of the dynamics of competitive intensity and the literature that integrates an ecological emphasis on environmental resources and an institutional emphasis on policies regulating competition (Dobbin and Dowd, 1997 & 2000; Dowd and Dobbin, 1998; Wade, Swaminathan, and Saxon, 1998). We integrate these literatures to suggest several ideas that we explore. First, we wish to examine how the formation of a trust, which we argue must be understood in the context of the state policy of its era, affected both the viability of the firms that were members and the competitive intensity that these firms exerted on other firms. Second, we show how state intervention altered the effects of the trust, principally by altering the competitive intensity that its presence exerted on the industry. Third and finally, we wish to examine how being shielded from competition affected the evolution of the firms that had been members of the trust.

We believe that empirical study of these ideas is important for several reasons. First, as Dobbin and Dowd (1997: 502) have argued the effects of state policy on industrial competition remain under theorized. The emerging finding from this work is that the state plays an important role in shaping competition. One way this happens is through the direct control of economic activity with local regulation. For example, Dobbin and Dowd (1997) found that organizational foundings were affected by a series of policy regimes adopted by the state of Massachusetts with respect to the railroad industry. Wade et al. (1998) found that the passage of prohibition laws in a state caused existing brewery

organizations to die and suppressed the founding of new brewery organizations. A second way that the state affects competition is through the indirect effects of legal environments and regulation (Edelman, 1990). For example, Dobbin and Dowd (1997) linked the policy regimes enacted in Massachusetts with normative shifts in thinking about policy in the broader American polity. Wade et al. (1998) found effects of prohibition in adjacent states and effects of the overall diffusion of prohibition regulations across many states. Dobbin and Dowd (2000) found that the emergence of American anti-trust policy in the late 19<sup>th</sup> century spurred consolidation among Massachusetts railroad firms.

Our first contribution is that we extend this work, which provides compelling evidence linking legal environments and population dynamics, by examining how actions by firms and the state affected both viability and competitive intensity (Barnett, 1997) in the emerging American film industry. Thus, we begin by discussing the formation of a trust in the industry, arguing that it created a form of compensatory fitness for its members. We provide evidence that this compensatory fitness affected the viability of firms in the trust, the focus of Barnett's (1997) argument. We go further by extending his argument and showing how, in the short run, the trust was able to increase the competitive intensity felt by its rivals as a result of their compensatory fitness. We demonstrate increased competitive intensity by linking the market presence of the trust with enhanced mortality rates in the population; we also show that lawsuits filed by the trust against competitors increased mortality. We demonstrate increased viability with evidence that the mortality rates of members of the trust were suppressed. The second contribution of this study is that we link state actions and the mobilization of state resources against the trust with a decrease in the competitive intensity exerted by the trust. Specifically, we show that actions to enforce anti-trust laws and create a legal climate against the trust resulted in decreased mortality in the population. We make a third contribution by going beyond evidence of ecological and institutional effects on population dynamics to look at the effects on the overall evolution of the industry.

Specifically, we suggest that the benefits that the trust members gained from this short term compensatory fitness came only at a significant cost, which is the meaning of blind trust in the title of the paper. Buffering themselves from competition, they clung to their control over the market for short films, attempting to suppress the emergence of feature films, which represented the future of the industry. Our final analysis provides evidence that trust membership had a direct relationship with the failure to make the transition to feature length films. As a result, none of these firms, which virtually controlled the fast-growing and increasingly important film industry up until 1912, remained a major player in the industry a decade later.

We proceed as follows: In the next section, we provide an overview of the early history of the American film industry, arguing that it is a good context to study the institutional ecology of competitive intensity. We argue that the emergence of a trust embodied in two organizations, The Motion Pictures Patents Company and the General Film Distribution Company, will enhance mortality generally but reduce mortality for member firms. Next, we discuss how emerging anti-trust policy at the state level eventually came to recognize the anti-competitive nature of this trust and acted against it. We argue that state intervention will make the trust less effective over time, even though the eventual legal finding that the trust was illegal took several years. Having established these hypotheses, we turn our attention to the effect that having been buffered from competition had on members of the trust. Specifically, we argue that these firms became detached from the market as a result of having created compensatory fitness with the trust. Thus, we predict that they were less likely to make the transition to feature length films, which replaced shorts as the dominant product in the market. We then review our data, which represents a history of the population of firms that produced and distributed films in the US between 1893 and 1920. Having described the data, we turn to the empirical analyses of mortality, which support our hypotheses. We continue by showing that trust members were significantly less likely to make the

transition to feature length films. Then, we present a discussion of our results, particularly as they relate to models of mortality and the role of legal environments in shaping competition. We close with a discussion of conclusions from our findings, including implications for future research on legal environments and competitive dynamics.

## **THE INSTITUTIONAL ECOLOGY OF COMPETITIVE DYNAMICS**

Recent work has provided the theory and evidence to clarify some of the ways in which legal environments shape competition (Dobbin and Dowd, 1997 & 2000; Dowd and Dobbin, 1998; Wade, et al., 1998). Schneiberg and Bartley (2001: 134) described the emerging view well: “Above all, we wish to stress that politics and institutions matter, not because they trump market forces or render intraindustry dynamics irrelevant, but because they shape and shift organizing options and create branching points for the evolution of industrial order.” We wish to extend this work by linking institutional forces directly with both competitive intensity and viability in the early American film industry. As Dowd and Dobbin (1998) showed, members of the railroad industry were quite active in constructing reactions to shifts in state policies. We find a consistent pattern in the early film industry: Emerging at the end of the 19<sup>th</sup> century as government tolerance of trusts gave way to active anti-trust, early film entrepreneurs enacted strategies that responded to these changes in the environment.

They began, under the lead of Thomas Edison, by using patent wars to structure competition, a common tactic in the late 1800s (Vaughn, 1972). By 1908, it had become clear that Edison’s attempt to create a monopoly by having the technologies of his competitors classified as illegal infringement on his patents had failed. Fifteen years earlier, the bloodied survivors might well have engaged in collusion to control the industry. By the turn of the 20<sup>th</sup> century, however, there had been a clear shift in the legal environment (Dobbin and Dowd, 1998; 2000), rendering such anti-competitive activity illegal. Thus, when the firms whose patents had survived began negotiating and eventually formed a trust, they did so

under the guise of patent protection. That they were able to do this even as state anti-trust policy against such forms of industrial organization was becoming quite active is not all that surprising. As Dobbin and Dowd (1997: 502) pointed out, railroad managers discovered merger as a response to anti-trust "...after a decade of experimenting with various covert forms of collusion." Indeed, merger did become an important tool for managing competition eventually in the film industry as well. However, for the period we examine, the attempt to hide collusion under the guise of patent protection worked, at least in the short run, with the trust having considerable initial success. Ultimately, its attempts at market control failed, and part of the reason for this failure can be attributed to anti-trust state policies. Of particular importance were lawsuits alleging anti-trust violations against this trust beginning in 1912. Contemporary observers believed that these lawsuits caused the trust to scale back its vigorous anti-competitive efforts. In the end, however, the actual ruling by the federal court against the trust was rather anti-climactic: Its influence had already waned (Bakker, 2003). A new industrial order based on feature length films had emerged, and the members of the trust, focused on maintaining the old order based on short films, had failed to participate in the new. In the next sections, we examine the history of these events in considerable detail in order to derive hypotheses for our empirical study.

**The Early Years: Trust Control of the Market.** After the dust of the early patent wars had settled, it was obvious that no single firm was going to be able to control the nascent film industry by wielding the weapon of patent protection. With his dream of a legally enforced monopoly dashed, Thomas Edison, a veteran of 19<sup>th</sup> century patent wars and pioneer in film technology, switched from a strategy of attempting to gain sole market control to a strategy of market control in cooperation with other patent holders. He entered into negotiations with Biograph with the hope that they could exercise effective industry control by wielding their patents. The eventual outcome of these negotiations was an agreement to form a trust called the Motion Pictures Patents Company (MPPC), which began operation

on 1 January 1909 (Bowser, 1990; Greenberg, 1982-83). This organization included all of the firms holding major patents that were the basis of either the Edison or Biograph licensee groups; they are listed in Table 1.

