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Examining the effect of innovation on the market structure of the U.S. Media industry

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EXAMINING THE EFFECT OF INNOVATION ON
THE MARKET STRUCTURE OF THE U.S. MEDIA INDUSTRY

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

Theanship School of Mass Communication

by
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August 2013

This dissertation is dedicated to the memory of my father, whose faith in me was so often greater than my own faith in myself. It is also dedicated to my mother, whose love and encouragement has helped me to achieve more than I often thought I could. I hope they are as proud of their son as I am of my parents.

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This work reflects many years of thought and effort; a project such as this isn't successfully completed by operating in a vacuum. Many people have contributed to my efforts in many different ways, but each person in his or her own way has been invaluable to me. I will forever be appreciative.

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Abstract

This dissertation examines if and how technological innovation influences market structure of the media industry. The empirical focus is twofold: 1) to measure and quantify the level of ownership concentration and competition (i.e., market structure) of the U.S. media industry, and 2) to examine the market structure of the media industry as a function of the adoption of three different media technologies, including television, cable television, and the Internet. OLS regression analysis is employed to address the following research question: How do technological innovations affect the market structure of the media industry?

Results of the study provide support for the idea that changes in the adoption rates of television and cable television lead to changes in the market structure of the media industry. The study, however, identifies challenges associated with collecting sufficient data to reach solid conclusions. Finally, the study makes recommendations for future studies that could overcome these challenges and building upon the findings resulting from this study.

Chapter One

Introduction

Comcast's acquisition of NBC in 2011 represented a significant change in the American media industry. For the first time in the history of the U.S. media, one of the major broadcast networks in the United States would be owned by one of the largest cable system operators. As with other large media mergers in the past, the acquisition generated protests and concerns of an increasing consolidation of power among fewer and fewer media conglomerates (Crawford, 2010). Comparing the acquisition to the AOL—Time Warner merger and other media mega-mergers, Free Press attorney Corie Wright predicted, "This merger goes deeper and wider than any of those" (Reybern, 2010). Conversely, proponents such as NBC Chief Executive Jeff Zucker extolled the virtues of the merger, predicting, "Consumers of all our products—on screens large and small—will have the benefit of enhanced content and experiences, delivered in new and better ways" (Finke, 2009).

The arguments leading up to the merger's eventual FCC approval rekindled an ongoing discussion regarding media ownership that has endured since the fierce debates of the 1920s regarding the role and nature of radio broadcasting (McChesney, *Telecommunications, mass media, and democracy: The battle for the control of U.S. broadcasting, 1928-1935*, 1993) (McChesney, 1993). At the heart of this debate is the importance of a free press to a healthy deliberative democracy (Nichols & McChesney, 2009). Critics of media consolidation point to the unique role the media plays as an intermediary of diverse ideas and viewpoints, and as a crucial watchdog of government (Nichols & McChesney, 2009). A central concern in this debate is the question of whether a highly concentrated media industry is too powerful and not reflective of (or receptive to) the needs and demands of the general public, instead responding to demands of the power elites of business, government, and society (Baker, 2007).

Not all decry the evils of such consolidation (Steiner, 1952; Einstein, 2004). Supporters of such mergers cite the value of free speech and of a free market unencumbered from government intervention (Fishman, 2004). Some argue that some consolidation offers media companies efficiencies that allow them to offer more diverse content that is not always designed to appeal to mainstream tastes and segments (Steiner, 1952). Moreover, others argue that—even with current mergers and acquisitions within the industry—the media industry is a highly competitive and unconcentrated industry (Compaine & Gomery, 2000).

Despite the lack of consensus among some scholars on the desirability of ownership diversity, it is nonetheless a key concern of federal communications policy. As such, policymakers are often concerned with whether and how regulatory policy should be crafted to meet the goals and objectives of media diversity, and ownership diversity in particular. Inherent in these decisions is the philosophy that specific limitations or restrictions on ownership of media properties will lead to the type of competition and diversity of ideas, content, and viewpoints that is desired of a media industry servicing the populous of a democratic society.

However, scholars have highlighted several attempts at regulating media ownership that—despite good intentions and sound reasoning—proved to be problematic at best and counterproductive at worst. Such failed attempts include the Financial Syndication and Interest Rules (Einstein, 2004), the Newspaper-Broadcasting Cross Ownership Rules (Gomery, 2002), and the Newspaper Preservation Act of 1970 (Martin, 2008).

Given these well-intended but unsuccessful attempts at directly regulating media ownership, and inasmuch as the media industry does not operate within a vacuum fully and solely influenced by regulatory action, is it possible that other influences help shape the competitive landscape of the media industry? If so, identifying these influences—and understanding how they affect the market structure of the media industry—is crucial to gaining a

better understanding of the dynamics of media ownership. Such an understanding may help to project any changes in the market structure of the media industry resultant from changes in any of these influences. Moreover, these influences could prove to be more relevant in influencing the media industry's market structure, and therefore more potent in creating the kind of competitive landscape that is desired for a democratic society.

As this dissertation will show, numerous researchers have argued that technological innovations can lead to changes in the market structure of an industry relying on or adopting such innovations (Tushman & Anderson, 1986; Dowd, 2004; Blair, 1972). Given the significant amount of literature supporting this idea, it is appropriate to extend this research by considering if and how such innovations might specifically influence the market structure of the media industry.

This dissertation advances the debate on ownership concentration within the media industry (i.e., market structure) by considering the following research question: How do technological innovations affect the market structure of the media industry?

This project adds to the existing body of research on the relationship between innovation and the media market structure in two important ways. First, this study considers the media industry as whole, rather than examining one particular segment. This approach acknowledges the importance of convergence within the industry, which continues to break down barriers between specific media, and now can make a particular medium a practical substitute for another medium, which previously had not been practical.

Second, this study examines the adoption of specific innovations—television, cable television, and the Internet—over different periods of time, in order to benefit from a longitudinal approach as well as to consider the specific adoption trends of each particular innovation. The different periods of time reflect the different adoption patterns for each of these

three innovations. Since the adoption pattern of one innovation will likely differ from that of another, it is important to be able to capture, measure, and consider these distinctions in order to gain a better understanding of how, when, and why innovations may influence market structure of the media industry.

Building upon previous theory, this study considers how innovation influences market structure of the media industry. In doing so, the study first measures the industry's market structure (i.e., ownership concentration) in order to more accurately determine if (and to what degree) competition within the industry is diminishing. Having established any trend or trends inherent in the evolution of the market structure of the media industry, this study then looks at key technological innovations in order to determine if and how these specific innovations impacted the evolution of the media industry's market structure.

The study begins by identifying and defining key terms and concepts which will be used throughout this dissertation. Section A presents and defines these key terms. Specifically, definitions for these terms are provided within the context of how they are used for this study. These terms may be defined differently in various other studies or in different contexts. It is therefore important to clearly distinguish how such terms are used precisely in this study.

Finally, Section B explains the importance and the impact that this study can and should have, and the anticipated contribution such a study will make to the existing body of research and literature. As will be discussed in Section B, this contribution will be to advance an understanding with respect to the relationship between innovation and market structure in general, and between innovation and media market structure in particular.

A. Defining Key Terms

Included in the above-description of this project are several key terms that have also been featured frequently and prominently throughout previous literature; however, definitions of these

vary from one researcher to another. As such, it is important to review and clearly define these terms within the context of this study.

1. Market Structure. For this study, “market structure” reflects the level of competition within the industry, and takes into account both the number of firms and the distribution of revenues among these firms. This is consistent with the approach taken by researchers such as Albarran and Dimmick (1996) and Compaine and Gomery (2000).

Market structures can be defined based on the number of firms within the particular industry, the product offered by firms within the industry, or a combination of both (Chacholiades, 1986). Media economists, for example, have measured competition (or “market structure”) of specific segments (e.g., product offerings) within the U.S. media industry such as television (Howard, 1998), radio (Drushel, 1998), film (Gomery, 1984), and book publishing (Greco, 2000). Alternatively, Alexander (1994) assessed the market structure of the music recording industry by also considering the number of firms competing against each other.

Microeconomists generally assess a market’s structure within the context of the level of competition for that market (Baird, 1975). In these cases, market structures are classified within the spectrum of “perfect competition” and “monopoly” (p. 100). Market structures often reflect the competitive level of the firms within the industry as well, typically measured by considering each company’s market share—based on its revenues—within the industry being studied (Albarran & Dimmick, 1996; Compaine and Gomery, 2000).

Other researchers have relied on different taxonomies of “market structure” in order to answer specific research questions. Emmons and Prager (1997), for example, in studying the cable television industry, defined market structures based on ownership (private vs. non-private, or governmental). Similarly, Dunaway (2008), when considering influences on the quality of

campaign new coverage, examined differences between corporate owned and privately held media firms.

In this study, a highly concentrated market structure indicates a media industry that features few companies with large market shares exerting great influence over all competitors in the industry. Conversely, a highly competitive market structure indicates many companies aggressively competing for customers and revenues without any company enjoying a significant level of market power, as measured by the company's market share of the industry. This study may discuss the market structure of the media industry relative to "media concentration" or "ownership concentration" as well. As will be discussed in greater detail in Chapters Two through Five, these terms have been used by different researchers in different ways. Unless otherwise stated, the terms "media concentration" and "ownership concentration" in this study will relate to the market structure of the industry, as defined in this section.

2. Innovation. The review of previous studies in Chapter Two offers a deeper explanation of the different approaches that researchers have taken in defining and operationalizing the concept of "innovation" when seeking to establish a relationship between innovation and market structure. One approach has been to examine a specific technological innovation in order to see if and how it affected the structure of a particular market or industry (Alexander, 1994; Hannan & McDowell, 1990). Abernathy and Utterback (1978) argue that innovations can be both radical and incremental. Radical innovations generally impact the production process of cost structure within an industry, and often lead to new industries. This study will follow this approach and specifically will examine radical innovations that significantly changed the media industry. Three innovations—television, cable television, and the Internet—will each be studied because each has been viewed as a new medium of mass communication (Hilliard & Keith, 2010; James, 1983; Morris & Morgan, 2002).

3. Media Industry. For the purpose of this study, “the media industry” will be defined to include any company in the business of creating, distributing, or owning news, entertainment, or informational content for consumption by mass audiences. This definition closely mirrors that used by Compaine and Gomery (2000). However, those researchers also included telecommunications companies engaged in what has traditionally been viewed as interpersonal (i.e., one-to-one) communications such as local and long distance telephone service providers. This study does not consider such services to be mass communication, and will, therefore not be included as part of the media industry.

Likewise, the definition used in this study is similar to how Albarran and Dimmick (1996) defined the media industry. In their study, the research team included fourteen different sectors as classified by Veronis, Suhler and Associates in their annual *Communications Industry Report*. Their approach, however, includes sectors such as advertising agencies and some miscellaneous communications services such as specialty marketing services that would not necessarily be consistent with this study’s definition of media industry. Such firms are not included in this study when considering the media industry.

The media industry examined in this study is used to describe media operations specifically within the United States. This may include companies headquartered outside of the United States; in such a case only revenues recognized as being generated in the United States will be included when determining the size of the media industry and appropriate market shares. Likewise, revenues generated by foreign operations of U.S.-based companies will not be considered in this study.

B. Impact of This Study

This study is important because the findings it generates can provide value in several areas. First, academic researchers have examined the relationship between innovation and

market share within the context of other industries (Geroski & Pomroy, 1990; Hannan & McDowell, 1990; Mansfield, 1983). This study extends the existing body of research to include a specific study of the U.S. media industry as a whole. To be sure, some researchers have examined the effect of innovation on market structure of the media, but these studies have focused on a particular segment of the media industry (Alexander, 1994; Dowd, 2004; Peterson & Berger, 1975). As horizontal integration becomes more prevalent within the media industry, and media conglomerates respond to convergence trends within the industry, the need to examine the market structure of the media industry as a whole instead of by individual segment becomes more relevant (Compaine & Gomery, 2000). As such, the need arises to also consider the effect of innovation on the media industry as a whole.

Secondly, while some studies have examined specific innovations, none have considered the adoption rate of these innovations when attempting to determine the effect of such an innovation on market structure, even though the adoption of such an innovation is obviously required for it to have an effect on market structure (Silverberg, Dosi, & Orsenigo; 1988). Researchers may identify an effect that innovation has on an industry's market structure, but cannot fully and accurately explain or quantify the nature of this cause-and-effect relationship, since the adoption pattern of the innovation isn't considered.

Researchers have found a frequent pattern in the adoption of a new innovation, whether it be information, knowledge, or a physical product (Rogers, 1962; Ryan & Gross, 1943). Frequently, a new innovation is adopted by a small group of "early adopters," followed by rapid adoption by a larger segment of the population, with subsequent slower adoption and, finally, a "negative growth" phase, where individuals begin to replace the innovation with a newer idea or product (Levitt, 1965). This pattern is often referred to and depicted as an "adoption curve," reflecting the S-shaped trend of the adoption rates when graphically presented (Silverberg, Dosi,

& Orsenigo, 1988). To effectively measure whether and how a specific innovation affects market structure, a longitudinal approach should be considered to effectively capture the adoption pattern of the innovation, as measured over the time of that innovation's adoption. Dowd (2004) utilized a time series approach to measure the effect of specific innovations on the music industry, but the study was more focused on the number of performing acts and the number of recording firms, rather than on the market structure, which considers market strength of each firm.

Lastly, this study is also important because of the impact such findings could have on policymaking endeavors. If, for example, innovation is found to have a causal effect on the market structure of the media, one of the outcomes of this study will be to identify, measure and explain this causal relationship. In so doing, the influence of innovation on the market structure of the media should be considered when formulating any future policy related to media ownership in order to ensure the greatest possibility for effective regulation that achieves its desired objective without generating unanticipated consequences as well.

On the other hand, if this study concludes that there is no causal relationship between innovation and media market structure, it will show a contradiction to much of the previous economic literature arguing such a relationship (Blair, 1972; Klepper & Graddy, 1990). Future studies would be warranted in order to better understand why the innovation-to-market-structure relationship is evident in some industries but not the media industry. If, indeed, this study shows no causal relationship between innovation and market structure, then future studies should focus on better understanding and identifying those variables that actually do influence the market structure of the media industry.

This study, then, uses a measurement of ownership concentration to quantify the market structure of the media industry. Doing so will reveal any trends towards increased competition

(or, conversely, increased concentration) over the timeframe of the study—1950-2009. Finally, this study measures the adoption rates of three specific mass communication technologies—television, cable television, and the Internet—and looks for the presence of causal relationships between the adoption of these three new technologies and the market structure of the media industry. In so doing, this study seeks to develop a model that can serve as the basis of future studies that are designed to further explain how innovation as well as other influences may impact the market structure of the media.

Chapter Two

Literature Review

Scholars seeking to explain the nature of the relationship between innovation and market structure have taken varied approaches (Alexander, 1994; Blair, 1972; Dowd, 2004; Geroski & Pomroy, 1990; Mansfield, 1983; Schumpeter, 1934; Schumpeter, 1950). In fact, there is not a generally accepted principle as to which (if either) influences the other: Some argue that technological innovations act as catalysts or shocks to an industry, resulting in a shake-up that affects the market structure (Alexander, 1994; Geroski & Pomroy, 1990; Klepper & Graddy, 1990); others argue that market structure and firm size within a market stimulate innovative activity and ultimately technological innovation (Aghion & Griffith, 2005; Dowd, 2004; Schumpeter, 1950; Van Cayseele, 1998). Both of these approaches are examined in Sections A and B of this chapter.

For many theorists espousing the idea presented in Section A that innovation influences market structure, the diffusion of these influences is an important element in understanding how market structure is affected. Section C reviews previous studies that have attempted to identify and measure such a relationship specifically within the media industry (Audretsch, 1995; Mansfield, 1983; Peterson & Berger, 1975).

A. The Effect of Innovation on Market Structure

Innovation is one of many exogenous influences that affect market structure (Klepper & Graddy, 1990). Tushman and Anderson see such innovations as “technological discontinuities”—significant breakthroughs or shocks to an otherwise gradual evolution of innovation that “either enhance or destroy the competence of firms in an industry” (p. 439, 1986). While the introduction of any innovation may be viewed as a one-time shock to an industry, some researchers view the effects of the innovation as a longitudinal process with its

own evolutionary characteristics (Organization for Economic Cooperation and Development, 1971; Schumpeter, 1950). In many instances, such an evolutionary process takes on the characteristics of an S-shaped diffusion curve (Silverberg, Dosi, & Orsenigo; 1988). The diffusion curve illustrates the rate at which an idea or innovation is accepted by a particular population. As Pemberton (1937) explained, “The distribution of a population according to time of adoption . . . tends to follow the normal frequency form and the curve of diffusion is the cumulative expression of this distribution” (p. 55).

The theoretical explanation to adoption patterns described by Rogers (1962) is prevalent in much of the literature supporting the idea that the *adoption*, not just the *introduction*, of an innovation is an important factor in measuring its effect on market structure (Silverberg, et al., 1988). The idea of an S-shaped pattern of diffusion is also used to explain how industries and individual products can evolve over time. In such cases, the “Industry life cycle” or “Product life cycle” reflects differing rates of adoption over time (Klepper, 1996; Mazzucato, 2000). Both Rogers’ Diffusion of Innovations theory and the Industry Life Cycle theory will be discussed in greater detail.

Whether an adoption pattern follows the traditional diffusion curve pattern or one unique to a particular innovation, such concepts are used to help explain how and why certain industries develop in response to technological changes. Berger (2003) has shown that in the banking industry larger banks tend to implement new technologies sooner than smaller banks, while Dowd (2004) has shown that production technologies have helped create a more open, decentralized recording market with multiple, competing production companies, even though many of these companies are merely divisions of the same conglomerate holding company.