Given the emerging anti-trust tenor of public policy, the official goal of the MPPC was to share income from patents owned by its members. The organization would sell licenses to use various film technologies controlled by member firms and distribute proceeds. Nickelodeon theatres, the primary exhibition venue of the time, were charged two dollars per week for the right to use equipment covered by the patents of MPPC companies. However, the policies of the MPPC went far beyond licensing the proprietary technologies of its members and distributing the resulting revenue. Production rates and schedules were enforced among member firms, limiting the volume of films and scheduling their release. Distribution of this coordinated production to the exchanges, the spot markets set up to supply the nickelodeons whose programs of shorts had to be changed frequently, was controlled as well. The MPPC imposed block booking: In order to get more popular releases, exchanges were required to take other films as well. Member companies were forbidden to sell or lease films to any exchange or distributor that bought films from any production company that was not a member of the MPPC. If this sanction was insufficient to compel an exchange or distribution company to comply, the MPPC would threaten and file lawsuits alleging patent infringement (Roberts, 2000). Further, their market control tactics did not stop in the courtroom: Firms producing films outside the control of the trust faced roaming squads attempting to disrupt production. Lussier (1999: 1) described how one company evaded these MPPC tactics: "During this time, quite a few tactics were used to disrupt filming, and Edison wasn't beyond sending out thugs to bring a stop to a day's shooting. One of Lubin's favorite tricks to deal with these situations was to set up a fake film crew. While they were taking the thugs on a merry chase, the real film company would be in some other location completing their day's work."

Despite lawsuits and other anti-competitive tactics, firms outside MPPC control remained in business because about one quarter of the film exchanges refused to be licensed by the MPPC. Carl Laemmle defied the MPPC by setting up his own Independent Moving Picture Company in 1909. Several other exchanges defied the MPPC by forming The American Film Manufacturing Corporation, an independent distribution operation outside the licensing policies of the MPPC. In response to this growing inability to control film distribution, the MPPC moved to exercise more active control by founding The General Film Corporation in 1910. Once again, the ostensible purpose of this organization, coordinating the distribution of films made by MPPC members and acquiring exchanges to facilitate this, was not a complete description of its activities. Aberdeen (2001) described some of the organization's other activities: "With coercive tactics that have become legendary, General Film confiscated unlicensed equipment, discontinued product supply to theaters which showed unlicensed films, and effectively monopolized distribution with the acquisition of all U.S. film exchanges, except for the one owned by the independent William Fox who defied the Trust even after his license was revoked." These extreme anti-competitive tactics effectively increased market control by the MPPC even as it was becoming clear that state policy was decidedly anti-trust.

Casting the effects of the MPPC in the ecological terms suggested by Barnett's (1997) model, we see the MPPC as providing compensatory fitness that affected both the viability of member firms and the competitive intensity they exerted on the population. The effects on viability are a straightforward extrapolation of Barnett's (1997) argument: We expect that cartel members would be less likely to die than non-cartel members. At the same time, we expect the MPPC to transform the compensatory fitness created by its manipulation of the institutional environment into greater competitive intensity. Barnett (1997: 138-9) addressed this possibility: "Some might argue that large organizations could use their institutional advantages to improve their functioning in the market, a form of subsidy that could result in

stronger competitive intensity. Although this might occur for some organizations, only a highly rational model would then conclude that large organizations will therefore generally behave in this way. From an evolutionary perspective, what matters is that this outcome does not result from the operation of selection processes.”

We agree, in fact, we see the formation of the MPPC as a fairly unusual event that conferred only a temporary advantage in terms of enhanced competitive intensity. That this advantage derived from institutional success as opposed to (Barnett, 1997: 139) “... competitive success in the market ...” is demonstrated by the fact that the advantage dissipated when the state acted against the trust. Therefore, we believe that the competitive intensity derived from MPPC membership is consistent with Barnett’s (1997) concept of compensatory fitness. This is supported by the fact that the members were ultimately shown to be weaker competitors once the state acted against the trust. Based on these arguments, we expect that the actions of the MPPC, both in and out of the courtroom, will increase the competitive intensity felt by firms outside the trust. Inside the courtroom, we expect that the greater the number of lawsuits filed by the MPPC against other firms, the higher will be mortality in the population. Of course, it would seem obvious that bearing the direct costs of being a defendant, a veritable David, against the Goliath of the MPPC and General Film juggernaut, would decrease the life chances of particular firms. However, we expect the effects of litigation to be much broader. The MPPC used this litigation as a competitive tool, undermining the confidence of suppliers, customers, and investors that firms outside of the trust could survive. This in effect became a self-fulfilling prophecy, exactly as the trust intended. Outside the courtroom, the MPPC used its ever-expanding dominance of the market for short films to drive competitors from the market. As a result, we expect that the increasing domination of the market for short films by the cartel will be associated with higher mortality in the early film industry. These ideas are stated formally as the following three hypotheses:

**Hypothesis 1:** Membership in the MPPC will be associated with reduced mortality.

**Hypothesis 2:** Lawsuits filed by the MPPC will increase mortality in the population.

**Hypothesis 3:** Domination of the market for short films by the MPPC will increase mortality in the population.

**Better Late than Never: State Action Against the Trust.** As we described above, the MPPC first achieved control over the market for the production of short films; it then extended this control to include the market for distribution with the founding of General Film. At this point, independent distribution of shorts faced the same challenges that independent production of shorts had suffered previously. Distribution outside of the MPPC seemed as doomed as production outside of it had seemed earlier. Fox, virtually the last man standing in the film industry outside the MPPC, turned to the state to save his business. In August 1912, he filed suit in federal court alleging that the MPPC was engaged in illegal trust building. This attracted the attention of the federal government, which eventually joined in the lawsuits against the MPPC. In response to these legal pressures, the MPPC softened its anti-competitive tactics in preparation for the long legal battle that would follow (Balio, 1976; Mezias and Boyle, 2002). The eventual legal moves against the MPPC suggest that the level of competitive pressure exerted by the organization will change over time. In particular, we expect the competitive intensity generated by the organization to decrease over time. Thus, mortality in the population will be greater during the early years of the trust, before legal pressures questioning its legitimacy began. Further, since this legal pressure was exerted, in part, by the use of lawsuits filed against the organization, we expect that the competitive intensity exerted by the organization will decrease as the number of lawsuits against it increase. As a direct corollary, we expect that mortality in the population as a whole will decrease with lawsuits filed against the MPPC. These ideas are stated formally as the following two hypotheses:

**Hypothesis 4:** Mortality in the population will decrease with the time since the founding of the MPPC.

**Hypothesis 5:** Mortality in the population will decrease with the number of lawsuits filed against the MPPC.

**Blind Trust: The Costs of Compensatory Fitness.** The use of the guise of patent protection to allow continued market control even as state anti-trust policy emerged is a clear example of how the firms in the MPPC tried to use aspects of the institutional environment to their competitive advantage. We have hypothesized that this use of compensatory fitness (Barnett, 1997) would enhance both the viability of member firms and the competitive pressures they exerted on non-member firms. At the same time, we have shown that the state did eventually move to enforce anti-trust policies against the MPPC, denying them the compensatory fitness that they had created with their trust. We believe these events provide us with a natural experiment to observe the longer run effects of compensatory fitness. Above we have hypothesized that state intervention will cause the MPPC to exert less competitive pressure as it grows older. Further, we have argued that lawsuits filed against the organization will decrease the competitive pressures felt by organizations outside of the trust. Our purpose in this section is to examine one mechanism by which compensatory fitness can lead to obsolescence, even of firms that were once as powerful as the MPPC: Our claim is that firms that are buffered by compensatory fitness will fail to follow market trends. In the context of early American film industry and the MPPC firms, we develop this argument in terms of the failure to make the transition from short films to feature length films.

Effective control of American film production meant that the MPPC could deny films to distributors or exhibitors refusing to purchase a license from them. Cut off from domestic sources of film, the few distributors and exhibitors that did not become MPPC licensees turned to film producers

outside the US. For example, upon having his MPPC licenses revoked as a result of his defiance of trust rules, Carl Laemmle began importing raw film stock. This seemingly small and isolated act of defiance can be seen as the beginning of a series of events that resulted in the transformation of the film industry. MPPC rules controlled prices and production on a per foot basis with quotas that forced members to adhere to the continued production of short films on a fixed schedule. Outside MPPC control and with no reason to continue producing single reel shorts, foreign firms began experimenting with film formats. The growth of the American audience for films was precipitous, and the tight controls of the MPPC meant that demand exceeded supply. European film producers benefited, particularly those in Italy who produced a new film product known as the costume spectacle. *Quo Vadis*, at an unprecedented nine reels in length, was a spectacular success, both internationally and in the US. This proved that audiences were not just willing to watch a much longer film, but also that they preferred them. In 1914, *Calabria*, running twelve reels, raised the stakes both in terms of length and the lavishness of production. The significant success of this film, which was labeled a superspectacle, established audience preferences for feature length films (Bowser, 1990; Mezias and Boyle, 2002). Figure 1 tracks the market share attributable to shorts and features beginning in 1910, the year before the first feature was produced, until 1920. As this figure shows, the share of total production attributable to short films was in steep decline as early as 1913, and feature length films had become the dominant product in the film market by the end of 1915.

However obvious these facts may be in retrospect, their significance was lost on MPPC members. With virtually total control over the short film market, the MPPC was not interested in facilitating changes that would ultimately be triggered by feature length films. Member firms were forbidden from producing feature length films, and the MPPC worked hard to suppress them. The result was that overall American dominance of film production globally was threatened, and MPPC dominance

of American production was reduced. In 1913, D.W. Griffith secretly made a feature length film, in defiance of his bosses at Biograph. When Biograph tried to suppress the film because it violated MPPC rules, Griffith quit the firm. His epic, *Birth of a Nation*, debuted in 1915; the same year that the Justice Department gave its first ruling in the Fox lawsuit, initially filed in 1912, declaring the MPPC to be an illegal conspiracy. (Balio, 1976; Mezias and Boyle, 2002).

We assert that the market control, which buffered MPPC member firms from competition, led to a failure to stay abreast of fundamental shifts in the organization of the film industry. Even in its earliest days, the MPPC was slow to recognize important trends: Member firms continued to rely on exchanges, which were essentially spot markets, rather than developing administrative structures for film distribution. Although they eventually responded by forming The General Film Corporation, MPPC members did not engage in advertising or distribution of film at the national level until long after their competitors. Member firms also resisted the star system, both because they preferred the status quo of films as commodity products whose production and distribution they controlled and because they saw the rise of powerful actors as a threat to their power. Most importantly, the MPPC tried to prevent the emergence of feature films by not allowing members to make films over one reel in length. Member firms were even forbidden to produce serial short films that carried over themes or characters from one film to the next (Bowser, 1990; Mezias and Boyle, 2002). The result was a failure of member firms to make the transition to feature length films, which diminished MPPC influence long before the courts ultimately declared it in violation of anti-trust laws. Cones (2000) makes the point effectively: "By 1915, the year that the lower court decision was handed down in the government's case against the Motion Picture Patents Company, feature producers were well entrenched in the motion picture industry; and by December 1916 feature-length pictures were predominant." We interpret this history to suggest that MPPC member companies were less likely to make or produce feature length films.

**Hypothesis 6:** Firms that are members of the MPPC are less likely to make the transition to feature length films.

## DATA AND METHODS

**Sample and data.** Our data include 1,397 firms that were active at any time between 1893 and 1920. For analyzing mortality, our sample spans the period 1893 to 1920 and includes 3,030 firm year spells and 1,362 events (e.g., firm deaths). For analyzing the quantity of feature length films made by firms, we analyze the years between 1911, when the first feature length film was produced, and 1920, the last year for which we have data. We ended our data collection in 1920 for two reasons. First, feature films had become the dominant product with 68% of the market by 1920. Second, as we discussed in the hypothesis section, the MPPC had ceased to be a significant factor in the industry by the end of 1916. By extending the observation period to 1920, we believe we have captured the lingering effects of the MPPC and MPPC membership on competitive dynamics and the product mix of firms.

Between 1893 and 1920, 52,159 films were released; of these 46,971 were short films and 5,188 were feature films. We used data on these films to create records about individual companies that were involved in film production or distribution between 1893 and 1920. Three sources were used to identify films and trace them back to the companies producing and distributing them during this period. The first source is the two volumes of the American Film Institute (AFI) Catalog of Motion Pictures: Film Beginnings (1893-1910) and Feature Films (1911-1920). The AFI Catalog comprehensively lists all short films released between 1893 and 1910 and all feature films between 1911 and 1920.

Unfortunately, the AFI has not yet cataloged short films released between 1911 and 1920, despite the fact that these films remained an important part of the overall industry during much of this time. To overcome this gap, we turned to two additional data sources on short films released between 1911 and 1920.

First, we used the weekly listing of films that appeared in *The Moving Picture World* (MPW), the leading trade publication of the film industry during these years. These weekly lists were organized by company name and then by title. In comparing this data with the companies that we were able to derive from other sources, we noticed that MPW only listed films made by firms that would ultimately appear more than once. In other words, all firms that appeared on the weekly lists of MPW ultimately released more than one film. As a result, we believe that films made by very small firms may have been excluded from the weekly list of releases. To obtain data on these firms, we went to another source: the Film Superlist--Motion Pictures in the U.S. Public Domain, 1894-1939 (Hurst, 1994), which provides a list of films receiving copyright protection. With this additional source, we believe we have obtained the most comprehensive data on shorts produced after 1911. However, even with these two additional sources of data, two problems remain. First, neither source gives distribution data. As a result, we do not have data for distribution of shorts after 1911. Second, it is possible that some small firms that produced only short films after 1911 are excluded from our sample. This is because copyrighting of films did not become dominant business practice until after 1915 (Hurst, 1994). Firms producing only short films after 1911 that were too small to enter the MPW weekly lists and that did not copyright their films will not enter our database. We are confident that the number of such firms is small, but this is a limitation of our data. Despite this limitation, we believe that our data provides an accurate accounting of the number of films made and the population of firms active in the film industry between 1893 and 1920. The possible exclusion of a few small firms making shorts or those that only distributed shorts after 1911 is likely not a limitation so serious as to alter the results we report in any substantive way.

Films in our database were documented by their initial release date, including month, date, and year, which we use as founding times for the firms that enter our sample. This heuristic likely provides a fairly accurate founding date for distributors. We also follow this same strategy in determining the

founding dates of producing firms, which we believe to be a reasonable approximation. Although information is sketchy, it is quite clear that the time between production and distribution during this era was much shorter than it is today. For example, Musser (1990: p. 469) indicates that for Famous Players, the first company to release full-length feature films regularly, the time from production to release for a feature length film was one month; the length of this time period likely would have been even less during the era of short films. Consequently, we believe that film release dates are a good approximation for the founding dates of producing firms during the entire period of our sample.

In moving from data about films to a database that includes all firms that produced or distributed films in the United States between 1893 and 1920, we had to make certain extrapolations from the available data. The following text discusses these extrapolations, the rationale behind them, and the procedures utilized to implement them; all of these are substantively similar to those used by Mezias and Mezias (2000). As they observed, some record-keeping and documentation problems emerge when researching the formative years of any developing industry. The American Film Institute (1988: 225) has noted that, “The determination of exact names was as difficult for corporate as personal names, and, in some cases, nearly impossible. Research among reviews, advertisements, and news items often resulted in conflicting information. For these cases, we gave the most credence to the name as it appeared in company records, followed by advertisements, copyright records and studio directories.” All personal and corporate credits listed by AFI as a unique entity were initially included in our database. However, as Mezias and Mezias (2000) argued, the uncertainty of those early, turbulent years resulted in some unique names being the result of inconsistent documentation rather than signifying unique members of the population. To reduce the impact of this on the accuracy of the sample, entities with only personal names, which cause most of the problem, are converted into firms in the database by applying two rules. (1) In the same or consecutive years, company names that were identical except for

the ending Co., Inc., or Corp. were combined into a single record. (2) In the same or consecutive years, company names that were proper names or proper names followed by anything were combined with any entities that were called by that same proper name followed by anything.

Some films only appeared in the United State Superlist of Copyrights and for a sub-set of these films copyright ownership was assigned to an individual. If the individual's name could not be linked to a company by the procedures described above, then these names entered the data set as distinct entities. These entries represent 991 films produced (1.9% of total) and potentially 679 distinct companies (32.7% of total) in operation between 1893 and 1920. Through our search for duplicate films in our database (i.e. films could enter the database from any one or all of the three film data sources) we noticed that Vitagraph Co. of America and Lubin Manufacturing Co. both assigned copyright ownership to an individual when the company produced a film. Although we cannot be certain that all firms followed this practice, we believe that these entries do not represent distinct entities. To be certain that our results are robust we ran our analyses with and without these entries; none of the significance tests for any of our hypotheses are affected. To be more conservative we decided to use the smaller sample; thus, the descriptive statistics, correlations and results provided in the tables reflect the exclusion of these entries.