In *Economic Concentration*, Blair (1972) examined causes and effects of market concentration from an empirical perspective, synthesizing years of prior research from academic

as well as governmental initiatives.¹ As part of this examination, he considered the effect of innovation on market structure, and found a concentrating effect until the early 20th century. During this time, technological innovation generally resulted in advances that encouraged economies of scale, but also required significant investment to take advantage of these advances. As a result, companies were driven to follow a bigger-is-better strategy; industries consolidated either through mergers, attrition of smaller, weaker competitors, or a combination of both.

By the late 20th century, however, Blair observed that new technological advances tended to be less costly, either in terms of the initial investment or in terms of the economies of scale required to justify such investments. Some researchers refer to the Blair hypothesis as the idea that—at least since World War II—new technology and innovation has had a decentralizing effect on market structure (Geroski & Pomroy, 1990; Mansfield, 1983).

Mansfield (1983) examined the chemical, petroleum, and steel industries to see what kind of effect innovations from 1920-1982 had on these industries. Mansfield found that in many cases an industry became more concentrated after the introduction of new technology, but that the presence of such concentration “depends on the nature and sources of the new technology” (p. 209). Mansfield acknowledged that one limitation to existing models of innovation and market structure is the assumption that no new firms enter an industry during the introduction and diffusion of a technological change. Noting that such new-firm entry had occurred in the drug and chemical industries, Mansfield speculated that—in such cases—innovation may generate greater competition and actually reduce market concentration, not increase it.

Geroski and Pomroy (1990) used data from two cross-sectional panels to measure the effect of innovations on the market structure of 73 different “technologically progressive

¹ Blair’s work was primarily based on 44 volumes of transcripts of selected hearings before and reports of the Subcommittee on Antitrust and Monopoly of the U.S. Senate Judiciary Committee during the years 1957—1971.

industries” in the United Kingdom (p. 305). The researchers’ findings were supportive of the Blair hypothesis: Regression results showed innovation generated a negative effect on industry concentration, although the effect size was small. In other words, innovation led to reduced industry concentration, or, conversely, increased competition. The researchers also found that industry deconcentration was generally felt relatively quickly after the introduction of the innovation. Moreover, for the industries studied, the decrease in market concentration was offset by increases in the industry size and in capital intensity.

Given the substantial body of work supporting the effect of market structure on innovation and, conversely, of innovation on market structure, how can these two seemingly contradictory theoretical approaches be reconciled? Geroski and Pomroy (1990) argue that different findings are not contradictory, but rather complementary, positing that such different findings “point to a mutually reinforcing process in which innovations deconcentrate markets, and such deconcentration further stimulates innovative activity (*ceteris paribus*)” (p.312). Either aspect of this process deserves close examination: Mansfield (1983) as well as Geroski and Pomroy (1990) show that either aspect of the process can be studied independent of the other. This study, therefore, focuses on the idea that innovation influences market structure, while recognizing that the resulting market structure can subsequently influence further innovation.

B. The Effect of Market Structure on Innovation

In examining market structure as an influencing variable on innovation and innovative activity, many scholars argue that differences between individual firms within a market can influence the respective level of innovative activity that each undertakes (Griliches, 1957; Rogers, 1962; Ryan & Gross, 1943). Firms may be spurred to greater innovative activity by the potential for additional profitability or by the threat of losses due to a competitor’s innovative activity. On the other hand, while other firms—currently enjoying a dominant position within the

market—may be discouraged from innovative activity if such activity may result in new products that take away from their existing mix of profit-generating products and offerings (Kamien & Schwartz, 1969; Van Cayseele, 1998). Such approaches, however, view a firm’s investments in research and development as a measurement of innovation. This can be problematic because investments do not always translate to innovation; investing in innovation (i.e., research and development) entails a risk that those investments may result in no meaningful innovations (Smith & Hall, 2012).

Others have considered the relative size of an individual firm as a major determinant of innovation. Some theorists argue that larger firms are more able and willing to generate innovation (Schumpeter J. , 1950), while others believe that larger firms dominating a particular market will have little or no incentive to engage in meaningful innovative activity (Dowd, 2004). In an attempt to reconcile these two schools of thought, Achs and Audretsch rely on a “modified Schumpeterian hypothesis that the relative innovative advantage of large and small firms is determined by the extent to which a market is characterized by imperfect competition” (p. 573, 1987). In this case large firms operating within markets having significant barriers to entry would be more willing and able to innovate. Conversely, small firms would be more motivated to innovate in more competitive markets with lowers barriers to entry. Others argue that smaller firms also have an advantage to innovate when such innovations offer significant breakthroughs, as opposed to those more incremental in nature (Mazzucato, 2000).

C. Examining Innovation’s Effect on Market Structure within the Media Industry

While prior studies examining the relationship between innovation and market structure in general may provide some insight into the effect of innovation on the market structure of the media industry, many researchers acknowledge that such a relationship varies significantly from one industry to another (Audretsch, 1995; Mansfield, 1983). As such, it is important to consider

existing research that has examined the effect of innovation specifically on the market structure of the media industry.

The relative concentration of the media industry is important for reasons. To be sure, the media industry—like any other industry—should be characterized by a healthy level of competition, offering consumers a diversity of choices differentiated by pricing and product offerings. However, the media industry is unique because of its importance to providing a democratic society with information and a variety of perspectives to as many people as possible (Fishman, 2004). While the media industry is examined in many different ways, an ownership-based approach is crucial; Gomery argues that “No research in mass communication can ignore questions of mass media ownership and the economic implications of that control” (p. 507, Compaine & Gomery, 2000).

Compaine and Hoag (2012) provide evidence that innovation has a positive effect on the competitive landscape of the media industry. In a series of interviews with 30 media entrepreneurs, the researchers concluded that one of the main sources of support for the entry of new competitors in the media industry was “the critical role of technological innovation” (p. 34). To be sure, new entry does not automatically ensure increased competition: Start-up ventures can enter a market but quickly fail and exit without offering any meaningful competition or significant impact on the market structure of the industry. Accordingly, if technological innovation supports entrepreneurs desiring to enter a new market or industry, does such new-firm entry ultimately affect the market structure (e.g., increased competition)?

Peterson and Berger (1975) examined the market concentration of the music industry segment of the media industry over a 26 year period. The primary research question considered the music segment’s market structure as an independent variable. However, part of the study

was also designed to see how the variables—including market structure—changed during the 26 years.

The researchers found a “concentration-competition cycle” (p. 158) during the 26 year period; the industry experienced three periods of rising corporate concentration interrupted by two periods of high competition. The shifts from concentration to competition (and vice versa) were often precipitated by other events or influences. In particular, Peterson and Berger note that the first shift—from concentration to competition in the mid-1950s—saw the expansion of more music production companies. In the second half of this decade, the number of production companies achieving a hit on *Billboard* magazine tripled. Peterson and Berger partly explain this shift from concentration to competition on technological innovation, specifically the advent of television.

According to Peterson and Berger, this new medium of television influenced both the motion picture and radio industries, which in turn affected the recording industry in two key ways. First, consumers now had a convenient, in-home alternative to motion pictures, and movie attendance significantly declined (p. 164). Production companies—looking for new alternatives to replace this lost revenue—began entering the music recording industry, thereby increasing the number of competitors.

Secondly, advertisers shifted significant portions of their budgets from radio to television, forcing radio stations to develop new strategies to combat the fact that audiences were choosing television over radio for what had been traditional radio programming (e.g., soap operas, comedy shows, dramatic series). In response, radio stations developed new programming strategies that incorporated two elements. The first element to the new programming strategy was to rely more heavily on recorded music. The second element was for radio stations to differentiate themselves from competing stations by offering differing music formats. The result of this new

strategy created an environment that supported an expansion of music outlets and a demand for more music “product,” thereby supporting more music production companies, and hence, increased competition.

Alexander (1994) also examined the music industry to determine how new technology led to increased competition and de-concentration as measured by market share. His specific research objective was to examine the innovation/market structure relationship. His study offered two important findings. First, Alexander concluded that scale-reducing innovations positively influenced the level of competition within the music industry, as new entrants to the industry often drove the innovation, which increased their competitiveness vis-à-vis older, more established media companies.

Secondly, those innovations leading to increased competition are exogenous in nature. Alexander found the 100 year period of 1890—1990 featured three periods of high concentration within the music production industry, and two intervening periods of increased competition. Both periods of increased competition were triggered by exogenous innovations; the innovations allowed for improvements in the production processes, which lowered costs, scales of efficiencies, and facilitated the entry of new start-up production operations. Further, in both instances, these periods of increased competition were followed by periods of consolidation, as competitors merged or struggling companies ceased to exist altogether.

The patterns described by Peterson and Berger as well as Alexander are consistent with the theoretical concepts of the Industry Life Cycle. Both research teams describe a pattern of initial introduction followed by a high growth phase with an increasing number of competitors. Ultimately the industry enters into a consolidation/retraction phase as some companies leave the industry through merger, failure, or a refocus in their respective corporate missions.

Additionally, Alexander’s finding of two different innovations generating two different periods

of increased market competition (and subsequent consolidation) is consistent with the idea that exogenous influences can extend the life of an industry by generating a repeat of the earlier phases of the Industry Life Cycle.

Other researchers have considered how the market structure influences innovation within a specific industry such as Dowd's examination of the music recording industry (2004). In particular, Dowd examined the U.S. recording industry over a 50-year period to see how concentration influenced innovation. In this case, his definitions of concentration and innovation were somewhat different than the definitions being used in this study. Dowd used the Herfindahl-Hirschman Index to measure market concentration, but concentration was based on the number of hit singles produced by a company rather than revenues. Additionally, Dowd operationalized innovation based on the number of new acts and the number of new firms that were included on the list of hit singles.

Studies of innovation's effect on the media industry in particular have typically focused on a particular segment, rather than the media as a whole (Alexander, 1994; Dowd, 2004; Peterson & Berger, 1975). More recently, a few scholars have begun measuring the market structure of the media as a whole (Albarran & Dimmick, 1996; Compaine & Gomery, 2000). This work has not yet been extended to examine the effect that technological innovation may have on market structure.

The existing literature, therefore, provides a foundation for additional research questions and hypotheses. Compaine and Gomery (2000) have studied the market structure of the media industry at two distinct points in time—1986 and 1997. Extending this study to incorporate multiple years would capture any trends or countertrends that may provide a more intuitive understanding of the dynamics of the media industry during the second half of the 20th century and beyond. Such trends are consistent with those identified by Peterson and Berger (1975) in

their study of the music industry, which has experienced phases of ownership concentration, followed by phases of de-concentration, in part spurred by new technological innovation.

In addition to measuring any trends related the market structure of the media industry over time, a second question to explore is whether or not technological innovation—particularly radical innovation—affects these trends. The literature reviewed in this chapter clearly supports such a hypothesis; studies involving other industries (Hannan & McDowell, 1990) as well as specific segments within the media industry (Alexander, 1994; Peterson & Berger, 1975) find that innovation affects the market structure of the media industry, albeit in different ways. However, without having longitudinal data on the market structure of the media, it has not been possible to confirm such a relationship between the media industry market structure and innovation.

Finally, if the expected causal relationship is established between radical technological innovation and media market structure, such a finding would suggest the need to examine the nature and extent of this causal influence. Again, Peterson and Berger (1975) may provide some clues as to the nature of this influence: Their findings seem to indicate that technological innovation initially generates a period of market expansion (i.e., de-concentration) but, as the innovation matures in the marketplace, such market expansion curtails and is eventually replaced by a period of market consolidation (i.e., concentration).

Chapter Three

Theoretical Argument

The literature reviewed in Chapter Two provides strong empirical support for the argument that innovation has a positive effect on a competitive market structure. There is a significant body of theoretical work that supports this argument as well.

As noted in the previous chapter, Peterson and Berger (1975) make a compelling argument that as an innovation matures in the marketplace, the innovation's influence on a competitive market structure diminishes, creating the potential for a reconsolidation and a more concentrated market structure of a particular industry. Despite Peterson and Berger's observations, tying an innovation's effect specifically to its adoption rate has not been widely attempted. The importance and significance of an innovation's adoption pattern is heavily grounded in the theory of Diffusion of Innovations. Section A discusses the general theory of Diffusion of Innovations, as well as the specific application within the business environment as explained by the Industry Life Cycle.

Scholars of the relationship between innovation and market structure generally acknowledge Joseph Schumpeter and his work to be a critical foundation for such studies (Freeman, 1982; Langlois, 2002). Schumpeter's theoretical perspective is particularly interesting because his arguments evolved over time, resulting in what some consider to be a dichotomy of conflicting viewpoints. Section B reviews Schumpeter's work and evolution from one school of thought to the other as a means of contrasting and comparing the theories developed in the previous chapter.

Lastly, Section C examines more closely the idea of radical and incremental innovations, particularly from a theoretical perspective to illustrate how such innovations could impact the market structure of the media industry.

A. Industry Life Cycles and the Impact of Adoption Curves

In his retrospective on factors that led to his developing the diffusion of innovations theory (and the subsequent growth in its applicability and usage), Rogers (2004) explained that it was his interest in developing a more “generaliz(ed) model of diffusion” (p. 16) that led him to publish *Diffusion of Innovations*. As part of his argument for a general diffusion model, Rogers offered a model of the Innovation-Decision Process as well as a method of classifying adoption categories consistent with the S-shaped curve of cumulative adoption and the bell-shaped curve of adoption patterns over time as previously utilized in studies (Rogers, 1962; Ryan & Gross, 1943). To be sure, these categories were not new to the study of diffusion, but Rogers’ work helped to set a standard with them.

Building upon this understanding of how ideas are “diffused” into society, researchers have utilized the Product Life Cycle as a means of understanding how new products are introduced and accepted into the marketplace (Dean, 1950; Levitt, 1965; Chandrasekaran & Tellis, 2011). This literature and the literature on the adoption of innovations suggest that: 1) adoption rates can vary, and 2) these variable patterns of adoption may have differential influences on market structures.

In a revised look at the product life cycle, Andrews (1975) suggests that the life cycle can be extended by revitalizing an already established product. Such revitalization can come from product redesigns, new markets, or new applications for the product, among other strategies. The result is either an extension or prolonged effect of the maturity stage of life cycle, or a possible renewal of the cycle itself, whereby the renewed product returns to the introduction or growth stage. Figure 1 illustrates both hypothetical scenarios.

The previously-discussed study by Alexander (1994) is an example of such a renewal of the life cycle. In his study, Alexander found that developments such as production

improvements could lead to the revitalization of a product, and extend the current stage or renew the life cycle by reverting back to an earlier growth phase.

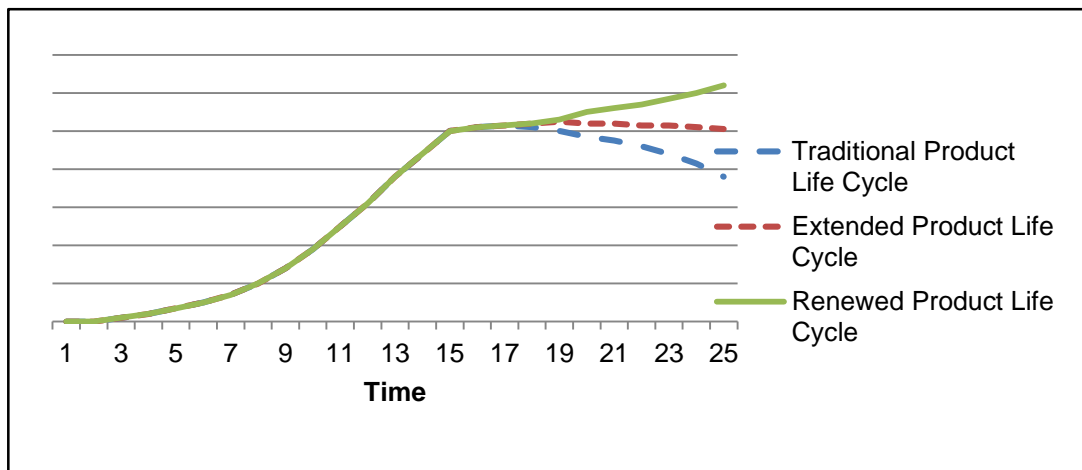


Figure 1. Comparison of Product Life Cycles. (A comparison of three different product lifecycles, which illustrates the differences in the degree of adoption or acceptance of a product.)

Building upon this idea, researchers such as Abernathy and Utterback have posited an industry life cycle theory (Utterback & Abernathy, 1975; Abernathy & Utterback, 1978). In this model, the unit of analysis is not the firm, but rather the production process (Peltoniemi, 2009). The industry life cycle is influenced by both radical and incremental innovations (Abernathy & Utterback, 1978). Radical innovations tend to focus on enhancing performance and filling needs that heretofore have not been satisfied by existing product offerings within the industry. On the other hand, incremental innovations generally impact the production processes and/or cost structure within an industry. Radical innovations are usually the catalyst for new industries, whereas incremental innovations are typically more evident as an industry matures (Abernathy, 1978).

Gort and Klepper (1982) conclude that new technologies—like those termed “radical innovations” by Abernathy and Utterback—positively influence the growth of an industry because such innovations encourage the entry of new competitors and help to delay the

elimination of existing and less efficient competitors. Gort and Klepper suggest that later in the cycle these less efficient competitors exit the industry, driven by “intensified technological competition originating from sources internal to the industry” (p. 650). This description of internally-generated technological advances is consistent with Abernathy and Utterback’s “incremental innovations.” Gort and Klepper’s description of firm entry and firm exit support the idea that adoption rates for radical innovations initially propel more competitors capitalizing on these innovations, followed by a decline as the rate of adoption also declines.