**Modeling Firm Mortality.** We developed several hypotheses about the mortality of firms in the early American film industry during the period of our study 1893 to 1920. To test these hypotheses, we coded a dependent variable set to 0 in each year a firm remained alive, and 1 in the year the firm died. We used a hazard rate model (Tuma and Hannan, 1984) to test our hypotheses because our data set contains right-censored data; that is, some of the firms remained alive at the end of our period of study, 1920. The hazard rate model takes the following form:

$$r(t)_i = \lim [q_i(t, t+t\Delta)]/\Delta t]$$

We compared measures of model fit using several functional forms of age dependence: exponential, weibull, and gamma. The exponential form provided the best fit but the results are robust to the other specifications, including running the model as a piece-wise exponential.

**Independent variables.** To test the hypothesis that MPPC membership would reduce the member firm mortality rate, we use a dummy variable, **MPPCMember**; it is set to 1 for each year a firm was alive and a member of the MPPC (see Table 1 for a list of member firms). The MPPC was founded in 1909; thus, the first year we coded this variable was 1909. The last year we coded the MPPC variable was 1916 because by all accounts the MPPC had ceased to be an important player in the industry by 1916 (Bowser, 1990).<sup>1</sup> Because we expect the effect of MPPC membership on the member firms to continue after the organization's demise we include a dummy variable, **LingerMPPC**, set to 1 for each year between 1917 and 1920 for former MPPC firms still in operation, and zero otherwise. We use two measures to test our second hypothesis that the activities of the MPPC would increase population mortality rates. The first is a measure of the MPPC's control of the short film market; it is called **MPPCShortsMarketControl** and is defined as the sum of short film production and distribution by MPPC member firms. The second is a measure of the MPPC's use of the legal system to thwart competition; it is called **LawsuitsByMPPC** and is defined as the cumulative number of lawsuits in which the MPPC was the plaintiff.

To test hypothesis 3 that actions taken by the state would reduce firm mortality rates we use a measure of the time elapsed since the founding of the MPPC. If the anti-trust actions of the state were effective in reducing the competitive intensity of the MPPC we would expect that the effect of the MPPC on the mortality rate of non-MPPC firms would decrease as the elapsed time from MPPC

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<sup>1</sup> As noted above, the MPPC toned down its most aggressive anti-competitive tactics after the lawsuit alleging illegal competition was filed in 1912. The first decision in that lawsuit came in 1915, and the MPPC was declared an illegal conspiracy. This initial decision was finalized after all appeals were exhausted, and the MPPC was disbanded in 1917. Variations on coding to accommodate these possible permutations have no effect on the results for the hypothesis tests.

inception increases. To measure this effect we include a variable called **TimeSinceMPPC**; it is a count variable that is increased by 1 for each year the MPPC was in operation (e.g. this variable is set to 1 in 1909 and is set to 8 in 1916)<sup>2</sup>. We also expect that lawsuits brought by the state or another firm against the MPPC to reduce the hazard rate. To capture this effect, we include a variable called **LawsuitsAgainstMPPC**, which is defined as the cumulative sum of the number of lawsuits in which the MPPC was the defendant.

**Control variables.** We include both firm and population level control variables consistent with prior work in this area (Barnett, 1997; Baum & Mezias, 1992; Hannan & Freeman 1987, 1988 & 1989). Firm level measures include firm age and firm size.<sup>3</sup> Increases in firm age and size are expected to reduce firm mortality. Firm **Age** is set to zero during a firm's first year of operation and is increased by 1 for each additional year the firm remains in operation. To control for the effects of firm size, we include separate measures of firm short film production, short film distribution, feature film production and feature film distribution because we were uncertain whether all four measures would have similar effects on mortality. **NumShortsProd** equals the sum of all short films produced during a given year by a firm. **NumShortsDistrib** equals the sum of all short films distributed during a given year by a firm. **NumFeaturesProd** equals the sum of all feature length films produced during a given year by a firm. **NumFeatsDistrib** equals the sum of all feature length films distributed during a given year by a firm.

We include density and density squared to control for the effects of competition that past research has found to impact hazard rates. First, we use the most frequent ecological measure of competition

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<sup>2</sup> We also considered a curvilinear effect by Time Since MPPC squared; this did not change the results other than to introduce multicollinearity that rendered both TimeSinceMPPC and its square not significantly different from zero.

<sup>3</sup> We ran models including firm experience by introducing the cumulative totals for production and distribution of both features and shorts. These variables had no explanatory power above the size variables and we do not report results for them.

within a population—density, the count of organizations. Hannan and Freeman (1987, 1988, 1989) articulated the density dependence argument of competition: Initial increases in density increase the legitimacy of the population (mutualism), while subsequent increases in density induce competitive effects. Since the density dependence argument suggests a curvilinear relationship, we control for effects of both density and density squared on foundings. **Density** is defined as the number of firms in the population, measured by counting the number of firms during a given year. Past research would suggest density to have a positive effect on foundings. We scale this variable by dividing by 1000. **Density<sup>2</sup>** is defined as the square of density. Past research would suggest density squared to have a negative effect on foundings. We scale this variable by dividing by 1000. Studies have also shown (Carroll & Hannan, 1989) that firm density in the year that a firm is founded, or density delay, increases firm mortality. **DensityDelay** is defined as the number of firms in the population in the year a firm is founded. We scale this variable by dividing by 1000.

Barnett (1997), in developing his model of the dynamics of competitive intensity, focused on the role of firms that are both older and larger than other firms in the population. He argued that the combination of being both older and larger would affect mortality rates differently than either alone. To show this, he used Sum of Ages and Sum of Sizes. He argued these would increase the population level mortality rate. He then hypothesized that the interaction between these two variables would be negative, indicating that older, larger firms were weak competitors. **SumofAges** equals the sum of firm age for all firms operating in a given year divided by 1000. **SumofSizes** equals the sum of firm production and/or distribution of short and/or feature films divided by 1000. **SumofAgesXSumofSizes** equals the **SumofAges** multiplied by the **SumofSizes** divided by 10000.

As other authors, e.g., Dacin (1997), have noted, economic forces may well affect ecological outcomes. For example firms are more likely to fail during periods of economic contraction. Following

Baum and Mezias (1992), we controlled for this plausible explanation of firm failures by including the annual growth rate of the U.S. gross national product as a control variable. The Gross National Product (GNP) data was taken from Balke and Gordon (1989). The waging of World War I is also thought to have affected both the economy and the nature of competition from films made outside the U.S.

**GNPGrowth** is defined as the rate of annual growth in the Gross National Product. **WW1** is a dummy variable set to 1 in years 1914 to 1919 and zero in all other years. Finally, to control for any general time trend that may affect firm mortality rates we include the variable **TimeTrend**; it is a count variable increased by 1 for each year in the analysis (e.g. this variable is set to 1 in 1893 and 28 in 1920).

Our last control variable is a dummy variable for the year 1911. We include this control because we believe our data is incomplete for this year. This was the first year we relied on the *Moving Picture World* (MPW) for the list of short films produced, and we believe that the MPW was not as complete in 1911 as it was in later years. For example, in 1910 our data set includes 90 firms producing short films and 94 firms producing short films in 1912 but we have only 32 short film producers in the data set in 1911. **1911Dummy** is set to one in 1911 and zero otherwise.

**Modeling the Production of Feature Length Films.** Our final hypothesis is that MPPC members will be less likely to make the transition to feature length films. The sample for this analysis is a sub-sample of our mortality analysis, which was formed by examining only years after 1911, when the first feature film was produced. 1,355 firms were active in the film industry during these years. The dependent variable for this analysis represents the total number of feature length films that a firm produced or distributed in a given year. It is called **FeatureInvolvement** and is measured as the total number of feature films produced and/or distributed by a firm in a given year. We used negative binomial regressions to test our hypotheses because our dependent variable is a count and because the model fit was better than with the Poisson.

**Independent variable.** To test hypothesis that MPPC members were less likely to make the transition to feature length films, we again use the variable **MPPCMember**.<sup>4</sup> This hypothesis is supported if the effect of this variable is significant and negative. Here again we believed that there might be an effect of MPPC membership after the MPPC no longer was an important player in the industry (e.g. after 1916). To capture this effect we include the dummy variable, **LingerMPPC**.

**Control variables.** Clearly, size in one year will affect the number of films that a firm can make in the subsequent year; thus, we include measures of organizational size in this analysis. As we discussed previously, we do not have data on the number of short films distributed after 1911. Because this analysis does not begin until 1912, data on the number of short films distributed is unavailable. Otherwise, the controls for size in this analysis are the same as in the mortality analysis.

**NumShortsProd** equals the sum of all short films produced during the prior year by a firm.

**NumFeaturesProd** equals the sum of all feature length films produced during the prior year by a firm.

**NumFeaturesDistrib** equals the sum of all feature length films distributed during the prior year by a firm.

Older firms are considered to be more inert (Barnett, 1997); thus, they may be less likely to make the transition to feature length films; consequently, we include firm age as a control in our analysis. This is the same variable used in our mortality analyses. Theories of organizational inertia and technological change suggest that firms founded prior to a major environmental change, such as the emergence of features, are less able to adapt to it (Amburgey, Kelly & Barnett, 1993; Stinchcombe, 1965). To control for this effect we include the variable **FoundedBefore1912**; it is a dummy variable set to one if a firm is born before 1912 and zero otherwise. If imprinting or competency traps are behind the inability of firms to change, then this variable will be significant and negative.

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<sup>4</sup> Note that because this analysis begins in 1912, the first year that feature films were produced; we have no coding for MPPC firms during 1909 and 1910.

The munificence of the environment may also directly affect the number of feature length films produced and distributed. To control for this, we include the same measures of environmental munificence used in our mortality analyses: **GNPGrowth** and the **WW1**. As the market for feature length films grew rapidly particularly during 1912 and 1917, the probability that a firm would produce or distribute features increased. To control for this trend, we include the variable **TimeTrend**, which is a count variable for years beginning in 1912. Since we know that the rate of increase was sharper in the earlier years, we suspect that this relationship is not linear. To account for the decreasing rate of increase in the total amount of feature films produced and distributed, we also include **TimeTrend**<sup>2,5</sup>.

We also control for each firm's prior experience in producing and distributing feature films. The American Film Institute (1988) defined feature films as those that are at least four reels in length in contrast to short films, which were typically only one-reel in length. Thus, we believed that using only a count of films would underestimate the resources devoted to feature films. Thus, in computing a variable to control for experience with features, we counted reels rather than films; we arrived at feature film reels by multiplying the number of feature films by four.<sup>6</sup> Consequently, the variable **FeatureExperience** is computed as cumulative feature film reels divided by the sum of the cumulative number of feature film reels plus the cumulative number of short film reels.

## **RESULTS AND DISCUSSION**

**Estimation and results.** Table 2 reports the descriptive statistics for and correlations between the dependent and independent variables in the mortality analysis. The mean of the dependent variable,

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<sup>5</sup> All of the specifications we tried, including just the linear term, indicated a significant time trend without changing the results for the hypothesis tests of our variables of theoretical interest.

<sup>6</sup> Given that some features were longer than four reels, this measure probably still underestimates the resources devoted to features. Nonetheless, the results for hypothesis tests are the same regardless of whether films or reels are used. The model fit and p-values are higher for model based on total reels rather than total films.

at .445, shows that death was a frequent event in the population of firms in the early American film industry. The mean of the dummy variable indicating MPPC membership, at 0.025, indicates that relatively few firm years fell in this category. The average age in the population was just over two years; again, this is indicative of the high rate of mortality, as it does not even represent one tenth of the time span of our observation period, which was twenty-seven years. The means on the size variables demonstrate that shorts were the dominant product overall during this period, with the mean number produced and the mean number distributed being over sixteen and six respectively. By contrast, neither of the means for number of features produced and distributed is greater than two. Density indicates that a large number of firms tended to be active in a given year, with a mean of over 324. Finally, GNP growth was over eleven percent.

The results of our hazard rate analyses are reported in Table 3. The direction and significance for the variables of theoretical interest demonstrate support for the hypotheses about the effects of the MPPC on mortality. Hypothesis 1 is supported: The coefficient on **MPPCMember** is significant ( $p < .10$ ) and negative, indicating that membership in the MPPC during its years of operation increased the viability of member firms. The coefficient on **LingerMPPC** is positive, as expected, but not significant. Hypothesis 2 is supported. **MPPCShortsMktControl** is positive and significant ( $p < .01$ ). This indicates that the MPPC was able to exert increased competitive intensity on its rivals. Similarly, the coefficient for the **LawsuitsByMPPC** is positive and significant ( $p < .10$ ). Again, this is an indication of the increased competitive intensity exerted by the MPPC. The hypotheses about state intervention are also supported. **TimeSinceMPPC** ( $p < .001$ ) is negative and significant. Consistent with hypothesis 4, which posited that state intervention would reduce the competitive intensity exerted by the MPPC, we find that mortality rates in the population decreased with time since the organization was founded. Consistent with Hypothesis 5, which posited that legal action against the MPPC would also reduce its

competitive intensity, we find that **LawsuitsAgainstMPPC** ( $p < .05$ ) has a negative and significant effect.

Because the difference between the log likelihood for our three models is small we questioned whether the effects of the MPPC and state intervention were of practical significance; interpretation of the coefficients in terms of their effect on mortality in the population suggests that they are. MPPC membership reduced member mortality rates to 25% of the hazard for the population as a whole. The coefficient on the market control variable has the following interpretation: For every thousand films released by the MPPC, the population mortality rate increased by 43%. At the height of its power, in 1909 and 1910, the domination of the market for shorts by the trust, as measured by the thousands of films it released, the mortality rate in the population was increased by over three times. Lawsuits were also important, with each additional lawsuit brought by the MPPC increasing the mortality rate by 6%. The state intervention variables had similar practical significance. The changing legal climate against the trust is indicated by the effect of the variable **TimeSinceMPPC**: With each year the MPPC was in operation, the population mortality rate went down by 10%. Additionally, lawsuits against the MPPC had about twice the effect of lawsuits brought by the MPPC against others, with each one reducing the population mortality rate by about 14%.

The results for the control variables for firm size and firm age are exactly as expected: Larger firms, in terms of producing or distributing a higher number of short or feature length films, were significantly less likely to die; older firms were also significantly less likely to die. **DensityDelay** is significant ( $p < .001$ ) and positive as expected. Our results for density dependence are opposite prediction: **Density** is positive but not significant, and **Density<sup>2</sup>** is significant and negative contrary to the predictions of density dependence theory. We believe this may be because overall demand for film was growing so quickly almost throughout the entire period of our study: This might mean that the

density shakeout was yet to come. The environmental munificence controls have effects as well: The **WW1** dummy variable is significant and negative as is the effect of the GNP growth rate. By contrast, our time period dummy controls are not significant. The time trend variable is positive but not significant, and the **1911Dummy** is negative but not significant.

The competitive intensity control variables have effects somewhat different than those found by Barnett (1997). **SumofAges** is positive, consistent with his findings, but not significant, and **SumofSizes** is negative and significant, inconsistent with his findings. Also inconsistent with Barnett's argument the interaction between **SumofAges** and **SumofSizes** is positive and significant in the full model. In hindsight this is perhaps not surprising given that we are studying an industry in its early stages of development. Barnett (1997) argued that the simultaneous increase in survival rates and decrease in competitive intensity of older, larger firms would be seen later in an industry's development.

In Table 4 we provide the descriptive statistics and correlations between our dependent, independent, and control variables for the negative binomial regression analysis of total feature film involvement. The proportion of firm years representing a firm that had been a member of the MPPC, .023, constituted just over two percent of the observations in the analysis. Average age is lower in this analysis than in the mortality analysis, but is still between 1 and 2 years. The size variables indicate that, despite the emergence of features as the dominant product during these years, most firms still produced more short films than feature length films during this period. The GNP growth rate was higher in this period, over twelve percent as opposed to eleven percent in the longer time span of the previous analysis. The proportion of firms born before 1912 is only 0.079 indicating that most firms in this analysis were founded after 1912. Our measure of prior experience with feature films indicates that on average firms dedicated about a third of their resources to feature films.