Gort and Klepper’s characterization of incremental innovations as “originating from sources internal to the industry” (p. 650) introduces the idea that innovations can be either endogenous or exogenous (Alexander, 1994; Brouwer, van Dalen, Roelandt, Ruiters, & van der Wiel, 2004). In their review of previous research on market structure and innovation, Brouwer, et al. concluded: “Market structure and the degree of competition change as a result of (individual) firm’s innovation decision. And the changed market structure . . . changes the character of competition as well as the competitive pressure to innovate (“endogeneity problem”)” (p. 203, 2004). Moreover, firms often make the strategic decision to compete through increased product innovation instead of through pricing. Generally (though not always) such product innovations could be considered as “incremental innovations” that are incrementally improving the functionality or attractiveness of a particular product or service.

In his examination of the changes in the market structure of the recording industry, Alexander observes the opposite: “Although one might expect significant new technologies to be endogenous (and hence proprietary), several important technological innovations in the music recording industry were, in fact, largely exogenous” (p. 114, 1994).

Evans and Schmalensee (2002) attempt to explain these differences by explaining that some companies in some industries engage in “dynamic . . . *for the market* (competition) through

. . . winner-take-all races to produce drastic innovations, rather than through static price/output competition *in the market*” (p. 2). Such “output competition” would clearly include incremental innovations designed to improve or enhance specific aspects of a product or service. Conversely, “drastic innovations”—which Evans and Schmalensee argue are prevalent in high-technology industries—have a radical impact on the existing industry, often resulting in “creative destruction,” a term offered by Schumpeter (1950) to describe how innovation can destroy existing, established industries or companies and create new ones (p. 81).

B. Schumpeter Theory

The idea of creative destruction is a foundational tenet of the work of Joseph Schumpeter, who showed that the evolutionary nature of capitalism is influenced by innovation, whether it is manifested in the form of products, production methods, markets, or organizations (1950). As innovation brings about improved products and processes, it also weakens and destroys those well-entrenched organizations that had succeeded by relying on products and processes now made obsolete by the latest innovations. As Scherer (1992) explained, “Innovation . . . destroyed old monopolies while creating new economic value” (p. 1418). This process of destroying market leaders and replacing them with new ones is the heart of Schumpeter’s creative destruction.

The nature of this innovation, however, has been explained by Schumpeter with sometimes different and conflicting rationales (Schumpeter, 1934; Schumpeter, 1950). In his early work, *The Theory of Economic Development*, Schumpeter (1934) champions the entrepreneur as the agent of this innovation. It would be the entrepreneur—either as an individual or small business—through innovation, that would challenge established market leaders and usher in a new round of creative destruction. By 1950, however, Schumpeter seemed to offer a different view, positing in *Capitalism, Socialism, and Democracy*, that it was the large,

established firm—with its greater capacity for investment—that was able to effectively spur new innovation (1950). Moreover, the large firm’s incentive to invest in new innovation came from a desire to further dominate an existing market, hence, such innovation tended to have the effect of increasing concentration within a market or industry.

Researchers have subsequently argued on behalf of either of these two philosophies—dubbed by many as “Schumpeter I” and “Schumpeter II” (Freeman, 1982; Langlois, 2002). Relying on a series of simulation experiments within a hypothetical 16-firm industry, Nelson and Winter (1978) attempted to identify those variables that facilitated concentration within the industry. The researchers concluded that investment in new innovative technologies results in an increasingly concentrated market, as “Some firms track emerging technological opportunities with greater success than other firms; the former tend to prosper and grow; the latter to suffer losses and decline” (p. 542). Such a conclusion would generally support the Schumpeter II idea that larger firms, not smaller firms, are the real agents of innovation.

On the other hand, Geroski (1990) found that increased innovation within an industry led to reduced concentration. In such a case, smaller, entrepreneurial entities—as referred to by Schumpeter in *The Theory of Economic Development* (1934) (“Schumpeter I”)—would likely be the agents of change and the catalyst for creative destruction. Rather than utilizing simulation techniques, Geroski relied on data of actual technological advances by industry over a 10-year period.

Hospers (2005) notes that Schumpeter “has long inspired social scientists and their research . . . (but has) not engendered an unambiguous interpretation of his ideas” (p. 25), while Scherer (1992) simply summarizes the debate by saying, “The only simple conclusion stemming from . . . theoretical research stimulated by Schumpeter . . . is that the links between market structure, innovation, and economic welfare are extremely complex” (p. 1421). This complexity

supports a research approach that seeks to examine innovation and market structure within a specific context (e.g., industry).

C. A Theoretical Application of Radical and Incremental Innovation

The existing literature features different approaches to explaining how differences in innovations (e.g., radical vs. incremental, endogenous vs. exogenous) may influence market structures. While the different approaches are not necessarily contradictory, it is not well established that they are complementary, either. This study does not seek to explain these differences; however, it is anticipated that the results of this study will provide a foundation for a framework that can be used to develop a thorough explanation of the dynamics between radical and incremental innovation. Specifically, theory suggests that radical innovations lead to a “creative destruction” where new competitors challenge—and often replace—old industry leaders. Eventually, an industry stabilizes and shifts in market structure tend to be minimal, often within a small group of competitors within the overall industry. Those smaller shifts reflect the ongoing efforts price/output competition, often considered incremental innovation. Figure 2 illustrates a hypothetical scenario, where an industry over time feels the effect of the adoption of two different radical innovations by the marketplace, including an expanded market structure and increased competitive levels.

Over time, as the adoption of either innovation decreases, the market structure may consolidate or maintain some sense of equilibrium, although an individual competitor within the industry may gain or lose market power vis-à-vis other competitors. This study will provide insight on the effect of radical innovations on the market structure of the media industry. The hypothesized trend in Figure 2 suggests that radical innovations—rather than creating a single concentrating or deconcentrating effect on market structure—generates a market expansion in

reaction to rising adoption trends of the innovation, and a subsequent market consolidation as the adoption rate weakens.

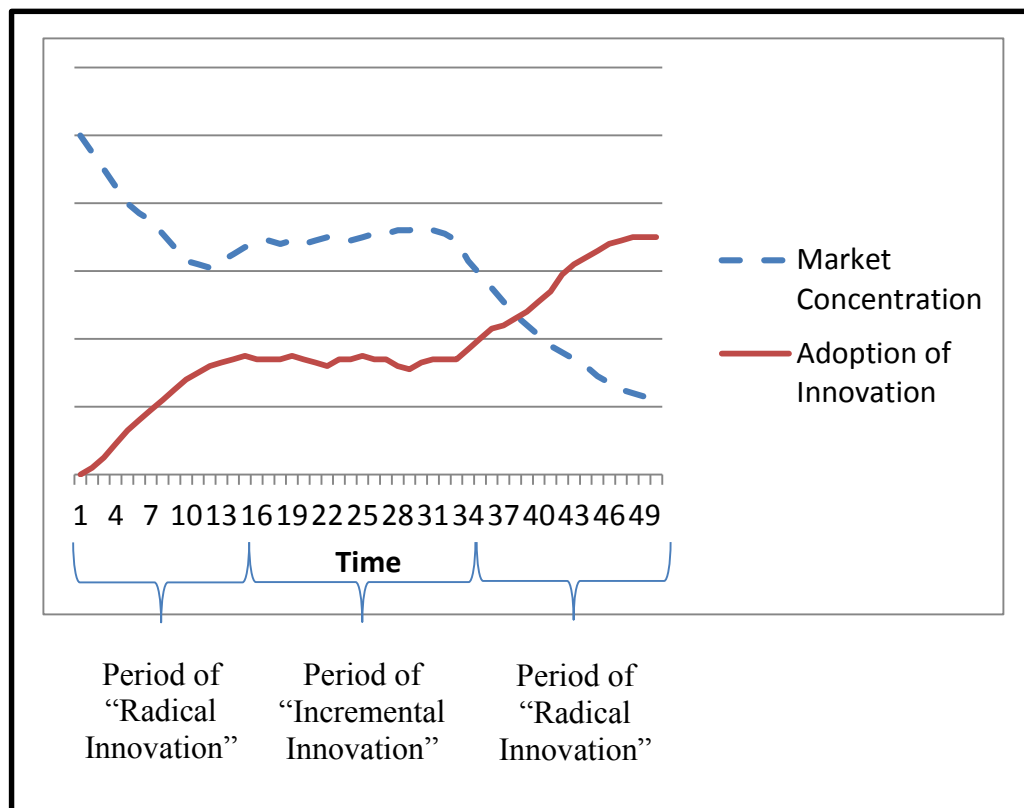


Figure 2. Theoretical Trend, Innovation-to-Concentration. (An illustration of the hypothesized relationship between the adoption rate of an innovation and the market concentration of an affected industry.)

This hypothesized trend also suggests that incremental innovations may be more prevalent during periods where market structures are relatively stable, as companies seek to gain competitive advantages over others in the industry with their own innovation. Such a situation may actually show that innovation (particularly incremental innovation) can in fact influence the market structure of the industry. As will be discussed in Chapter Eight, the idea that endogenous, incremental innovations may be the result of the media industry's market structure is a question that warrants further study. However, this study specifically examines radical innovation, and recognizes that such radical innovations are exogenous shocks to the industry

that lead to changes in the market structure of the industry. As a result, reverse causality is not a major concern with this study because the focus of this study is specifically focused on exogenous influences.

Chapter Four

Hypotheses

Thus far, the review of previous literature has provided evidence that innovation influences the market structure of varied industries (Compaine & Hoag, 2012; Geroski & Pomroy, 1990; Hannan & McDowell, 1990; Mansfield, 1983). In addition, the review indicates a prevailing concern over the market structure of the media industry; specifically, the concern of a growing concentrated ownership structure, and the subsequent diminished diversity of ideas and information resulting from such concentration. The previous research suggests the need to further examine the relationship between innovation and the market structure of the media. As with most meaningful research, it also encourages even more questions to consider. This chapter outlines some of those questions.

Section A reviews the need to quantify the level of market concentration in the media industry, and to track the trend of such concentration over the last 60 years. Having established the history of the media market structure for this time frame, it is then possible to examine specific media innovations (for this study, television, cable television, and the Internet) in order to see if such innovations had an effect on media market structure. Section B examines the introduction and adoption of television as a new medium in American society, and the effect it had on the market structure of the media. Similarly, Sections C and D examine these same questions, but as they relate to cable television and the Internet respectively.

A. Measuring the Market Structure of the Media

Previous studies of the market structure of the media industry have generally focused on a specific segment of the industry (Bednarski, 2003; Drushel, 1998; Greco, 2000; Howard, 1998) as opposed to considering the media industry in its entirety. Researchers have often relied on this approach because historically, competition in the media industry has often been considered

segment-specific. For example, notwithstanding differences in programming choices, competing radio stations can offer listeners (and advertisers) suitable and acceptable alternatives to listeners wishing to access programming via the radio, or advertisers wishing to reach an audience of radio listeners. On the other hand, listeners of radio are not likely to consider magazines and their content as acceptable alternatives to radio programming. This substitutability logic has been the basis of examining market structures in a segment-specific manner.

1. Studying Media Market Structure by Segment. Howard (1998) sought to determine if implementation of the Telecommunications Act of 1996 (“1996 Act”), which relaxed ownership restrictions throughout the entire media industry, affected ownership diversity among television stations. While ownership consolidation had been evident for over two decades within the television industry, Howard found that passage of the 1996 Act brought a noticeable and marked increase in consolidation of ownership. However, he also concluded that despite this increased consolidation, ownership *diversity* was still quite apparent within the television industry, as reflected by more than 184 group owners and the continuation of many local owners.

Bednarski also examined the effects of the 1996 Act, focusing on ownership of radio stations (2003). She found a 25% decrease in the number of radio station owners during the five years immediately following passage of the 1996 Act. Similarly, Drushel—also studying the effects of the 1996 Act on the radio industry—observed a 100% increase in concentration levels of ownership between the years 1992 and 1997, thus offering a comparison of radio ownership before and after implementation of the 1996 Act (1998). Finally, Chambers (2001) examined the effect of the 1996 Act on radio ownership within markets with populations of less than 125,000. Again, the result was a decrease in ownership diversity.

In another study, Greco concluded the U.S. consumer book industry for the years 1995 and 1996 was “moderately concentrated,” as defined by industry accepted standards (2000).

Despite significant merger activity among book publishers during this time, ownership concentration actually decreased. Greco reasoned the increase reflected the fact that smaller publishers, capitalizing on industry turmoil resulting from larger firms merging and consolidation operations, were able to expand through internal growth instead of through acquisitions.

2. Studying Market Structure of the “Media as a Whole.” As media companies continue to merge to converge, the argument for studying media ownership across all segments becomes more compelling (Albarran & Dimmick, 1996, Compaine & Gomery, 2000). This argument reflects the ongoing convergence of multiple media platforms into fewer but more robust and flexible platforms that allow similar content to easily be distributed in many different ways (Jenkins, 2008). One of the results of such convergence is greater substitutability among (not just within) different medium formats. Thierer (2005) posits that such substitutability can vary in degrees but generate competition among media companies that previously might not have been viewed as competitors. He points out that “rapid technological convergence has made it increasingly difficult to distinguish one type of media outlet from another” (p. 40).

Albarran and Dimmick (1996) measured ownership concentration levels within several media industry segments, but also “across-industry concentration” among the top four and top eight media companies in 1994. The researchers relied on existing concentration ratios that have been previously used to measure media concentration (Chan-Olmsted & Litman, 1988; Owen, Beebe, & Manning, 1974; Picard, 1988). Using these ratios, the researchers found high ownership concentration in specific segments, but found that “in terms of total industry revenues the communication industries as a whole have not yet reached levels indicating high concentration” (p. 48, Albarran & Dimmick, 1996).

Noam (2009) examined ownership concentration across the entire mass media industry but also measured concentration across all content programming (i.e., providers) and content distribution (i.e., deliverers). Noam measured key points in time during the 1984—2005 timeframe. Regarding horizontal concentration, he found concentration among content providers had slightly increased during the time studied, but had stayed at concentrated levels throughout the entire period. Among content distributors, concentration increased dramatically from 1992-2005, but, as with content providers, the level of concentration was consistently within “unconcentrated” levels.

To measure ownership concentration across the entire mass media industry, Noam considered a firm’s presence across all media sectors, represented by a Sector Share Index. He found concentration increased over the 1984-2005 timeframe, particularly among the largest companies. During this timeframe, the share of the mass media industry held by the top ten firms doubled from 17.7% to 35.5%. He also considered the relative strength of vertically integrated firms, recognizing that a vertically integrated firm may benefit from market strength in some—but not all—segments in which the firm competes. Here, he again found an increasing trend in concentration among the top 25 firms, most markedly among the top five mass media companies.

Compaine and Gomery reinforced the finding that the media industry as a whole is not concentrated by comparing ownership concentration at two points in time—1986 and 1997 (Compaine & Gomery, 2000). These two years represent significant milestones within media regulatory history: The first milestone is shortly after the Federal Communications Commission eased its ownership rules (F.C.C., 1985). The new rules enacted in 1984 increased the number of broadcast properties that could be owned by one entity. The second milestone—1997—is the year after passage of the 1996 Act, which further eased ownership restrictions. Compaine and Gomery measured ownership concentration among the top four, top eight, and top 50 media

companies for both years. In all cases, concentration increased from 1986 to 1997, but the increase was minimal, and the overall measures of concentration were very low, prompting the researchers to conclude that “the media industry remains one of the most competitive major industries in U.S. commerce” (p. 562, Compaine & Gomery, 2000).

The Albarran and Dimmick study, while laying a solid foundation for the “media as a whole” approach, nevertheless lacked two desirable elements. First, the study looked at the industry for just one year, rather than examining several years, making it impractical to reach conclusions with a high degree of reliability. Second, the study only considered the top four and eight companies within the media industry, which can present an incomplete picture of an industry’s diversity and competitiveness (Albarran & Dimmick, 1996; Owen, Beebe, & Manning, 1974), raising potential questions of the study’s external validity. Accordingly, Albarran and Dimmick’s study could be enhanced by incorporating a longitudinal perspective and by including a greater number of media companies.

Compaine and Gomery’s approach addresses both of these issues, but still leaves room for further examination (2000). By measuring ownership concentration at two different points in time, the researchers enhance the temporal aspect of the study. However, the fact that concentration increased from 1986 to 1997 does not necessarily indicate a consistent upward trend during that 11-year period. Did media concentration increase in a constant straight line, or was the increase punctuated with peaks and valleys throughout? Such insight would offer a greater understanding of trends in media ownership. Compaine and Gomery’s study also offers greater statistical external validity, as they measured concentration among the top 50 firms. However, including an even larger sample of companies would present a more complete picture of media industry market structure.

Building upon the “media as a whole” concept established by Albarran and Dimmick (1996) as well as Compaine and Gomery (2000), Vizcarrondo (in press) provides a more longitudinal perspective of the trends and shifts in the concentration of the media industry. Using revenue figures for media companies over a 35-year timeframe, Vizcarrondo found—consistent with the previous studies utilizing the “media as a whole” approach—that the media industry has been “consistently characterized by unconcentrated and diverse ownership” (in press).

In addition, Vizcarrondo also noted three distinct trends during the 35-year timeframe: an initial period of declining concentration within the media industry followed by a period of general stability and minimal changes from year-to-year, and a final period of rising concentration. Such changing trends support the idea that a better understanding of how and why such shifts is warranted. This study then, seeks to understand what causes the market structure of the media industry to change over a longitudinal period of time by specifically examining the effect of three different technological innovations which have had a major impact on the media industry. This study begins by expanding the work of Vizcarrondo to measure the market structure of the media as a whole over a longer period of time; specifically, the years 1950—2009.

RQ₁: How has the market structure of the media industry evolved over time?

B. Television’s Influence on Market Structure of the Media Industry

The invention of the television is not credited to one particular innovator, but rather viewed as the outcome of many years of innovation by many individuals (Winston, 2003). Indeed, numerous individuals, businesses and research organizations were independently working to be the first to develop a working solution to the idea of a mass communication tool that could broadcast over the airwaves like the radio, but provide the visual element as well.

With the stock market crash of 1929, many of these fledgling entrepreneurial endeavors lost their sources of funding, thereby also losing race to be the first to have a working prototype (Godfrey, 2001). The result was a competition between two vastly different men. Philo T. Farnsworth, a self-made man from the Western U.S. had impressively developed what is believed to be the first truly working model of a television, while David Sarnoff—a titan in the media industry—had successfully navigated his way to become President of RCA (Radio Corporation of America) and therefore had access to significant resources to support an ongoing and aggressive research and development effort in his quest to be the first to offer a commercially viable television to the market.

While a few commercial broadcasters were operating in the United States in the early 1930s, two key milestones during the late 30s and early 40s are seen as watershed events in the early history of television (Edgerton, 2007; Larsen, 1962). The 1939 World’s Fair in New York City prominently featured the television in the RCA exhibit (Edgerton, 2007). Sarnoff—a member of the Fair’s executive planning committee—saw the fair as an opportunity to demonstrate his company’s latest technology. It was, as Edgerton reflects, television’s “coming-out party at the RCA exhibit” (p. 6). Just two years later the F.C.C. formally approved commercial telecasting in the United States, representing what some see as a de facto starting point for commercial television (Larsen, 1962).

Subsequent to these two milestones, scholars note a rapid adoption of television by U.S. consumers, and television quickly supplanted radio as the primary medium of information and entertainment (Fullerton, 1988; Larsen, 1962). These initial years of commercial television did not necessarily generate an explosion of new companies and new competitors; indeed, the competition for leadership of this emerging industry seemed to be between Sarnoff’s RCA and another radio powerhouse—the Columbia Broadcasting System (CBS)—led by William Paley

(Edgerton, 2007). However, the FCC—in approving commercial television broadcasting—also implemented rules designed to eliminate noncompetitive conditions, paving the way for future entrants into this fledgling new medium. By 1948, the U.S. television industry featured four networks and 52 stations transmitting programming to nearly one million televisions in 29 different cities (Winston, 2003).

Consistent with Gort and Klepper's (1982) description of the industry life cycle—which argues that new technologies initially will positively influence the growth of an industry, but then later result in the exit of less efficient competitors—this study hypothesizes that the new technology of television in the 1930s and 1940s had a similar causal effect on the market structure of the media industry. A positive relationship between the adoption of television and the market structure of the media industry, therefore, would mean that increases in the adoption rate of television would lead to an increased level of competition within the media industry.

H₁: Changes in the adoption rate of television as a new media innovation should be inversely related to changes in the market concentration of the media industry.

C. Cable Television's Influence on Market Structure of the Media Industry

With the advent of television as a viable communications medium for the general public came an irony: Supporters of this new medium saw this as public good that could provide benefits to the masses, but the reality was that this new medium was in many ways, strictly for elites. The cost of a new television was out of reach for most consumers (Television History--The First 75 Years), and, equally important, broadcast signals from television stations could only reach households within a limited range from the broadcast stations (Mullen, 2008). As such, this new medium that was hoped to be a way to communicate to the diverse masses throughout the country was—from a practical standpoint—only broadcasting to those areas within the reach of a television station's signal, generally large metropolitan areas.

Such a difference between the desired and actual effect of television on society created pressures for new solutions and alternatives that could extend the reach of television's broadcasting capabilities. During the second half of the 20th century, the nature and role of *cable* television would evolve in response to political, economic, and technological forces (Parsons & Frieden, 1998). Parsons and Frieden characterize the evolution of cable television as having three distinct phases.

The first phase—from cable TV's inception through 1975—saw the medium primarily as a tool to facilitate the retransmission and distribution of broadcast television to those remote areas without local broadcast service. The service was known at that time as Community Antenna television—later Community Access television—or CATV, reflecting the primary purpose of the medium.²

The second phase—1975-1996—saw “CATV” become “cable television,” as technology (most notably satellite) helped transform the medium into a major distribution channel for programming beyond that of retransmitted broadcast stations' offerings. Pioneers such as Time-Life's Home Box Office channel (History of HBO) and Ted Turner's WTCG superstation (Mullen, 2008)—the forerunner to TBS—utilized the burgeoning technology and changing regulatory climate to transform cable television into a consumer choice with expanded offerings that had not been available during the first phase of the medium's history.

Finally, Parsons and Frieden describe a current, third phase of cable television as a period of “promoted competition and eliminat(ed) barriers to market entry,” thanks to the combination of technology (e.g., digital communications) and deregulation (e.g., The Telecommunications Act of 1996) (p. 20).

² In an interesting exception to this primary purpose, Parsons and Frieden also point out that early forerunners to CATV services were developed in large metropolitan areas. Apartment building owners—wishing to prevent the numerous television antennae arising from their tenants' individual apartment windows or rooftops—chose instead to install a master antenna, and retransmit the broadcast signals via wire into each rental unit.

The rise of cable television as a pervasive telecommunications medium, therefore, gives justification to considering its effect on the media industry's market structure, and its adoption/growth patterns. It is hypothesized that increases in the adoption rate of cable television will lead to an increased level of competition within the media industry.

H₂: Changes in the adoption rate of cable television as a new media innovation should be inversely related to changes in the market concentration of the media industry.

D. The Internet's Influence on Market Structure of the Media Industry

Despite his indications to the contrary, Al Gore did not invent or create the Internet (Transcript Late Edition, 1999). Rather than an invention, the Internet is really more of a development over time, gradually formed over the last fifty years. As early as 1961, scientists began proposing an economically and technologically viable solution enabling remote computers to connect and transfer information to each other.

Largely motivated by Department of Defense initiatives, this networking functionality was refined until the first host-to-host protocol—Network Control Protocol—started in 1970 (Zakon, 2003). The networks of computers and their data transfer capabilities were very basic—some email functionality and a file transfer program. For most of the 1970s and 1980s this network was used primarily for technical and governmental applications. Even mainstream businesses were not big users of Internet technology. The communication was very basic during this time; the Internet was a tool that was only functional in a simple text environment.

Beginning in the late 1980s, five key developments occurred that would change the landscape of the Internet and transform it into a virtually ubiquitous communications medium. The first milestone was the development of HTML (Hypertext Markup Language), a programming language that enabled easier creation and use of computer images, thereby encouraging visual communication as a practical element of the Internet (Sturken & Cartwright,

2001). The ability to communicate visually and not just textually in this medium made it more “user-friendly and more likely to be adopted by mass audiences.

The second development was the creation of the World Wide Web by CERN in 1991. As a part of the Internet, the “web” (as it has become known) was envisioned as a more accessible portal for mainstream users and communicators. By 1996, the web would become the service with the greatest traffic on the Internet (Zakon, 2003).

The third milestone was really more of a trend. From the mid-1990s to today, the dropping prices for personal computers has made this product more affordable for the average consumer, and ownership of PCs has grown tremendously (Bureau of Labor Statistics, 2000).

Finally, the fourth milestone was the introduction of on-line dial up systems, or *Internet service providers* (ISP’s) such as America Online and Prodigy (Zakon, 2005). These providers delivered Internet accessibility to the average consumer who was often computer unsophisticated. Prior to these easy-to-use services, most consumers were either too intimidated or too overwhelmed by the seemingly complex nature of accessing and communicating through the web.

As consumers became more comfortable with personal computers and accessing the Internet through CERN’s³ World Wide Web, both users and usage increased significantly (Abbate, 1999). Quickly, new services went beyond just locating information, but also gave users—both individuals and companies—the ability to create information, entertainment, and applications themselves (Schatz & Hardin, 1994). This ability for individuals to create their own content has ushered in the fifth milestone—Web 2.0—in history of the Internet. Also known as the “read/write Web,” this phase of the development of the Internet has given greater power to

³ CERN is an acronym for the European Organization for Nuclear Research, or more literally, the French Conseil Européen pour la Recherche Nucléaire.

individuals by not only letting them choose what content they see, but also to create and distribute their own content, effectively bypassing many of the traditional intermediaries (i.e., media companies) that have historically been the creators and distributors of such content (Ajjan & Hartshorne, 2008).

As Ajjan & Hartshorne note, Web 2.0 has “change(d) the way documents are created, sued, shared and distributed . . . and the increased need for tools to quickly create, analyze and exchange . . . information . . . (has) fueled a surge in the emergence of Web 2.0 technologies” (p. 71). These technologies yet again are the result of innovation and have introduced a new group of upstart companies competing with older established media companies to meet the growing demand for new hardware and software from consumers wishing to capitalize on Web 2.0’s social media offerings and capabilities.

Given this shake-up in how information is created and disseminated, and the companies that are engaged in this process, the Internet has become a key area to explore to see what (if any) impact this new medium has had on ownership diversity. Many see the Internet as yet one more way for the large, dominant media companies to extend their dominance (McChesney, 1999). Others see an existent or potential *increase* in diversity as a result of the Internet. Benkler (2003) argues that the Internet empowers individuals to originate, distribute, and receive messages without intermediaries (gatekeepers), which has helped create a networked public sphere that effectively neutralizes any power inherent in a pre-Internet media industry. Indeed, Benkler argues “The pattern of information flow in such a network is more resistant to the application of control or influence than was the mass-media model” (p. 261).

Moreover, Benkler provides a detailed analysis of power law distributions and network topology related to the Internet to support his contention that there is an “intrinsic process” (p. 261) that enables all voices to be heard. The analysis, however, measures a website’s power

(and, therefore, the owner's power) by the number of links that can direct traffic to the website. Such a framework can be useful, but does not allow for measuring ownership in economic or financial terms.

Hindman (2009) has explored the idea of media concentration within the Internet, and has attempted to compare this concentration to other media outlets. In his study, he observed and concluded "that online audiences are at least as concentrated as those in the traditional media" (p. 96). Hindman's study, however, used website traffic (or circulation/audience figures, for traditional media) to determine a media outlet's strength, not financial or economic data such as revenues.

Further, Hindman treats each "media outlet" (e.g., radio station) as an individual member of the group. Such an approach does not, therefore, allow for the fact that one media company could own multiple outlets. Inasmuch as this issue of ownership concentration is largely concerned with the effect of consolidation, and a single entity owning multiple outlets, this study doesn't allow for definite conclusions or observations with respect to that concern. For measuring traffic distribution, Hindman's study could be of value; for purposes of determining ownership diversity, however, his model is unable to allow for key factors.

It is clear that many different researchers have tried to understand the competitive structure of the Internet. Indeed, such attention to this issue is a testament to the influence that the Internet has already garnered as a mass medium in such a short period of time. The Internet has been regarded by some as the fastest growing medium (Rooh-e-Aslam, Ali, & Shabir, 2009). Given its rapid growth and pervasiveness in society and throughout the media industry, it is important to examine the pattern of its adoption and its effect on the market structure of the media industry. It is hypothesized that increases in the adoption rate of the Internet will lead to an increased level of competition within the media industry.

H₃: Changes in the adoption rate of the Internet as a new media innovation should be inversely related to changes in the market concentration of the media industry.

Chapter Five Methodology

In order to test the hypotheses proposed in Chapter Four, several different measurements will be used. First, change in the market structure of the media industry will be measured on an annual basis. Section A discusses different measurements that can be used to quantify market structure, and provides justification for using the Herfindahl Hirschman Index (HHI) as the preferred measure of market structure. The change in the annual levels of HHI will be the dependent variable for this study. Additionally, Section A describes the data to be collected and how it will be analyzed in order to calculate the HHI and change in HHI.

Section B operationalizes the adoption rate of each of the three technological innovations studied in this project—television, cable television, and the Internet. The annual changes in these measures will be the independent variables for the study. Section B explains the data collection procedures required in order to measure the change in the annual adoption rate for each innovation examined in the study. Recognizing that other influences may also affect the changing market structure of the media industry, two variables designed to measure government regulation and changes in economic conditions are also included in the analysis as control variables. Section C explains how these variables will be operationalized and measured.

Finally, OLS regression will be employed to determine the presence of a causal relationship between changes in innovation adoption and changes in media market structure. Section D outlines the empirical strategy that will be used. For all of the change variables to be studied, the logarithm of the value of the year-to-year change will be used.⁴

⁴ The change variables are GDP and the adoption rates of each technological innovation. Regulatory environment is not a change variable.

A. Dependent Variable: Measuring Market Structure

This study will determine and measure the effect that innovation has on the market structure of the media industry. As such, the dependent variable for this study will be a measurement of annual change in the market structure of the media industry. As stated above, this study operationalizes market structure as a measurement of ownership concentration, as defined by market share held by each company.

1. Measurement Instruments. There are numerous tools for measuring ownership concentration among a group of companies. The HHI will be used to measure the market structure of the media industry in this study. The benefits for using the HHI over other measures of concentration will be explained further in this section.

a. Herfindahl-Hirschman Index (HHI). The HHI is one of the most widely used measurements of ownership concentration within a particular industry or other group of companies (McCauliffe, 1997). The HHI is used by many regulatory agencies including the U.S. Department of Justice, the U.S. Department of Commerce, and the Federal Reserve Bank. It is one of the factors that regulators consider when studying a merger's potential effect on the competitive landscape of a particular industry or market (Department of Justice, 2010).

The HHI is the sum of squares of the market shares of all firms within the group of companies being analyzed. The calculation is represented as: $HHI = \sum_{i=1}^n (MS_i)^2$, where MS_i represents the market share of firm i with n firms in the market. The resulting sum of these squared market shares—the HHI—can be as high as 10,000 (which would show monopolistic concentration and, hence, no ownership diversity) or as low as < 1.0 (for a highly diversified market or industry). For example, a true monopoly, in which one company has 100% of the

market share, would have an HHI of 10,000 ($100^2 = 10,000$). On the other hand, a market with 100 firms each maintaining 1% of the market would result in an HHI measurement of 100:

$$\left(\sum_{n=1}^{n=100} (1)^2 = (1 * 1)_1 + (1 * 1)_2 \dots + (1 * 1)_{100} = \underline{100} \right).$$

The Department of Justice, when assessing the impact of proposed mergers, considers an industry or market to be “unconcentrated” if the HHI measurement is 1500 or less (Department of Justice, 2010). Those markets with an HHI measurement between 1500 and 2500 are considered to be “moderately concentrated,” and markets with an HHI measurement greater than 2500 are considered “highly concentrated.”

One of the advantages of the HHI ratio is that it considers a greater number of companies within a particular industry or market and it considers the impact of each individual company’s market share on the overall concentration measure (e.g., HHI). For example, one market with four companies could be much more concentrated than another market with the same number of companies simply because of different market share distributions.

Once the concentration level has been determined by calculating the HHI, year-to-year differences will be calculated and used as the dependent variable. Changes in concentration are a more appropriate measurement to use as the dependent variable; the “impact” or effect that the independent variables generate are more meaningfully portrayed in the change of the level of market structure.

b. CR4 and CR8 ratios. The C4 and C8 ratios measure concentration within an industry or market by adding the market shares of the top four (or eight) firms within the targeted industry (Albarran & Dimmick, 1996). These ratios were utilized in Albarran and Dimmick’s study of “across industry concentration,” which found high concentration within certain segments of the media industry, but no level of high concentration within the media industry as a whole (1996).

Because the CR ratios only consider four or eight companies within an industry, the ratios may present an incomplete and inaccurate picture of that industry. For example, two industries with identical market share distributions among its respective top eight firms would have equal CR8 scores, even if one of those industries had 50 additional companies with relatively small market shares.

c. HHI vs. CR ratios. While the HHI ratio and the CR ratios both provide some indication of a market's concentration, even Albarran and Dimmick, when using the CR4 and CR8 ratios in their study, acknowledged the HHI was “the best measure of concentration” (p. 44, 1996). Their study did not use the HHI because of their inability to include every company within the media industry, including private firms that do not make revenue figures available to the public. This perceived limitation is unwarranted because the market share for any single smaller firm—particularly with numerous competitors in the industry—does not by itself significantly impact the HHI (Greco, 2000).

Moreover, the HHI has been widely used when studying different aspects of media concentration, including content diversity (Einstein, 2002; Napoli, 1997) as well as ownership concentration or market structure (Compaine & Gomery, 2000; Drushel, 1998; Greco, 2000; Noam, 2009). The HHI is therefore considered to be a more robust and appropriate measurement of ownership concentration than are the CR4 and CR8 ratios. Because of its strengths, the HHI will be the measurement-of-choice when testing for any relationship between market structure and innovation.

Appendix B lists values calculated for the HHI from 1950-2009. Appendix A provides a sample of the companies that were included in the study in order to calculate the HHI; the sample in Appendix A includes all companies for the years 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, and 2009.

2. Sample Selection. The sample in this study will include publicly traded corporations with media operations in the United States. Publicly traded companies are the measured population for both practical and theoretical reasons. Because this study relies on market shares based on revenues, it will be necessary to access annual revenue figures for each media company, which is required of all publicly traded companies. Privately-owned media companies—which by definition are not required to publicly release financial data—could therefore not be included in this study, as their revenue figures would likely not be available.

Moreover, public companies must ensure that the financial information released has been audited by an independent auditing firm. In the unlikely event that a private company did release financial information to the public, there is no requirement that the information be complete or independently verified. As such, it is only practical to include revenue data for publicly traded companies.