Table 5 presents the negative binomial regression results used to test Hypothesis 6. The coefficient on **MPPCMember** is significant ( $p < .001$ ) and negative, indicating support for the hypothesis. This effect was observed even after including several control variables that also might be associated with a reduced probability of making the transition to feature length films. All three of the firm size controls are significant ( $p < .001$ ) and positive providing support for the argument that larger firms have more resources available to make feature length films. The **WW1** dummy variable is positive, but not significant, suggesting that World War I had more of an effect on firm mortality rates than on the transition to features. Also consistent with expectations, our measure of cumulative commitment to feature films is significant ( $p < .001$ ) and positive. It makes sense that a firms' cumulative feature experience is highly related to current feature involvement. **TimeTrend** and **TimeTrend<sup>2</sup>** are also significant and behave as expected, indicating that the rate of increase in making feature films declined over time.

Some other results were a bit more surprising: Results for firm **Age** and **FoundedBefore1912** are both positive and highly significant, while **GNPGrowth** is negative and significant. Counter to our expectation that older firms are less likely to make feature films, firm age is positive and significant. Also counter to our expectation that imprinting in a prior technological regime would reduce the number of feature films, we find that firms founded before 1912 were more likely to be involved in features than those founded after 1912. Because these results are not what we expected, we conducted additional analyses in an effort to explain these findings. When we ran just firm **Age** in the negative binomial regression, its effect is positive. When firm **Age** and **FoundedBefore1912** were included in the regression, **FoundedBefore1912** has a negative and significant coefficient, indicating that firms born before 1912 were less likely to be involved in feature films than firms of the same age born after 1912. Once we include the MPPC firms, however, the effect of having been born before 1912 reverses. This

indicates that older firms that were not members of the MPPC were, in, fact more likely to make feature length films. The result for the **GNPGrowth** is an indication that growth in the production and distribution of features was driven more by a transition in the market than by overall economic conditions.

There are some limitations to our data and analysis that should be kept in mind in interpreting the results. The main data limitation is related to problems with the data for shorts production in 1911 and shorts distribution for the years 1911 and later. We believe that the problem is less serious for the production of shorts. The only year for which we have serious concerns about the reliability of our data on the production of shorts is 1911; the dummy variable that we included to look for possible effects of data problems in this year was not significant. Another problem with the data on the production of shorts is possible double counting of some short films. Some companies registered their films for copyright under the names of individuals employed by the company with no reference to the actual firm that owned the film. This would have triggered a new entry in our population data of a firm with the name of that individual having produced one film. In order to be more conservative, we did not include these entries in any of the analyses reported here; including them does not affect any of the results for hypothesis tests that we have reported.

The problem with distribution of shorts is likely more serious: We simply do not have data on the distribution of shorts after 1910. Obviously, this contributed to our problem in 1911, which is also controlled for by the dummy variable for that year. We were also worried about the effect of the lack of short distribution data in years after 1911 on our estimate of the effect of MPPC short film market control. To address this concern, we ran the analyses including only short film production in the measure, omitting information on distribution during 1909 and 1910. The variable is still significant and negative as predicted. Given this, we decided it was better to include all available data in the analyses

presented in the paper; thus, our measure of MPPC market control includes data on the distribution of short films in the years it is available. Another problem arising from the missing data on shorts distribution is related to the size variables. Clearly, this is at least part of the reason why the coefficient on the shorts distribution is the smallest among the four size control variables we included in our analysis.

Overall, however, there are reasons to believe that the impact of this data problem is not likely to change any of our findings in any fundamental way. First, by 1910, independent firms to distribute short films had begun to disappear: Distribution was increasingly seen as inseparable from production, particularly after firms began to invest in the promotion of stars and their films. Second, because shorts distribution was increasingly seen as the province of the producing firm during this time period, it is likely some of the benefits of size missed by our inability to get data on shorts distribution are reflected in a somewhat larger coefficient for the production of shorts. Thus, it is not surprising that the coefficient on the shorts production is so much larger than that on shorts distribution. Third, among MPPC firms, distribution was handled by The General Film Corporation; thus, our data on size for these firms, which includes only production, is likely correct throughout the analysis. Of course, because of the missing data on shorts, the General Film Corporation never enters our data. Given that the power of our test of the effect of MPPC membership on viability is reduced by this omission, we believe our estimation of the standard error of the effect of the trust on mortality are likely overestimated as a result. Further, since the General Film Corporation was guaranteed business as long as the MPPC remained in existence, through the final 1917 court decree, we likely also underestimate the survival benefits of the MPPC because of this omission. Thus, we believe our hypothesis tests for the effects of the MPPC variable are biased against the findings that we obtained in this paper as a result of these data problems. This combined with the fact that the MPPC represented only a small number of firms during only a few

of the years in the time period that we studied may explain why we were only able to achieve significance at the ten percent level for this variable.

## **IMPLICATIONS AND CONCLUSIONS**

We began this study by asking under what conditions firms would be able to exercise effective market control. We suggested that success was more likely when they engage in action that reflects current legal environments, which is driven by changing state policy. We argued that MPPC firms, by forming a trust based on the ostensible purpose of protecting patent rights, engaged in an action that managed to succeed in the short run, despite an emerging state policy against such trusts. In providing evidence for this success, we linked the institutional argument with the dynamics of competitive intensity by arguing that the trust was a form of compensatory fitness (Barnett, 1997). We showed that the trust enhanced the viability of its members, who experienced decreased mortality. We also focused on how the trust translated its compensatory fitness into increased competitive intensity. Mortality rates in the population in general were enhanced as the domination of the trust over the shorts market increased and with the cumulative total of lawsuits filed by the trust against its competitors. After nearly three years of exercising control that sometimes went to criminal excess, the trust did become the subject of state anti-trust actions. We can again understand the effect of these actions in terms of viability and competitive intensity. We interpret our results to suggest that the effect on viability was delayed and not as pronounced as the effects on competitive intensity. MPPC membership through 1916, obviously including years after the anti-trust actions began in 1912, reduced mortality. In years after 1917, having been a member of the MPPC has no significant effect. Together, these findings suggest that state sanctions and remedies, which eventually caused the MPPC to disband, did not enhance the mortality of MPPC firms directly. By contrast, state activity seems to have had a more immediate and pronounced effect on competitive intensity. The changed legal climate as anti-trust

actions continued in the later years of the existence of the trust is signaled by the significant and negative coefficient on the variable **TimeSinceMPPC**. Similarly, we see reduced competitive intensity associated with the cumulative number of lawsuits filed against the MPPC. This understanding of the effects of anti-trust actions in terms of competitive intensity suggests two interesting facts. First, the most important effect of the anti-trust litigation filed in 1912 was to reduce the competitive intensity exerted by the MPPC, most likely by causing it to curb its most abusive tactics. Consistent with Dobbin and Sutton's (1998) argument about the strength of a weak state, we see that state actions did little to sanction MPPC firms directly even as they were quite successful at creating a legal climate that reduced the competitive intensity exerted by the trust. Second and related, the ultimate declaration of the MPPC as violating anti-trust laws, while a climactic moment in bringing the litigation to a close, was not particularly important in terms of effects on the dynamics of competitive intensity. The firms in the trust had already ceased to dominate the emerging film industry by the time the final court ruling occurred.

This leads us directly to the third question with which we started our study: What is the long run effect of market control on the firms that exert it? Our answer to this question mirrors Mezias and Eisner's (1997) finding that decreased competitive intensity resulted in lower levels of innovation: Absent the pressures of competition, the MPPC firms failed to keep up with market trends. We interpret this failure of the MPPC to suggest an important difference between assumptions about the role of agency from an institutional and ecological perspective and those of managerialist perspectives. Agency in the legal environment, and we would guess institutional environments more generally, while active (Edelman, et al., 1999) is not necessarily rational. This is illustrated by the outcome of the patent wars and trust formation in the early American film industry, which is reminiscent of the maxim about being careful what you wish for, as you may get it. Just as Barnett (1997: 139) predicted, they were not able to transform their compensatory fitness into greater competitive intensity in the long run; ultimately, they

were exposed as weaker competitors. Clearly, the trust was successful at creating compensatory fitness that buffered its members from competition and enhanced mortality among the population at large during the height of its power. At the same time, however, Edison, Biograph and their trust compatriots detached their businesses from the market, delaying their entry into feature length films and destroying their long run viability. Adolph Zukor, founder of Paramount, one of the Hollywood upstarts that challenged the trust, gave the following description of the MPPC firms (Mezias and Boyle, 2002: 157): "They put some brains into their mechanical devices and into their sales department, but never by any chance into their films."