There is also a theoretical basis for not including firms that are not publicly traded companies. Dunaway (2008, 2011) has argued that private (i.e., not publicly traded) companies do not have the same financial pressures and constraints as publicly traded firms, and therefore are more able and more likely to be managed for other objectives besides **just** profitability and revenue growth. As a result, it is likely that concerns of diminishing diversity and localism are not as prevalent when examining smaller, private companies. These concerns are often what drive media policymakers calling for regulation that would hinder larger conglomerates from gaining even further market power (Baker, 2007). Therefore, publicly traded companies are the most likely suspects for engaging in monopolistic behavior and also may be those most likely to be the targets of government regulation.

As detailed in Chapter One, companies in the U.S. media industry are defined as those companies in the business of creating, distributing, or owning content for consumption by mass

audiences. This definition differs slightly from Compaine and Gomery's (2000) definition who include local and long distance telephone providers in their sample. The present study does not include telephone service providers unless they offer other mass media related services (e.g., cable television, Internet services). In those cases, the media-related revenues will be included.

Companies included in this study classified primarily within the '51' sector of the North American Industry Classification System—NAICS. The NAICS is a system of classifying businesses to allow for easier collection of meaningful statistical data related to businesses and the business economy in general (U.S. Census Bureau, n.d.). The NAICS—developed jointly by the U.S., Canada and Mexico, replaced the U.S. Standard Industrial Classification System (SIC) in 1997. Within the NAICS, sector 51 includes all companies in the information industries, and includes subsectors such as publishing, motion picture, broadcasting, and telecommunications.

An additional sector—sector 71—includes companies in the “Arts, Entertainment, and Recreation” industries. However, these organizations are generally non-media related: subsectors include museums, performing arts, and gambling.

Beyond relying on the NAICS categories to draw the sample, additional sources have been used to identify other companies with media-related operations that may not have been included in either the 51 or 71 sectors. These include the *Value Line Investment Survey*, which offers independent investment information and covers more than 1,700 publicly traded companies (Value Line, 2012). Relevant industries within the Value Line database include Cable TV, Entertainment, Information Services, Internet, Newspaper, Publishing, and Telecom Services. Within these industries, a company may or may not be included, depending on the specific types of revenue-generating activity the company is engaged in. This method, for example, resulted in the addition of companies such as The Washington Post Corporation—which owns educational and test preparation services through its Kaplan, Inc. subsidiary. The

Washington Post Corporation was categorized by the NAICS in its Educational Services (61) sector. As such, it would not have been included by only considering companies listed in the NAICS as being in either sector 51 or 71.

In addition, foreign companies are included if they engage in meaningful media operations in the United States. Examples of such companies include Japanese-based Sony Corporation and the German-based company Bertelsmann. In these cases, only revenues generated within the United States—as reported in the company’s annual reports—were included in the market share calculations.

3. Data Collection Methods. Revenues used in this study were accessed through Compustat North America. The Compustat North America database provides historical and restated financial data on active and inactive publicly traded companies, which allows year-to-year comparisons. For most companies in the database, annual financial history is available going back to 1950 (Standard & Poor's, 2011). For the years 1975 and beyond, Compustat provides total annual revenues as well as revenues generated by operating segments and geographic segments. For these years, it is possible to include only revenues associated with media-related businesses in the United States, which is the focus of this study.

This allows for using only revenues that were derived from U.S. operations, which is a better measurement of market structure within the U.S. media industry. For example, News Corporation reported revenues in fiscal year 2009 of \$30 billion (News Corporation, 2009). However, the company also indicated that \$16.6 billion of these revenues came from U.S. operations; the remaining revenues were generated from operations throughout the rest of the world. In assessing News Corporation’s market share of the U.S. media industry, only those revenues generated from U.S. operations (i.e., \$16.6 billion) would be considered. In doing so, News Corporation is more accurately portrayed as a company that is very similar to Time

Warner Cable, which reported revenues in 2009 of \$15.9 billion (Time Warner Cable Inc., 2009). By eliminating revenues generated from non-U.S. operations, a more accurate picture of the U.S. media market is presented.

In addition, only revenues derived from media operations were included. As a result, revenues for Walt Disney Company's theme parks and consumer products, for example, were not included. Disney reported total revenues in 2009 of \$36.1 billion (The Walt Disney Company, 2009). However, when eliminating "non-media" operations (e.g., theme parks, consumer products, etc.), revenues are \$22.3 billion. Accordingly, revenue figures in this study may be different than total revenues reported by a particular company for a specific fiscal year.

The examples of News Corporation and Walt Disney illustrate why it is desirable to use segmented revenues reflecting only media operations within the United States. Unfortunately, the Compustat database of revenue data for the years 1950—1975 does not segment revenues by either operating or geographic segments. For these years, total revenue for each company is provided, without any breakdown by operations or countries. As a result, it is difficult to measure the market structure of the media industry for the 1950—1975 timeframe as accurately as for the years beyond 1975. Several variations of the OLS model will be used that adjust the market shares for those companies (heretofore known as "conglomerates") with significant non-media or foreign media revenues during the 1950—1975 period. These variations, and the reasoning for employing them, will be discussed further in Chapter Six.

Using the company revenues from the Compustat database, market shares for each individual company will be calculated in order to determine the HHI and the CR4 and CR8 indices. The basis for measuring market structure, therefore, is each company's revenue generated from its media related operations, with some adjustments when necessary.

B. Independent Variables: Measuring Innovation

As previously argued, this study hypothesizes that the pattern of adoption of an innovation is more critical than the introduction of the innovation itself when attempting to measure the impact of the innovation on market structure. Accordingly, this study measures the adoption rates for each of the three technological innovations examined (television, cable television, and the Internet).

1. Measurement Instrument. For each technological innovation examined, the rate of adoption is measured by annual change in the percentage of U.S. households utilizing that particular medium. Other statistics, such as sales based measures, provide some insight into the diffusion of these technologies throughout the general public, but are less robust for representing the actual adoption rate. For example, relying on the number of televisions sold in a given year may show the popularity of television, but does not necessarily provide an accurate indication of if and how television is broadening its reach to more people. New television sales could be generated by current television owners, choosing to buy a second or third television. In such a case, an increase in television sales doesn't necessarily expose more people to the technology, whereas adoption by a new household does. Therefore, a household-based measure of adoption is a more appropriate basis for measurement for purposes of this study. As such, using the percentage of households with televisions provides a more meaningful method of measuring the adoption of television for purposes of this study.

2. Data Collection. Data detailing the adoption rate of both television and cable television for the years 1950—2009—as measured by the penetration into U.S. households—is available from the *Statistical Abstract of the United States* (heretofore referred to as “The

Abstract”). The Abstract is published annually by the United States Census Bureau.⁵ The Abstract is a self-described “comprehensive summary of statistics on the social, political, and economic organization of the United States” (<http://www.census.gov/compendia/statab/>). In addition to information generated by the Census Bureau, The Abstract includes data from other sources including the Bureau of Labor Statistics and the Bureau of Economic Analysis.

For information regarding the adoption of the Internet, the Census Bureau has released annual data indicating the percentage of households with access to the Internet. However, the Census Bureau did not begin collecting this information until 1997; by then already 18% of households were reported as having access to the Internet. Moreover, the Census Bureau has also not reported any household Internet access figures beyond 2009. Accordingly, using Census Bureau data would limit the number of data points (i.e., years) that could be used for this study, and would not provide important information as to the adoption rate of early adopters in the years preceding 1997.

Two other sources are also available for the rate of Internet adoption. Pew Research Center has tracked the percentage of U.S. adults using the Internet for the period of 1995-2012 (Pew Research Center, 2012). In addition, The World Bank has released data showing Internet users as a percentage of the population in the United States, from 1990 through 2009 (The World Bank, 2012). For this study, the World Bank data will be used as it is the only data source which provides uninterrupted figures annually; the other two sources have periodic skips where data is not reported for a particular year.

Appendix C presents adoption rates on a year-to-year basis for television, cable television, and the Internet. Where there is no adoption rate for an innovation in a given year, it

⁵ The Census Bureau has announced that the Statistical Abstract will no longer be published annually after 2011.

can be assumed that the innovation had not yet been introduced to the public, and will not be included in any analysis.

C. Control Variables: Regulation and Economic Influences

Other variables may be likely to affect changes in market structure. As such, two control variables are included in the models; namely, a variable to reflect regulatory influences, and a second variable reflecting economic influences.

1. Regulatory Influences. Cleavage theory advocates the idea that political parties' positions "reflect divisions in the social structure and the ideologies that provoke and express those group divisions" (p. 585, Marks, Wilson, & Ray 2002). Marks, et al. have shown that a party's position on a new or emerging issue is strongly influenced by the party's general ideological positions. This concept can be extended to argue that a party's general philosophical position could be a predictor of that party's regulatory approach when serving as a governing party (Coate, 2002). As such, this model controls for the expectation that regulatory policies of a Republican administration will differ than those of a "non-Republican" administration. This expectation is based on the reality that a presidential administration enacts and enforces its regulatory policies through the appointment of cabinet and agency heads (e.g., Department of Justice, FCC, FTC) empowered with regulating the media industry. For this study, a control variable—Regulatory Climate—will be operationalized as a dummy variable, indicating a Republican administration (i.e., value of '1') or a non-Republican administration (i.e., value of '0'). Appendix D provides the values of this dummy variable for each year during the 1950—2009 timeframe.

The differences between a Republican and non-Republican administration may have an effect on the business climate in general, and the market structure of an industry specifically. Generally, Republican Party policy has been characterized as a pro-business, deregulatory

focused policy (Shenk, 1995). This laissez-faire approach manifests itself in many ways, including the calls for limiting restrictions on how and when businesses may grow and expand. Such an approach would tend to be less interested in actively limiting the market strength of a particular company, and therefore it is considered that Republican regulatory policies would create an environment conducive to the accumulation of market power among a few large and powerful corporations.

Conversely, Democratic Party policy is characterized as pro-consumer oriented. Such an orientation is in part based on the idea that using regulatory policy to expand competition and limit an individual company's market power is desirable for consumers. It is anticipated that the regulatory environment under a Republican administration will lead to a concentrated media market structure (i.e., increasing HHI).

2. Economic Influences. Inasmuch as this study incorporates economic concepts in order to measure the media industry, it is reasonable to assume that general economic trends may also influence an industry and its market structure. The GDP, as defined by the U.S. Department of Commerce, is "the output of goods and services produced by labor and property located in the United States" (Bureau of Economic Statistics, 2012). The GDP is commonly used as a measurement of the condition of a nation's economy (Abramowitz, 2008; Chamberlin, 2011). Comparisons of the GDP from year-to-year provide measurement of the growth or contraction of the economy. GDP figures for each year are released by the U.S. Department of Commerce; these figures will be used in this study as an indication of economic conditions.

Economic conditions would likely influence individuals and corporations in their spending decisions as well as their investment decisions in research and developments. It would be expected that both of these decisions would impact the expansion or contraction of the media industry, and therefore its market structure. Specifically, it is anticipated that increases in GDP

will result in decreases in ownership concentration of the media industry as measured by HHI. Appendix D provides the values of this dummy variable for each year during the 1950—2009 timeframe.

D. Measuring the Relationship between Innovation and Market Structure

This study relies on multivariate analysis to determine the presence and nature of a causal relationship between each of the independent variables and the market structure of the media industry.

1. Data Structure and Analysis. Because the data and relationship of interest involve change over time, it is important to consider the use of time series analysis to determine the extent to which the dependent variable is influenced by previous values of itself as well as other variables.

Time series analysis techniques are important when analyzing trends in data that report values of a particular variable (or variables) over a period of time (Stock & Watson, 1988). In such a situation, it is likely that the dependent variable is influenced in part by previous values of itself. In a linear regression analysis this measure of influence would not be accounted for, and would result in the error term for a particular time being correlated with the error terms of previous and subsequent times (Maddala, 1988). The error terms, therefore, would be autocorrelated; time series analysis helps to identify and measure the component of the error term specifically related to the longitudinal nature of the data and to address any autocorrelation issues.

The review of the previous literature presented in Chapter Two clearly supports the idea that the adoption of an innovation generally occurs over a period of time. As such, it is possible that measuring the effect of such adoption on any variable such as market structure may need to be analyzed over a period of time. Some researchers specifically examining the relationship

between innovation and the media market structure have utilized such an approach (Dowd, 2004).

Even researchers studying this relationship that have not relied on time series analysis nonetheless acknowledge its relevance, as evidenced by Peterson and Berger (1996), who argued that “Future studies that use regression models to test the relationship between concentration and innovation . . . will need to be sensitive to the assumptions underlying the methods of time-ordered analysis of historical processes” (p. 177).

To determine whether or not time series analysis is the appropriate methodology for this study, the Box Jenkins approach was employed, which helps identify and estimate time-series models (Enders, 2004). Box Jenkins diagnostics help determine whether or not a prior value of the dependent variable influences and predicts future variables. The Box Jenkins approach recognizes three components to a time-series model: an autoregressive component, a moving average component, and an integrated component. A time series relationship may have any or all of these components. The Box Jenkins methodology helps to determine the presence of each of these components which, combined, are represented in an ARIMA model.⁶ Each component will be explained, and results indicating the presence or absence of each will be discussed.

Initially, tests for integration (the ‘I’ of the ARIMA model) of each variable were conducted. An Integrated variable, by definition, violates key assumptions of time-series data. Those assumptions are:

- 1) The variable has a constant mean,
- 2) The variable has a constant variance, and
- 3) The effect of a prior observation on future observations is a decaying one.

⁶ When using the Box Jenkins method for analyzing variables, the “AR” and “MA” components are tested only for the dependent variable.

Further, an integrated variable is considered to be influenced by its previous observation, but purely randomly. Integrated variables, by definition, are considered to have unit roots, so the effect of a prior value of that variable on its current value never diminishes. To test for integration, two tests—the augmented Dickey Fuller test and the Phillips-Perron test—were applied to the dependent variable and each independent variable individually. Each allows for testing a null hypothesis that the variable does has a unit root.

Table 1 shows the results of the Dickey-Fuller test, while Table 2 presents the results of the Phillips-Perron test. Results of both tests lead to the conclusion that the null hypothesis can only be rejected for the “TV-Adoption” variable. In other words, it is assumed that unit roots exist for “Market Structure,” “Cable-Adoption,” and “Internet-Adoption” variables. In the case of “Market Structure,” the Phillips-Perron test does indicate that the null hypothesis can be rejected, but only at the $p < .10$ level. Given the results of the Dickey-Fuller test and the failure to reject the null hypothesis at the $p < .05$ and $p < .01$, it is assumed that a unit root exists for the “Market Structure” variable.

Table 1. Results, Augmented Dickey-Fuller Test.

	Test Statistic Z(t)	1% Critical Value	5% Critical Value	10% Critical Value	Mackinnon approximate p-value for Z(t)
Market Structure (HHI)	-2.470	-3.562	-2.923	-2.596	0.123
TV Adoption	-16.524	-3.569	-2.924	-2.597	0.0000
Cable TV Adoption	-0.603	-3.576	-2.928	-2.599	0.8702
Internet Adoption	-0.075	-3.750	-3.000	-2.630	0.9519

Table 2. Results, Phillips-Perron Test.

	Test Statistic Z(t)	1% Critical Value	5% Critical Value	10% Critical Value	Mackinnon approximate p-value for Z(t)
Market Structure (HHI)	-2.697	-3.567	-2.923	-2.596	0.0745
TV Adoption	-28.662	-3.569	-2.924	-2.597	0.0000
Cable TV Adoption	-0.629	-3.576	-2.928	-2.599	0.8644
Internet Adoption	-0.211	-3.750	-3.000	-2.630	0.9372

Results of the tests for integration on the “TV-Adoption” variable are somewhat incongruous with the nature of the data: Rejecting the null hypothesis that “TV-Adoption” has a unit root would imply that the trend for “TV-Adoption” is a linear one. However, as Figure 3 illustrates, a view of the trend of “TV-Adoption” shows a curvilinear relationship.

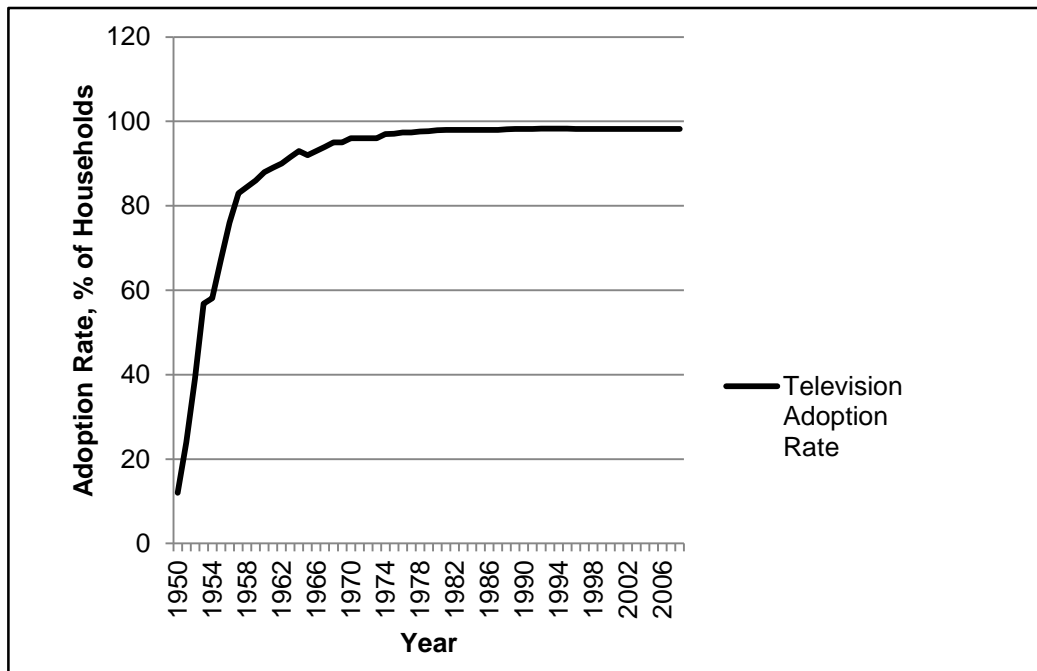


Figure 3. Television Adoption Rate. (Adoption rate of television as measured by percent of U.S. households with televisions for the years 1950-2009.)

Given the obvious illustration that “TV-Adoption” is not a linear trend, the more conservative approach to reconciling the diagnostic results with the graph results is to assume the variable is integrated (i.e., has a unit root), and does not have a constant mean or variance. Again, Figure 3 supports this approach.

Having concluded that the variables in this study each contain a unit root, further analytics are required in order to determine the most appropriate model for testing the hypotheses. Specifically, each independent variable must be examined to see if it is cointegrated with the dependent variable. Cointegrated variables, by definition, share a unit root and have a normally distributed error (Granger, 1981). If two integrated variables do not share a stochastic trend (i.e., normally distributed error), then any correlation is deemed to be spurious.

To detect such cointegration among these variables the Engle-Granger test is applied to each independent variable paired with the dependent variable. Table 3 presents results of the Engle-Granger test as applied to each pair; results support the conclusion that the null hypothesis (“The variables are not cointegrated”) can be rejected. Therefore, it is assumed that each independent variable is cointegrated with the dependent variable, and that these relationships are not spurious.

Because the variables are cointegrated, the equation should not include a time trend as a regressed variable (Mocan, 1999). Without the presence of such a time trend, testing for the autoregressive component of the ARIMA model is unnecessary, and it is concluded that $p=0$, where p is the number of lags included in the autoregressive component to allow for the effect of any time trend. The same can be concluded with respect to the white noise of the model being developed, and therefore moving average components (“MA”) are nonexistent. In this case, $q=0$, where q is the number of lags in the forecast errors. Finally, when time series variables are

cointegrated, the equation used to test the hypotheses must incorporate the changes in the value of the variables.

Table 3. Results, Engle-Granger Test.

	Test Statistic Z(t)	1% Critical Value	5% Critical Value	10% Critical Value	Mackinnon Critical Values
Market Structure/TV Adoption	-0.308	-3.654	-2.957	-2.618	
Market Structure/Cable TV Adoption	-0.411	-3.654	-2.957	-2.618	
Market Structure/Internet Adoption	-2.468	-3.833	-3.031	-2.656	

In summary, diagnostic tests on the preliminary data revealed no time trend for the dependent variable. Accordingly, this proposed study need not employ time series analysis to examine annual changes in media market structures as a function of annual rates of technological adoptions. Instead, it is appropriate to utilize OLS regression of the changes in the studied variables as measured by the logarithms of these changes.

Chapter Six

Results

Having determined that OLS regression is the appropriate method for studying the research questions, this chapter presents results of regression analyses for different models using different assumptions regarding the market shares for the conglomerates for the 1950—1975 period. First, Section A reviews the data that was collected in order to measure each of the variables identified and defined in Chapter Five. The measurement of market structure—as represented by the HHI—is examined more closely in Section B in order to more fully understand the trends and evolution of the market structure of the media industry over time. As will be noted in that section, the difficulty with collecting media-only revenue data for the 1950—1975 period means that the 1976—2009 timeframe will be more closely examined when trying to understand the evolution of the media market structure.

Given the difficulties resulting from the two different data sets used for this study, different strategies will be utilized to create a uniform data set that is the best solution for combining the two data sets into one set that can be used for the study. Section C considers revenue data from both data sets, without any adjustments to try and estimate media only revenues. Sections D through H employ different approaches to estimate a “media-only” revenue scenario. These approaches are explained in the respective sections. Finally, Section I specifically examines the effect of the adoption rate of the Internet only (i.e., without considering the adoption rate of other technological innovations) on the market structure of the media.

A. Description of Data

The data collected for each variable is described in Appendix E with a summary of the descriptive statistics for each variable. Because the three independent variables are designed to measure adoption rates for different media, it is appropriate and meaningful to compare the

statistics for these variables. Figure 4 illustrates the trends for each of the three independent variables.

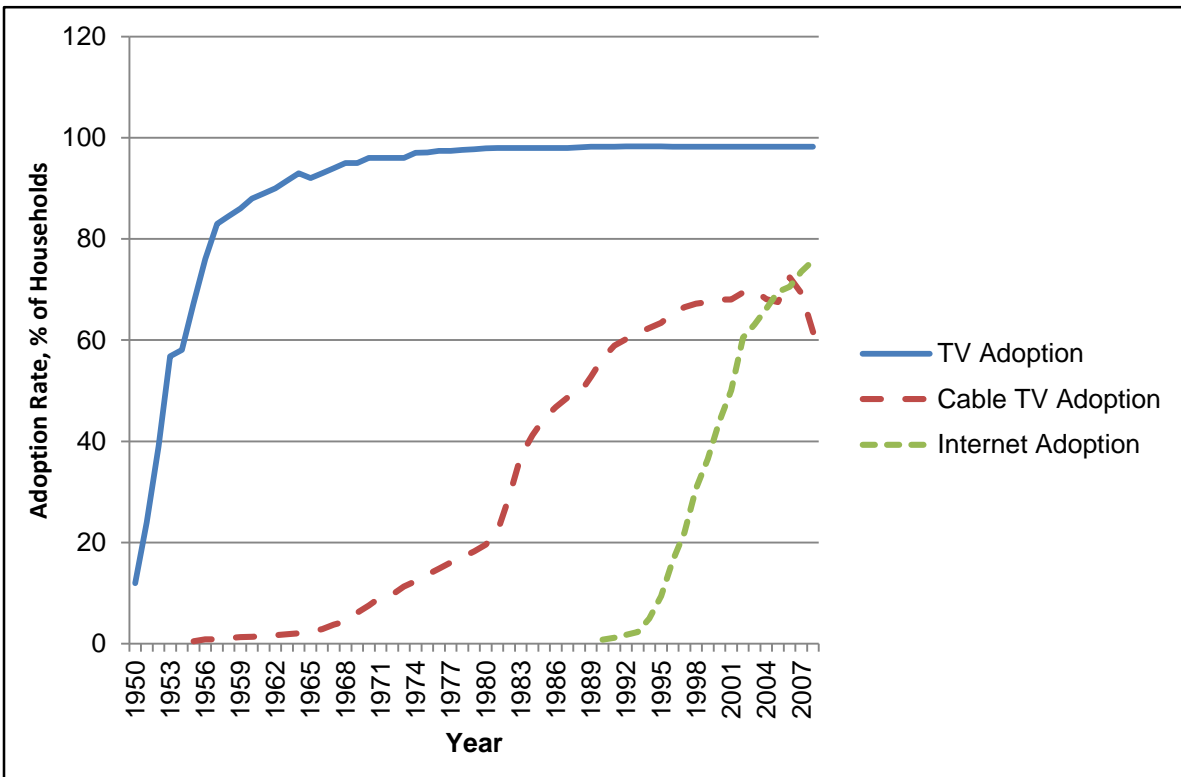


Figure 4. Adoption Rates by Technology. (Adoption rate of each technological innovation examined in this study. Adoption is measured by the percent of U.S. households that have the respective technology, as measured by the U.S. Statistical Abstract for the years 1950—2009.

As noted in Appendix E, it is interesting to note that the number of observations for “TV Adoption” and “Cable TV Adoption” are similar ($N_{TV\ Adoption} = 59$, $N_{Cable\ TV\ Adoption} = 54$), indicating that the adoption of these two technologies has occurred over a similar timeframe. This is also evident in Figure 4 by the fact that the trend lines for “TV Adoption” and “Cable TV Adoption” are similar in terms of the length of time each line measures. However, despite the fact that the adoption of television and cable television have occurred over a similar length of time, these variables report noticeably different means ($\bar{X}_{TV\ Adoption} = 90.2$, $\bar{X}_{Cable\ TV\ Adoption} = 33.29$), medians ($M_{TV\ Adoption} = 97.7$, $M_{Cable\ TV\ Adoption} = 22.21$), and ranges ($Range_{TV\ Adoption} = 12.0—98.3$, $Range_{Cable\ TV\ Adoption} = 0.5—72.4$). These statistics provide evidence and

confirmation that the adoption patterns for television and cable television are different: The public's adoption of television was much more rapid and pervasive than was the adoption of cable television.

With regards to cable television adoption, those statistics which differ from television adoption appear to be very similar to the respective statistics for Internet adoption, particularly the means ($\overline{X}_{\text{Cable TV Adoption}} = 33.29$, $\overline{X}_{\text{Internet Adoption}} = 38.87$) and the ranges ($\text{Range}_{\text{Cable TV Adoption}} = \min(0.5), \max(72.4)$, $\text{Range}_{\text{Internet Adoption}} = \min(0.8), \max(29.45)$). Such results indicate that the adoption pattern for cable television and the Internet may share a similar trend, but the pattern for the Internet was accomplished in nearly one-third the timeframe that it took for cable television. Again, this is illustrated in Figure 4, showing that the trends for both "Cable TV Adoption" and "Internet Adoption" are characterized by lines forming S-shaped curves, although the slopes of each are significantly different. Such findings further support the contention by some that the Internet is the fastest growing communications medium (Rooh-e-Aslam, Ali, & Shabir, 2009).

B. Identifying Trends in the Evolution of the Market Structure of the Media Industry

Having collected revenue data on media companies used in this sample for the years 1950—2009, Figure 5 shows the trend in the HHI as a measure of media market concentration for this timeframe. Data collected for the years 1950—1975 include all revenues for companies, including revenues that are not from media-related operations.

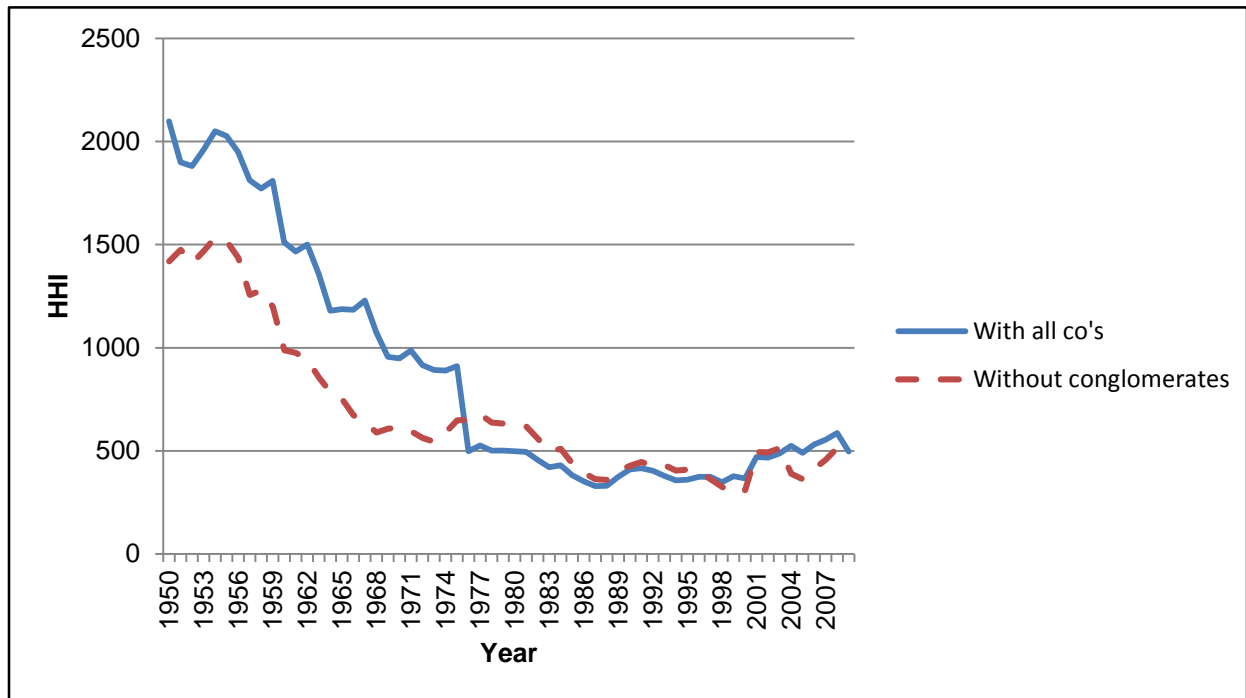


Figure 5. Media Industry Concentration, 1950—2009. (This figure tracks the market structure of the media industry during the 1950—2009 period. “Market structure” is defined as concentration of ownership as measured by market shares of each media company included in the study. The level of concentration is represented by the Herfindahl-Hirschman Index (HHI). One measure includes all media companies, including conglomerates which reported non-media revenue incomes for the years 1950—1974. The second measure eliminates these companies for the entire period.

As such, the measure of concentration for this timeframe may be skewed. To provide some perspective into how much of an effect these companies may have on the HHI measurement, a second measurement (“without conglomerates”) is presented that considers the market structure of the media industry if these companies are eliminated for the entire timeframe. The result shows that both trends are very similar, although the variance from year-to-year is greater when including all companies. Additionally, the impact of these companies is seen by the dramatic drop in market concentration from 1975—1976, representing the elimination of non-media revenues from one year to the next.

As shown in Table 4, the results provided by these two different approaches are highly correlated ($r=.9510$). As a result, while it may be difficult to reach conclusions as to the precise

HHI value, particularly for the 1950—1975 timeframe, it is nevertheless possible to identify trends over the entire 60-year period, since the trends are highly correlated. Indeed, there appears to be five distinct trends during this time period, with some phases lasting longer than others.

Table 4. Pearson Correlations: HHI with and without conglomerates' revenues.

	With	Without
With	1.0000	0.9510
Without	0.9510	1.0000
*Correlation is significant at the $p < .01$ level (two-tailed)		

The results indicate an initial trend of a generally steep decline in market concentration beginning in 1950 and continuing through the early 1970s.⁷ For the next few years (until 1976), fluctuations in the level of concentration are minimal, and the trend line is generally flat. By 1976, the market structure enters another phase of declining concentration which continues until 1987.⁸ From 1987 through 2001, the HHI value stabilizes within a 90-point range. After 2001, market concentration begins to increase, and a general upward trend continues throughout the remainder of the time period analyzed in this study. To be sure, the final year—2009—shows a noticeable decline. Whether or not this is the beginning of a new trend or a mere fluctuation cannot be determined, but should be examined as subsequent years' worth of revenue data are collected and additional HHI measurements are calculated.

C. Effect of Technological Adoption on the Market Structure of the Media

Applying equation 5.1 to the preliminary data for market structure and adoption of television and cable television, regression results are presented in Table 5.

⁷ Depending on which trend line used, the declining trends ends in either 1973 or 1974.

⁸ When analyzing the trend post-1975, HHI figures which include all companies and all revenues, including conglomerates, are used.

Table 5. (Model 1) OLS regression estimates for model of Media Structure, with unadjusted market shares.

	b	t	
Constant	0.038 (0.041)	0.91	
Change in Television Adoption Rate [-]	-0.417 (0.850)	-0.49	
Change in Cable TV Adoption Rate [-]	-0.102 (0.160)	-0.64	
Change in GDP (Economic Climate) [-]	-1.24 (0.786)	-1.57	*
Regulatory Climate [+]	-0.016 (0.0334)	-0.48	
N	53		
R ²	0.0714		
Adjusted R ²	-0.006		
F	0.92		
Prob > F	0.4584		
Note: T-statistics are based on standard errors.			
For each variable, standard errors are indicated under the respective coefficient in parentheses.			
Symbols in brackets represent the expected direction of the co-efficient.			
****prob. <.001			
***prob. <.01			
**prob. <.05			
*prob. <.10			

This model (“Model 1”) includes all revenues for the companies studied. This includes nine conglomerates which report a significant drop in market share from 1975—the final year of unsegmented revenue reporting—to 1976—the first year of segmented revenue reporting. For purposes of this study, a decline in market share of 20% or greater was considered “significant,” and appropriate for an adjustment in market share data for the first half of the study. Figure 6 illustrates the adoption rates of the two media technologies in relation to the trend of the market structure of the media, as measured by HHI. For Figure 6, HHI is based on all companies (including conglomerates) and, for the 1950-1975 timeframe, all revenues (including non-media

operations of those conglomerates). This is consistent with the assumptions used for Model 1, albeit future models are based on different assumptions regarding the calculation of HHI.