As costume epics, super spectacles and eventually star vehicle feature length films produced in Hollywood took hold with American audiences, the damage the MPPC had done to itself was revealed. They were brought down by the resistance to feature length films that they had ruthlessly enforced during the apogee of their market control. Their reluctance to internalize the distribution function put them at a competitive disadvantage relative to firms that released films nationally with coordinated promotion and advertisement. Their attempt to suppress feature length films and slowness in responding to the obvious fact that audiences preferred them meant that they delayed building the facilities and capabilities that the new product required. They had not invested in fixed assets like stages and studios or new technology and equipment, but this was likely not their most serious problem given that they still had considerable financial assets. Perhaps more damaging was their failure to build the administrative functions required to support the production of a film that could sustain a narrative over an hour and longer. Unlike their competitors, they had not moved to the central producer system (Mezias and Kuperman, 2001) and had not formed ties with stage actors and stage writers or invested in creating stars that were adored by the public (Balio, 1976; Mezias and Boyle, 2002). They were at a clear disadvantage relative to competitors who had pioneered the link between longer narrative, the sustained

presence of actors on the screen, and the rise of stars. The MPPC firms, which had dominated the film industry during the shorts era, failed to become part of the emerging global entertainment colossus called Hollywood.

It is ironic that none of these firms -- not Edison, not Biograph, not any of their partners in the MPPC trust -- gained a long-term competitive advantage from the trust. There can be little doubt that they reaped some short-term benefit: It would practically be impossible to have avoided short-term advantage in an environment where demand for films and the popularity of nickelodeons were literally exploding. At the same time, however, another major effect of the patent wars and the subsequent trust formation was to impede the growth of the film industry in the US. By limiting production and imposing fixed prices and policies, the trust induced exchanges, distributors, and exhibitors to turn to European producers, who made steady headway at the expense of American production. Two developments helped prevent American film production from going into longer-term decline at this point. First, the influence of the MPPC was limited beyond the Eastern US, where its power was concentrated. With the cooperation of the Los Angeles Chamber of Commerce, a group of film producers fled to what became known as Hollywood to escape the oppressive trust. Second, World War I intervened, with adverse effects on European producers.

A final conclusion we draw from our work is that an understanding of the links between legal environments and population dynamics has considerable potential for informing public policy. The findings of our analysis have clear relevance for conclusions about competition. Analysis of anti-competitive actions might usefully consider both effects on viability and competitive intensity. We have provided evidence that the trust enhanced the viability of its members and increased competitive intensity, both in terms of its control over the market for shorts and the lawsuits it filed against competitors. These variables deserve attention in future analyses for anti-trust purposes. Our evidence

concerning the effects of anti-trust actions suggest that they reduced the compensatory fitness advantage of the trust members, but did not directly cause those firms to be more likely to die. More importantly, state actions seemed to have directly reduced the competitive intensity exerted by the trust, with both time since the founding of the organization and lawsuits filed against it having direct, negative effects on mortality in the population.

Perhaps more interesting, however, are interpretations of our findings that have implications beyond the direct effects on competitive dynamics. For example, we provide evidence that the group of firms that sheltered itself from competition was also less likely to move into feature films. We believe this has clear implications for the issue of whether firms sheltered from competition are less likely to adapt to market trends. Additionally, we view our results as an indication of the importance of legal environments and how they are linked with competitive processes. As an illustration, consider how the trust affected the climate for the business of making films nationally and even globally during the early years of the film industry. Film entrepreneurs were forced to migrate away from the center of power of the trust to the deserts of southern California. American film production was suppressed by the presence of the trust; European producers benefited. The recovery of American production firms and the emergence of Hollywood stand as a testament to the resilience of firms and markets. However, the widespread effects of the anti-competitive tactics of the trust were curbed only after the state intervened; this is an important illustration of why there is a need for public policy to oversee the private order of the market.

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Table 1

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**MPPC Member Firms**

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Biograph Co.

Essanay Film Mfg. Co.

Kalem Co.

Kleine Optical Co.

Lubin Mfg. Co.

Pathe Freres

Selig Polyscope Co.

Thomas A. Edison, Inc.

Vitagraph Co. of America

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Short and Feature Reels as a Percent of Total Reels Produced