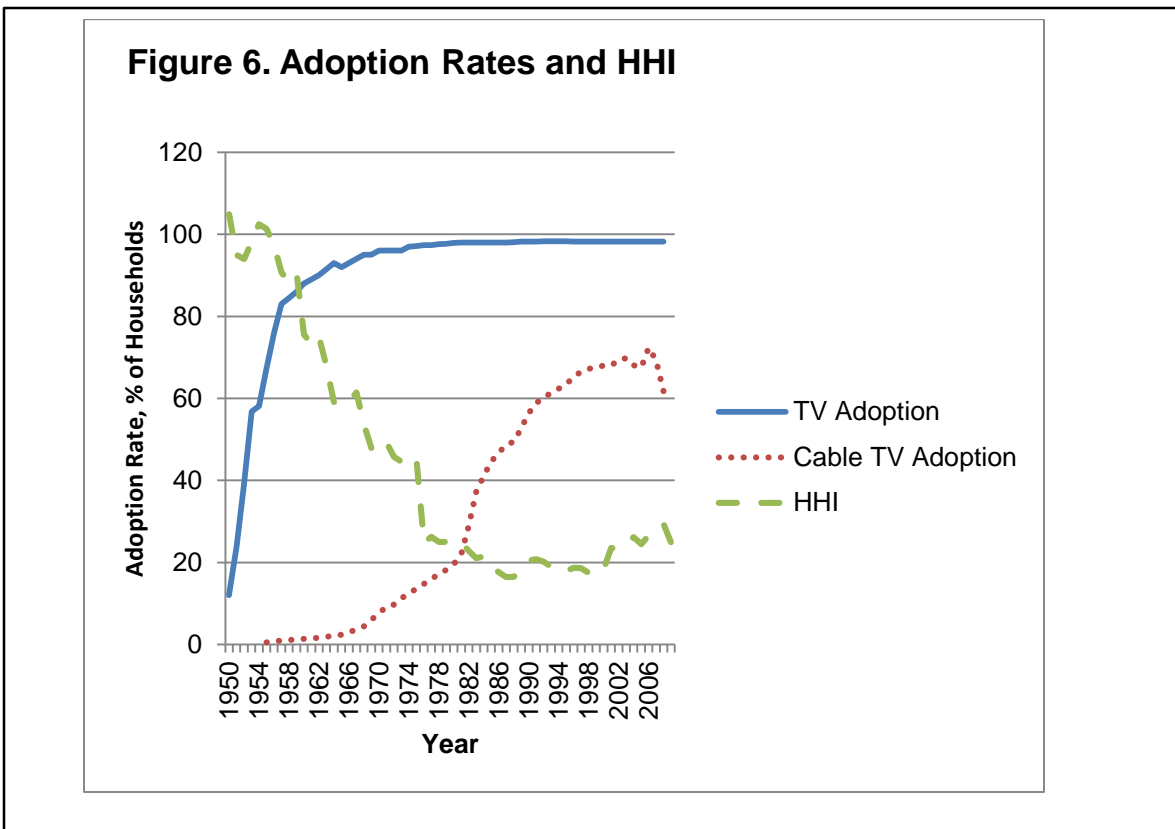


Figure 6. Adoption Rates and HHI. (Adoption rate of Television and Cable TV, compared to media market structure, as measured by HHI. Adoption rate is measured by the percent of U.S. households that have the respective technology, as measured by the U.S. Statistical Abstract for the years 1950—2009.)

Table 6 presents these companies with the market shares for each company in 1975—based on unsegmented revenues—and in 1976—based on segmented revenues. For Model 1, no adjustments were made to any of these companies, so the revenue data used includes revenues from all operations associated with each company.

The results do not support the conclusion that the model represents a “good fit” in terms of explaining the relationship between the causal variables and media market structure (“Prob > F” = .4582). Accordingly, the null hypothesis that this model does not provide a good estimate of media market structure cannot be rejected. Additionally, the model offers minimal

explanatory power ($R^2 = 0.0714$). Only one control variable—GDP—is shown to be a statistically significant predictor of the dependent variable at the $p > .10$ level ($b = -1.24$, $t = -1.57$).

Table 6. Companies with significant declines in market share when data source changes.

	1975 Market Share	1976 Market Share	% Change in Market Share
Cadence Industries	0.469	0.326	30.49
Chris-Craft	0.326	0.134	58.90
Cinerama	0.387	0.028	92.76
Disney	2.77	0.827	70.14
Harcourt General	1.91	1.17	38.74
Journal Communications	1.23	0.69	43.90
MacMillan	2.54	1.3	48.82
Post Corp	0.112	0.059	47.32
RCA	25.53	5.76	77.44
Total	35.274	10.294	----

The model predicts that a one-unit increase in the change of GDP will result in a 1.24-unit decrease in the annual change of the concentration of the media industry. None of the remaining variables are shown to be statistically significant predictors of the dependent variable.

D. Removing companies with non-media revenues from consideration in the model

For the nine conglomerates, the change in their respective market shares decreases by over 20% from the year 1975 (the last year that unsegmented revenues are reported) to the year 1976 (the first year that segmented revenues are reported, allowing for an examination specifically of media-only revenues). While it is possible that companies may show revenue declines over any given one-year period, the large declines are explained to some degree because these companies were diversified conglomerates, with non-media operations generating significant revenues during the 1950-1975 period.

RCA, for example, was a leader in the consumer electronics industry and not just in the media industry through its NBC Radio and NBC Television operations. The impact of these

non-media revenues on the analysis of the market structure for the 1950—1975 period could be significant. As Table 6 shows, the combined market share in 1975 for these nine conglomerates totaled 35.27%; the following year—when media-only revenues are analyzed—these nine companies only represented 10.29% of the market. Put another way, the data suggest that non-media revenues for RCA during the 1950—1975 period of analysis could be as much as 25% of all the revenues analyzed in Model 1.⁹

There are several options that could be considered for minimizing the impact that the non-media revenues from these nine conglomerates might have on this study. The first option is to completely eliminate these companies from analysis during the 1950—1975 time frame. Such an adjustment would obviously impact the measure of annual concentration for the media industry (i.e., HHI) and the regression estimates for the model of the Structure of the Media. The regression results for this model (“Model 2”) are presented in Table 7.

The results indicate that this model is a good fit estimate for explaining the relationship between the causal variables and the change in media market structure (“Prob > F” = .0291; “Prob > F” < .05). This model offers a moderate level of explanatory power ($R^2 = .1977$), and includes two variables that are statistically significant predictors of the dependent variable. The first variable, as in the first model studied, is the economic climate variable, as reflected by annual changes in GDP ($b = -1.2$, $t = -2.32$). Here, the model predicts that a one-unit increase in the change of GDP will result in a 1.2-unit decrease in the annual change of the concentration of the media market structure. In addition, this model shows one technological adoption variable to be a statistically significant predictor of the dependent variable: The model indicates that a change in the adoption rate of television as a new medium predicts a change in the media market structure ($b = -.755$, $t =$

⁹ In other words, the difference between the 1975 market share and the 1976 market share ($35.27 - 10.29 = 24.98$).

1.35). Specifically, a one-unit increase in the adoption of television predicts a .755-unit decrease in the concentration of the media market structure.

Table 7. (Model 2).OLS regression estimates for model of Media Structure, with nine companies eliminated for 1950-1975 period.

	b	t	
Constant	0.03 (.027)	1.1	
Change in Television Adoption Rate [-]	-0.76 (.561)	-1.35	*
Change in Cable TV Adoption Rate [-]	-0.1 (.105)	-0.95	
Change in GDP (Economic Climate) [-]	-1.2 (.518)	-2.32	**
Regulatory Climate [+]	0.01 (.022)	0.59	
N	53		
R ²	0.1977		
Adjusted R ²	0.1308		
F	2.96		
Prob > F	0.0291		
Note: T-statistics are based on standard errors.			
For each variable, standard errors are indicated under the respective coefficient in parentheses.			
Symbols in brackets represent the expected direction of the co-efficient.			
****prob. <.001			
***prob. <.01			
**prob. <.05			
*prob. < .10			

E. Removing RCA from consideration in the model

Returning to Table 6, a closer examination of the nine conglomerates with significant non-media operations shows that one company in particular—RCA Corporation—more than any other company is a major contributor of “non-media” revenue to this study during the 1950-1975 time period. Indeed, the difference between RCA’s market share in 1975 and 1976 shows a difference of 19.77%, indicating that almost 20% of the entire “media market” analyzed in 1975

was associated with non-media revenues solely generated by RCA. In comparison, the difference between the 1975 and 1976 market shares of the remaining eight companies combined only represents 5.21% of the entire market analyzed. This is still a significant number, but given the size of its market share, RCA could be viewed as an outlier by itself. As such, another alternative to analyzing the relationship between the independent variables and the media market structure is to remove only RCA from the study for the years where the non-media revenue cannot be identified and eliminated. Using this approach, results of the regression analysis are presented in Table 8.

Adjusting the market share data by removing RCA revenues does not result in an OLS regression model that provides a “good fit” estimate of media market structure (“Prob > F” = .1017). Moreover, the explanatory power of this model is weak ($R^2 = .1461$).

As with the previous two models, the “economic climate” variable, reflecting the annual change in GDP, is a statistically significant predictor of change in the media market structure ($b = -0.795$, $t = -1.59$). The model predicts that a one-unit increase in GDP change will result in a .795-unit decrease in change in the media market structure. For this model, the economic climate variable is the only causal variable that is statistically significant.

F. Revising Market Shares

Including all revenues from the nine conglomerates in this study (i.e., Model 1) may result in a skewed measure of market structure that indicates more concentration than there really is, excluding all revenues from these conglomerates (i.e., Model 3) may also result in skewed results. Excluding all revenues for the 1950—1975 period means that media revenues are excluded as well, and the measure of media market structure could theoretically indicate more or less concentration than what actually exists.

Table 8. (Model 3). OLS regression estimates for model of Media Structure, with RCA eliminated for 1950-1975 period.

	b	t	
Constant	0.015 (.026)	0.55	
Change in Television Adoption Rate [-]	-0.48 (.542)	-0.88	
Change in Cable TV Adoption Rate [-]	-0.11 (.102)	-1.08	
Change in GDP (Economic Climate) [-]	-0.8 (.501)	-1.59	*
Regulatory Climate [+]	0.02 (.213)	0.99	
N	53		
R ²	0.1461		
Adjusted R ²	0.075		
F	2.05		
Prob > F	0.1017		
Note: T-statistics are based on standard errors.			
For each variable, standard errors are indicated under the respective coefficient in parentheses.			
Symbols in brackets represent the expected direction of the co-efficient.			
****prob. <.001			
***prob. <.01			
**prob. <.05			
*prob. <.10			

Another alternative is to include these conglomerates in the study, but to adjust their market shares in a way that more accurately reflects a measurement of media-only revenues. One way to do this is to determine an “average” market share for each of the nine conglomerates, and apply this average market share for the years 1950—1975 in lieu of using a market share based on the conglomerate’s total revenues (non-media included).

For this approach, an average market share for each company was calculated by averaging each conglomerate’s annual market share over the 1976-2009 period. This average was then used as an estimate of the company’s market share for each year over the 1950—1975

period. The average market share to be used for each company is presented in Table 9. The table shows that, for example, Cadence Industries' market share of the media industry averaged .3% during the 1976-2009 period. This number will be used to reflect the company's market share during the 1950-1975 period in order to calculate a measure of market structure (HHI) for the media industry over the entire period of study.

Table 9. Average Market Share to be applied, 1950-1975.

	Average Market Share
Cadence Industries	0.3
Chris-Craft	0.23
Cinerama	0.022
Disney	3.75
Harcourt General	0.86
Journal Communications	0.3
MacMillan	0.8
Post Corp	0.08
RCA	5.76

Having determined a measure of market structure with these assumed market shares, an OLS regression analysis produced results detailed in Table 10 ("Model 4").

The model does not necessarily represent the best fit as an explanation into the relationship between the causal variables and the dependent variable ("Prob > F" = .0573). The model also offers limited explanatory power with respect to identifying and explaining those agents of influence on changes in the market structure of the media industry ($R^2 = .1705$).

The model, however, does suggest two causal variables that are statistically significant predictors of changes in the market structure of the media industry; namely, changes in the adoption of television ($b = -.685$, $t = -1.35$), and changes in GDP ($b = -.757$, $t = -1.61$). The model predicts that a one-unit increase in the change of the adoption rate of television will result

Table 10. (Model 4).OLS regression estimates for model of Media Structure, with estimated market shares for 1950-1975 period for nine conglomerates.

	b	t	
Constant	0.015 (.025)	0.60	
Change in Television Adoption Rate [-]	-0.685 (.507)	-1.35	
Change in Cable TV Adoption Rate [-]	-0.096 (.095)	-1.00	*
Change in GDP (Economic Climate) [-]	-0.757 (.469)	-1.61	*
Regulatory Climate [+]	0.020 (.020)	1.02	
N	53		
R ²	0.1705		
Adjusted R ²	0.1014		
F	2.47		
Prob > F	0.0573		
Note: T-statistics are based on standard errors.			
For each variable, standard errors are indicated under the respective coefficient in parentheses.			
Symbols in brackets represent the expected direction of the co-efficient.			
****prob. <.001			
***prob. <.01			
**prob. <.05			
*prob. < .10			

in a .685-unit decrease in the annual change of the concentration of the media industry. Further, the model predicts that a one-unit increase in the change of GDP will result in a .757-unit decrease in the annual change of the concentration of the media industry.

G. Considering Trends When Revising Market Shares

Model 4 attempts to provide a realistic estimate of the media-only market shares for the nine conglomerates in this study, but this approach assumes that there is no fluctuation in the market shares of these companies throughout the 1950-1975 timeframe. It is likely that each company's market share will fluctuate from year-to-year. To allow for these fluctuations, a final

model with adjustments to conglomerate revenues will be considered in order to analyze the effect that changes in the adoption rate of television and changes in the adoption rate of cable television have on the dependent variable.

This model begins with an assumption that market shares for 1975 (the last year of unsegmented revenues) are the same as the company's market share for 1976 (the first year of segmented revenues). The model then assumes that actual changes in a conglomerate's market share during the 1950-1975 period is similar to the changes in that company's market share for revenues specific to the media industry. In other words, if unsegmented (i.e., total) revenues for RCA increased 4% from 1974 to 1975, then it is assumed that RCA media revenues also increased by 4% during that timeframe. With this assumption, RCA's 1974 media segment market share can be calculated based on the estimated 1975 market share. These assumptions produce market shares that are consistent with market shares generated from the segmented data for the years 1976—2009, but also consistent with the year-to-year fluctuations in the company's revenues for the years 1950-1975. Using these estimates of market shares for the nine companies, an OLS regression generates results detailed in Table 11 ("Model 5").

The results indicate that this model is not a good fit for explaining the relationship between the independent variables and the dependent variables ("Prob > F" = .0735). As with prior models, this model offers minimal explanatory power ($R^2 = .1601$), and only one causal variable—change in GDP—is found to be a statistically significant predictor of the dependent variable ($b=7.779$, $t=-1.65$). It is interesting to note that this variable is the only one that has shown to be a statistically significant predictor of the dependent variable in every model that has been tested.

Table 11. (Model 5). OLS regression estimates for model of Media Structure, with estimated market shares and trends for 1950-1975 period for nine conglomerates.

	b	t
Constant	0.016 (.025)	0.63
Change in Television Adoption Rate [-]	-0.535 (.510)	-1.05
Change in Cable TV Adoption Rate [-]	-0.110 (.095)	-1.14
Change in GDP (Economic Climate) [-]	-0.779 (.469)	-1.65 *
Regulatory Climate [+]	0.019 (.020)	0.94
N	53	
R ²	0.1601	
Adjusted R ²	0.0901	
F	2.29	
Prob > F	0.0735	
Note: T-statistics are based on standard errors.		
For each variable, standard errors are indicated under the respective coefficient in parentheses.		
Symbols in brackets represent the expected direction of the co-efficient.		
****prob. <.001		
***prob. <.01		
**prob. <.05		
*prob. <.10		

H. Considering Segmented Revenues Only

The results presented thus far have all included revenues for the entire 1950—2009 timeframe. However, recognizing that the data for the first 26 years cannot provide media-only revenues, each scenario reflects a different approach to try and use these 26 years in the analysis. Another option, however, is to completely eliminate these years entirely from the analysis—not just revenues from the nine conglomerates, but from all companies—and only examine 1976—2009; the years where segmented revenues are available.

One disadvantage to this approach is the fewer number of observations available for inclusion in the model. In this case, $N = 32$, whereas the other models are based on $N = 53$. However, if this model proves to be the most theoretically and empirically sound model, this disadvantage could eventually go away; going forward, a new observation will be added each year, as publicly traded companies currently continue to report segmented revenues on in their annual reports. As such, the number of observations (i.e., N) will increase, and as this sample size increases, eventually to an acceptable and desired number of observations.

Despite the limited number of observations, this model offers the benefit of examining strictly media-related revenues, and the model does so without having to make estimates based on assumptions that are likely to be unrealistic throughout the entire 1950—1975 period.

Results of this model (“Model 6”) are presented in Table 12. Unfortunately, the model does not appear to be a best fit estimate of the relationship between the independent variables and the dependent variables (“Prob > F” = .346). As with prior models, the explanatory power is minimal; the model only explains approximately 15% of the variance between the independent variables and the dependent variable ($R^2 = .1478$).

Only one variable is shown to be a statistically significant predictor of the dependent variable. Interestingly, for the first time, the “Change in Cable TV Adoption Rate” variable is shown to be statistically significant ($b = -.355$, $t = -1.89$). The model predicts that a one-unit increase in the change of the adoption rate of Cable TV will result in a .355-unit decrease in the change of media market structure. The results are interesting in that the change in the adoption rate of TV is no longer a statistically significant predictor, but change in the adoption rate of Cable TV is for the first time. This will be discussed further in Chapter 7.

Table 12. (Model 6). OLS regression estimates for model of Media Structure, 1976-2009.

	b	t	
Constant	0.021 (.036)	0.59	
Change in Television Adoption Rate [-]	-0.943 (21.32)	-0.04	
Change in Cable TV Adoption Rate [-]	-0.355 (.188)	-1.89	**
Change in GDP (Economic Climate) [-]	-0.479 (.763)	-0.63	
Regulatory Climate [+]	0.022 (.029)	0.77	
N	32		
R ²	0.1478		
Adjusted R ²	0.022		
F	1.17		
Prob > F	0.346		
Note: T-statistics are based on standard errors.			
For each variable, standard errors are indicated under the respective coefficient in parentheses.			
Symbols in brackets represent the expected direction of the co-efficient.			
****prob. <.001			
***prob. <.01			
**prob. <.05			
*prob. <.10			

I. Effect of the Internet on Media Market Structure

Chapter Four presented a strong argument for considering the Internet as a technology capable of influencing the market structure of the media industry. However, none of the models discussed in this study have yet to incorporate the adoption rate of this medium. This is because including Internet adoption in the previously presented models would result in fewer observations for all variables that would be considered in the models.