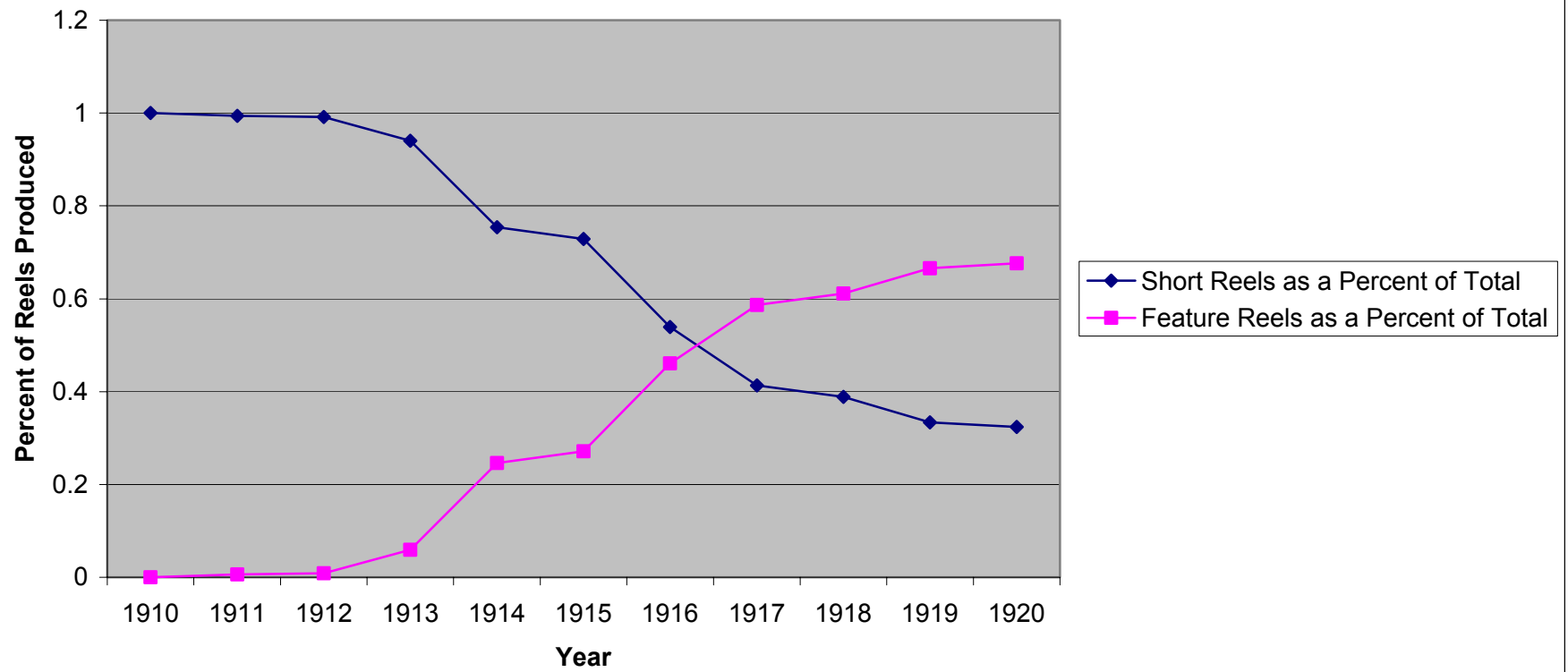


Table 2

**Descriptive Statistics and Correlations for Firm Mortality Analyses, 1893-1920**

Variable	Mean	Std. Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Death	.445	.497	1.00							
2. MPPC Member	.025	.156	-.145							
3. Linger MPPC	.010	.098	-.049	.523**						
4. MPPC Shorts Market Control	.879	.971	-.015	.092**	-.090**					
5. Lawsuits by MPPC	15.98	7.965	.205	-.044	.088**	-.420**				
6. Time Since MPPC	2.99	3.266	-.014	.012	-.091**	.622**	-.020			
7. Lawsuits against MPPC	9.89	5.276	.206	-.064**	.081**	-.408**	.979**	.012		
8. Number of Shorts Produced	17.35	51.539	-.248	.371**	.027	.075**	-.227**	.001	-.235**	
9. Number of Shorts Distributed	6.86	43.115	-.112	.092**	-.016	-.009	-.305**	-.124**	-.299**	.264**
10. Number of Features Produced	1.72	6.664	-.144	.078**	.107**	-.097**	.162**	-.032	.160**	.195**
11. Number of Features Distributed	1.72	9.762	-.141	.025	.073**	-.066**	.111**	-.022	.109**	.137**
12. Age	2.03	3.417	-.232	.607**	.438**	-.098**	-.037	-.101**	-.044	.360**
13. Density Delay	.244	.187	.321	-.235**	-.123**	-.254**	.630**	.038	.634**	-.315**
14. Density	.325	.157	.171	-.049*	.007	.131**	.652**	.643**	.696**	-.187**
15. Density <sup>2</sup>	78.724	47.454	.183	-.058*	.020	-.021	.676**	.525**	.716**	-.187**
16. WW I	.625	.484	.143	-.047*	.043	-.058*	.582**	.339**	.570**	-.156**
17. GNP Growth	.116	.104	.098	-.015	.070**	-.471**	.545**	-.103**	.484**	-.113**
18. Sum of Ages	.492	.223	.228	-.05*	.073**	-.366**	.887**	.114**	.883**	-.235**
19. Sum of Sizes	4.646	1.636	.082	.030	-.052*	.729**	-.034	.715**	.003	-.020
20. Sum of Ages X Sum of Sizes	235.308	131.0778	.172	-.036	.011	.109**	.544**	.566**	.574**	-.157**
21. Time Trend	22.52	4.697	.233	-.020	.078**	-.251**	.943**	.006	.930**	-.237**
22. 1911 Year Dummy	.011	.103	-.074	.165	-.010	.029	-.105	.001	-.176	.126

•p<.01; \*\*p<.001 ; one-sided test. 3,066 spells, 1,365 events.

Table 2

**Descriptive Statistics and Correlations for Firm Mortality Analyses, 1893-1920**

Variable	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1. Death													
2. MPPC Member													
3. Linger MPPC													
4. MPPC Shorts Market Control													
5. Lawsuits by MPPC													
6. Time Since MPPC													
7. Lawsuits by MPPC													
8. Number of Shorts Produced													
9. Number of Shorts Distributed													
10. Number of Features Produced	-.041												
11. Number of Features Distributed	-.028	.448**											
12. Age	.143**	.157**	.115**										
13. Density Delay	-.194**	-.014**	-.049*	-.446**									
14. Density	-.279**	.101**	.069**	-.097**	.541**								
15. Density <sup>2</sup>	-.251**	.118**	.081**	-.069**	.598**	.965**							
16. WW I	-.206**	.116**	.079**	-.050**	.537**	.772**	.784**						
17. GNP Growth	-.095**	.112**	.077**	.038**	.427**	.285**	.425**	.321**					
18. Sum of Ages	-.261**	.161**	.110**	-.025**	.681**	.779**	.862**	.700**	.674**				
19. Sum of Sizes	-.094**	-.009	-.006	-.098**	.147**	.582**	.529**	.430**	-.046	.185**			
20. Sum of Ages X Sum of Sizes	-.215**	.103**	.070**	-.065**	.552**	.904**	.951**	.772**	.485**	.794**	.692**		
21. Time Trend	-.326**	.150**	.102**	-.040**	.598**	.646**	.648**	.509**	.441**	.851**	.095**	.545**	
22. 1911 Year Dummy	-.016	-.025	-.017	.057	-.010	-.194	-.171	-.135	-.088	-.170	-.128	-.160	-.079

•p<.10; \*\*p<.05; \*\*\*p<.01; \*\*\*\*p<.001 ; one-sided test. 3,066 spells, 1,365 events.

Table 3

**Maximum Likelihood Estimates of Firm Mortality, 1893-1920**

<b>Variable</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
MPPC Member		-1.379*	-1.392*
		(1.025)	(1.026)
Linger Membership		.027	.006
		(.468)	(.468)
MPPC Shorts Market Control		.218**	.356***
		(.125)	(.137)
Lawsuits by MPPC		-.026	.062*
		(.029)	(.048)
Time Since MPPC			-.111***
			(.045)
Lawsuits against MPPC			-.150**
			(.076)
Number of Shorts Produced	-.023***	-.023***	-.023***
	(.003)	(.003)	(.003)
Number of Shorts Distributed	-.003**	-.003*	-.003*
	(.002)	(.002)	(.002)
Number of Features Produced	-.126***	-.126***	-.124***
	(.020)	(.020)	(.020)
Number of Features Distributed	-.096***	-.096***	-.095***
	(.025)	(.025)	(.025)
Age	-.029**	-.024*	-.025*
	(.015)	(.017)	(.017)
Density Delay	.700***	-.788***	.705***
	(.287)	(.000)	(.295)
Density	.130	-1.539	3.286
	(1.362)	(1.717)	(2.611)
Density <sup>2</sup>	-.007	-.002	-.020**
	(.008)	(.009)	(.011)
WW I	-.150*	-.006	-.423**
	(.111)	(.143)	(.216)
GNP Growth	-1.740**	-1.484*	-3.204***
	(.787)	(.961)	(1.164)
Sum of Ages	5.079***	3.698***	.267
	(1.177)	(1.318)	(2.015)
Sum of Sizes	.3264***	.0750	-.392*
	(.097)	(.154)	(.244)
Sum of Ages X Sum of Sizes	-.004*	-.002	.011*
	(.003)	(.003)	(.006)
Time Trend	-.025	.039	.081
	(.025)	(.055)	(.063)
1911 Year Dummy	.331	-.013	-.544
	(.617)	(.649)	(.732)
Constant	-2.295***	-2.354***	-1.831***
	(.363)	(.679)	(.647)
Log Likelihood	2156.937	2160.661	2163.857

•p<.10; ••p<.05; •••p<.01; ••••p<.001 ; one-sided test. 3,066 spells, 1,365 events.

Table 4

**Descriptive Statistics and Correlations for Total Involvement in Feature Production and Distribution, 1912-1920**

Variable	Mean	Std.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Dev.												
1. Feature Involvement	3.16	13.587												
2. MPPC Member	.023	.149	.085**											
3. Lingering MPPC	.008	.089	.104**	.590**										
4. Number of Shorts Produced	8.73	39.161	.236**	.450**	.096**									
5. Number of Features Produced	1.07	5.837	.606**	.128**	.169**	.277**								
6. Number of Features Distributed	1.24	8.617	.723**	.018	.044	.158**	.356**							
7. Age	1.47	2.980	.200**	.655**	.466**	.466**	.259**	.154**						
8. WW I	.854	.353	.086**	-.043*	.037	-.018	.076**	.059	.071**					
9. GNP Growth	.125	.115	.084**	-.004	.057*	.005	.102**	.078**	.108**	.234**				
10. Founded Before 1912	.079	.269	.033	.522**	.308**	.401**	.107**	-.020	.700**	-.118**	-.052*			
11. Time Trend	4.70	1.954	.129**	-.024	.100**	-.016	.153**	.120**	.146**	.637**	.593**	-.116**		
12. Time Trend <sup>2</sup>	25.92	18.924	.124**	-.014	.104**	-.023	.155**	.122**	.149**	.499**	.534**	-.099**	.977**	
13. Feature Experience	.334**	.446**	.248**	-.099**	-.049*	-.102**	.159**	.168**	-.108**	.197**	.094**	-.186**	.315**	.324**

\*p&lt;.01; \*\*p&lt;.001

Table 5

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**Negative Binomial Regression of Total Involvement in Feature Production and Distribution, 1912-1920**


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Variable	(4)	(5)
MPPC Membership		-1.764**** (.396)
Lingering Effect of MPPC Membership		.714** (.424)
Number of Shorts Produced <sub>t-1</sub>	.007**** (.001)	.010**** (.002)
Number of Features Produced <sub>t-1</sub>	.050**** (.006)	.046**** (.006)
Number of Features Distributed <sub>t-1</sub>	.039**** (.004)	.036**** (.004)
Age	.195**** (.020)	.259**** (.025)
WW I	.138 (.381)	.196 (.385)
GNP Growth	-1.669** (.717)	-1.626* (.727)
Founded Before 1912	.920**** (.192)	.826**** (.199)
Time Trend	.930*** (.320)	.843*** (.326)
Time Trend <sup>2</sup>	-.096**** (.027)	-.089**** (.027)
Feature Experience	4.699**** (.132)	4.830**** (.140)
Constant	-5.169**** (.490)	-5.168**** (.501)
Log Likelihood	-3191.579	-318640

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•p<.10; ••p<.05; •••p<.01; ••••p<.001 ; one-sided test. N=2861

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