Since the Internet is still a relatively new medium that has nevertheless shown rapid growth in terms of overall adoption, there is a short time period that incorporates the adoption

pattern of the Internet by the general population. As a result, there are few observations or data points that show adoption levels for this medium. Indeed, this study shows only a twenty-year timeframe of Internet adoption, for a total of 19 observations. It is, therefore, prudent to examine this medium separately. It is also prudent to recognize that any conclusions suggested by an “Internet-only” model are conditional at best; as the timeframe of consumers’ adoption of the Internet expands, more observations can be captured and included in the model, which may increase its validity and predictive strength.

Results of the “Internet-only” model are presented in Table 13, and reaffirm the incomplete nature of the data. With only 19 data points, the results indicate that the model is not a good fit estimate of the relationship between the independent variables and the dependent variable (“Prob > F” = .192). Further, none of the independent variables in the model are statistically significant predictors of the dependent variable. Interestingly, out of all the models studied, this model indicates the highest explanatory power ($R^2 = .2638$), although such a finding is inconclusive yet encouraging at best.

Table 13. (Model 7). OLS regression estimates for model of Media Structure with Internet adoption as causal variable.

	b	t
Constant	-0.059 (0.050)	-1.19
Change in Internet Adoption Rate [-]	-0.011 (0.103)	-0.11
Change in GDP (Economic Climate) [-]	1.144 (1.006)	1.14
Regulatory Climate [+]	0.085 (0.044)	1.93
N	19	
R ²	0.2638	
Adjusted R ²	0.1165	
F	1.79	
Prob > F	0.192	
<p>Note: T-statistics are based on standard errors.</p> <p>For each variable, standard errors are indicated under the respective coefficient in parentheses.</p> <p>Symbols in brackets represent the expected direction of the co-efficient.</p> <p>***prob. <.001</p> <p>**prob. <.01</p> <p>*prob. <.05</p> <p>*prob. <.10</p>		

Chapter Seven

Discussion of Results

One of the objectives of this study has been to develop a model that can be used to examine the market structure of the media industry as a whole and explain the changes in the structure as measured by concentration of ownership. As discussed in Chapter Two, previous studies have established an empirical foundation for the idea that one influencing agent of an industry's market structure is technological innovation. Moreover, researchers have studied this effect of technological innovation specifically on the media industry, although these studies have focused on individual segments of the media industry, and not by looking at the media as a whole.

The idea to build upon this body of work in order to examine the relationship between technological innovation and the market structure of the media industry as a whole is particularly important now. This is because of the increasing convergence of the media industry, and the potential concentration of market power that could result from this convergence and consolidation. Because this convergence trend is still relatively young, the need for a "first attempt" to develop a model explaining the market structure of the media as a whole is timely. Certainly, any such "first attempt" should benefit from future examination and revision. The results of this study, which offers such a "first attempt," will benefit from such future examination and revision. Nevertheless, it still offers a positive first step in many respects.

The study has proposed a model that recognizes the potential influence that technological innovation, general economic conditions, and governmental regulatory policy could have on the market structure of the media. Chapter Six shows the model leads to inconclusive findings. Empirical analysis does not conclusively support the idea that radical innovation influences the market structure of the media industry. The inconclusive findings may be the result of a flawed

hypothesis as to the nature of the relationship between innovation and media market structure. Conversely, it is also possible that the inconclusive findings suggest problems with the construction and operationalization of the variables used to study this relationship. Indeed, this study provides clues as to how the model could be improved to provide the best level of explanatory and predictive power desired. All of the models studying changes in the adoption rate of television and changes in the adoption rate of cable television are reviewed and summarized in Section A. This review includes a discussion of each variable studied. Rather than presenting the models in the order in which they were discussed in Chapter Six, they are presented in an order that highlights those models that offer the most explanatory power.

In addition to offering an adequate level of explanatory power, any model should also be strongly grounded in a solid theoretical framework. Section B discusses the theoretical strength of the models examined in Section A, adding to the explanatory power examined in that section.

Section C then examines these models to determine which ones overall (i.e., both empirically and theoretically) best explain the causal influences of changes in media market structure. Having identified which model(s) best illustrate the relationship between the independent variables and the dependent variable, Section C also explores these “best” models to test this study’s hypotheses, as presented in Chapter Four, with the idea of identifying which of the models the hypotheses proposed in that chapter are supported.. For Sections A-C, the first six models reported in Chapter Six will be discussed. These models consider, as independent variables, both the change in the adoption rate of television as well as the change in the adoption rate of cable television. The last model—which considers Internet adoption as a causal variable will be discussed separately in Section D.

The final two sections look beyond the scope of this study. Section E considers future research initiatives directly related to the model of choice proposed in Section B, specifically

considering ways in which the model can provide greater explanatory and predictive power.

Section F looks beyond this model to consider other relevant questions related to media market structure.

A. Assessing Trends in Media Market Structure

Chapter Seven provided evidence that the market structure of the media industry has experienced different phases and different trends. These results, therefore, show that the media industry has not been plagued with a constant trend of increasing concentration and diminishing competition. Likewise, the industry has not always been characterized by consistent period of increasing competition. Such changes in the direction of the trend reaffirm the importance of identifying those variables that can act as a catalyst for these changes and influence both the direction and magnitude of any trends in the market structure of the media industry.

In addition, the results in Chapter Seven indicate that for almost the entire time period of this study, the market structure of the media has been below the 1500-point level that is considered to be “moderately concentrated,” and within the range that is considered to be “unconcentrated.” In other words, when viewing the “media as a whole,” the media industry is generally characterized by unconcentrated and diverse ownership. Indeed, some points in time during the early years of this study’s timeframe indicate a market structure that is “moderately concentrated.” However, these are generally when including the non-media revenues generated by conglomerates with media operations. Even when including these revenues, the media industry is considered “unconcentrated” as far back as 1963 and remains as such throughout the remainder of the study.

B. Assessing Empirical Strengths of the Models

Of the five models considered, only one—Model 2—offers a best fit estimate of the relationship between the independent variables and the dependent variable (“Prob “F” = .0291, F

= 2.96). One other—Model 4—approaches a level consistent with being a best fit estimate (“Prob “F” = .0573, F = 2.47).

Model 2 eliminates the nine conglomerates from consideration in the years 1950-1975 by assuming market shares of 0%. Not only does this model offer the best fit estimate out of all models considered; it also finds two of the four causal variables to be statistically significant predictors of the market structure of the media industry. First, the model gives some support to the idea that technological innovation influences the market structure of the media by showing change in the adoption rate of television to be a statistically significant predictor of changes in media market structure ($b=-.755$, $t=-1.35$, $p<.10$). In addition, the general economic climate as reflected by changes in GDP also are a statistically significant predictor of changes in media market structure ($b=-1.2$, $t=-2.32$, $p<.05$). In this model, neither the change in Cable TV adoption rate nor the regulatory climate as represented by the political party in power is a statistically significant independent variable.

The other model that comes close to generating a best fit estimate—Model 4—addresses market shares for each of the nine conglomerates by assuming a market share during 1950—1975 timeframe that is equal to its average market share during the 1976—2009 timeframe. This model also finds two causal variables to be statistically significant predictors of media market share. As with the prior model, change in economic conditions (GDP) is a statistically significant predictor of change in media market structure ($b=-.757$, $t=-1.61$, $p<.10$). However, this model also indicates that change in the adoption rate of cable television is a statistically significant predictor of change in media market structure ($b=-.096$, $t=-1.00$, $p<.10$). Neither of the other two hypothesized causal variables—change in the adoption rate of television, or regulatory environment—is shown to be statistically significant.

Two additional models offer some empirical power, as each reports one variable that is statistically significant and each approaches a level consistent with being a best fit estimate. Each of these models incorporates the unsegmented revenue data for the years 1950-1975; however, the market shares associated with the nine conglomerates are treated differently.

In one case—Model 5, results of which are reported in Table 11—market shares are estimated based on the market shares for the years with segmented revenues (i.e., 1975—2009) and based on a trend during the 1950—2009 timeframe. This model is not a best fit estimate although it approaches that distinction (“Prob > F” = .0735). The second model—Model 3—adjusts the market share only for RCA by eliminating the company from consideration during the 1950—1975 timeframe. In this case, the model, while approaching a level consistent with a best fit model (“Prob > F” = .1017), does not reach the desired level.

For Model 4 and Model 5, only one variable—change in economic condition (GDP)—is statistically significant. Neither of the variables specifically indicating technological innovation as measured by adoption rates for new technologies is statistically significant. As in the case of all of the other two models reviewed, regulatory environment is not a statistically significant predictor of the dependent variable.

Finally, two of the models examined seem to offer little if any empirical support for the relationship between the independent variables and the dependent variable. For each of these models, one causal variable is found to be significant, but neither is a best fit estimate of the relationship between all of the independent variables and the dependent variable. In one model—Model 1—revenues for all media companies are included, and no adjustment is made for the conglomerates during the 1950—1975 period. As a result, non-media revenues are included in calculating market shares, which leads to skewed measurements of annual market concentration (i.e., HHI). In this model—results of which are illustrated in Table 4—one causal

variable, change in economic conditions (GDP), is statistically significant ($b=-1.24$, $t=-1.57$, $p < .10$). The F-statistic clearly indicates that this model is not the best estimate of the relationship which is being studied (“Prob > F” = .4584).

The remaining model—Model 6—considers media-only revenues from all companies in the study. As a result, the sample size is smaller. In this case, the change in the adoption rate of cable television is a statistically significant predictor of change in media market structure ($b=-.355$, $t=-1.89$, $p < .05$), but, as with Model 1, the F-statistic indicates Model 6 is not the best fit estimate of the relationship between the independent and dependent variables (“Prob > F” = 0.346).

Overall, the varying levels of empirical strength of each of the models supports the idea that as of yet, the strongest model to explain changes in media market structure has not been determined. However, each of the two primary independent variables—change in adoption of television, and change in adoption of cable television—are shown to be statistically significant predictors in one of the two most empirically sound models respectively. It is not possible to absolutely conclude that both variables would be statistically significant in any ideal model, but the results at a minimum provide empirical evidence to justify considering both of these variables. As will be discussed further in Section H, future attempts to revise, modify and strengthen any of these models should continue to include both of these variables.

Regarding the control variables, the empirical findings provide clear and strong support for the idea that changes in economic conditions as measured by GDP is a statistically significant predictor of changes in media market structure. Only one model—that with the smallest sample size—did not show this control variable to be statistically significant. The impact of this finding as it relates to hypothesis testing will be discussed further in Section F, and the implication for future studies will be discussed further in Section H. The remaining control variable, which

measured the impact of the general regulatory climate on changes in the market structure of the media, was not shown to be a statistically significant predictor in any of the models. Such a consistent finding could lead to a conclusion that regulation does not impact the market structure of the media. This will be discussed further in Section G.

C. Assessing Theoretical Strengths of the Models

Because of the challenges resulting from the different methodologies used to calculate the data that was used for this study, the models are based on different theoretical assumptions as to how best to determine measurements of annual market structure of the media industry. While Section A compares the different models from an *empirical* perspective to evaluate the relative strengths of each, any evaluation of all the models should also include an assessment of which models are grounded in the strongest *theoretical* assumptions, or which models avoid weaker assumptions.

Because Model 6 relies on media-only revenue data, there are no adjustments made to any of the data. As such, it can be argued that the results are the purest in terms of not being skewed by extraneous revenues, or by any adjustments used in order to minimize or eliminate the effect of those extraneous revenues. One of the main weaknesses of this model is the small sample size ($N=32$), but this weakness can (and should) eventually be overcome in future studies by adding additional observations, or in this case, additional years of HHI values based on subsequent segmented revenue data. Indeed, this model has, as one of its inherent strengths, the characteristic that its main limitation of a small sample size is probably the easiest in which to address and overcome. It is this model that found changes in adoption of cable television to be a statistically significant predictor of change in media market structure.

Of the remaining models, which must all deal with the problematic nature of combining segmented and unsegmented revenue data, Model 5 seems to offer the most realistic approach to

addressing the problem of the unsegmented data. This model doesn't ignore the problem (as does Model 1), nor does this model completely ignore selected media companies from consideration for any year or years (as do Models 2 and 3). Rather, it estimates market shares for nine conglomerates during the years 1950—1975. In doing so, Model 5 recognizes that these market shares would fluctuate, unlike Model 4, which assume market shares remain constant year-to-year. Further, the fluctuations that are assumed are based on the actual fluctuations from year-to-year for each company, when all consolidated revenues are used to measure each company's market share. The model, therefore, relies on assumptions that are grounded in the strongest theoretical foundation for explaining how and why the adjustments were made in order to address the issue of revenues generated by non-media operations for these nine conglomerates.

In Model 5, as with Model 6 which offers the strongest theoretical foundation of support, the variable measuring change in the adoption rate of cable television was found to be a statistically significant predictor of the dependent variable ($b = -.096$, $t = -1.00$, $p < .10$). Additionally, changes in economic conditions (GDP) were also statistically significant ($b = -7.57$, $t = -1.61$, $p < .10$) which is contrary to the findings in Model 6, but consistent with the findings in all of the other models that tested for the effect of changes in the adoption rates of both television and cable television.

Combined, these two models offer a compelling argument that changes in adoption rate of cable television, as an example of technological innovation, does influence the changes in the market structure of the media industry.

As stated earlier in this section, the remaining models, while seeking to provide different perspectives on how the issue of unsegmented revenues should be address, nevertheless approach this issue with assumptions that are less realistic and less likely, and therefore do not offer the same theoretical foundation as offered by Models 5 and 6.

D. Identifying the Model(s)-of-Choice

In Section A, two models were identified as those which offered the strongest empirical justification as the model-of-choice for explaining the causes of changes in media market structure. Similarly, Section B identified two models with the strongest theoretical support for being the best model to explain the causes of these changes. No single model is judged to be a model-of-choice by both the empirical and theoretical approaches. As such, focusing on one model for hypothesis testing purposes requires a more intuitive approach that considers the empirical and theoretical strengths, but also includes other considerations.

Because each model has some inherent weakness due to the problematic nature of the revenue data for the 1950-1975 timeframe, one additional consideration when selecting a model-of-choice should be that the model's inherent weakness can reasonably and convincingly be overcome in as parsimonious a manner as possible. Regarding the problem data, for example, it is neither reasonable or realistic to assume that additional information can be obtained that would result in the ability to accurately identify and segregate media-only revenues for the 1950-1975.

Of the models studied, the one which offers the best opportunity to improve on the integrity of the data is Model 6, which only considered revenues after 1975 (i.e., segmented revenues only). The reason for this is that the major weakness of this model is that there are only 32 observations in the sample size. As discussed in Section B, each year of reported earnings subsequent to this study increases the number of valid observations, and therefore increases the validity of the model. Section B also recognizes that this model is one of the strongest from a theoretical perspective, albeit the empirical aspect of this model is weak. Additional observations should strengthen this aspect of the model, thereby making it a model that should be used and updated.

While this model does not represent a best fit estimate of the relationship between the independent variables and the dependent variable (“Prob > F” = .346), it is of interest to note that all four models which include adjusted 1950—1975 revenues are shown to be a best fit or approaching an F-statistic that is consistent with a “best fit” model. This could indicate the positive impact that additional observations might have on creating a “best fit” model that provides explanatory and predictive power. It could also reaffirm the importance of making sure that revenues used are truly media-only revenues, as the model which included unsegmented revenues was the worst model of all in terms of achieving a best fit.

E. Understanding the Effect of Internet Adoption

As expected, the limited number of observations available to study the pattern of Internet Adoption makes it difficult to identify any trends or reach any conclusions with respect to the influence that Internet Adoption has on media market structure. With only 19 observations, we cannot conclude that the model is a best fit (“Prob > F” = .192). Further, none of the independent variables show any statistical significance as a predictor of changes in the market structure of the media industry (see Table 13). Obviously this does not mean that the Internet specifically, or technological innovation in general, has no influence on the market structure of the media industry. At best, it merely leaves as undetermined the nature of the relationship between Internet Adoption and media market structure. As with the models examining the effect of changes in television adoption and changes in cable TV adoption, a longer timeframe with additional observations of Internet Adoption rates will be helpful to more accurately identify and define any affect that Internet Adoption has on media market structure.

F. Hypothesis Testing

As concluded in Section C, Model 6, which relies on segmented revenues only, should be the “model of choice,” particularly when selecting a model from which to build upon and modify

in future studies. As such, it is appropriate to first consider Model 6 when testing the hypotheses proposed in Chapter Four. However, since it is problematic to reach firm conclusions until a more robust model is developed, it is appropriate to also examine the other models to see if they provide some indication that might lead to a different conclusion. In essence, the nature of the “dueling models” experienced in this study suggests that Model 6 should be used to provide an initial indication as to whether each hypothesis is supported or unsupported, and the other models should be used to indicate if and how such support may be impacted with the advent of a more robust model.

Model 6, the “model of choice,” concludes that changes in the adoption rate of television is not a statistically significant predictor of changes in the market structure of the media industry ($b=-9.43$, $t=-.04$). Accordingly, we cannot reject the null hypothesis that changes in the adoption rate of television do not result in changes in changes in the market structure of the media industry.

It is important, however, to remember that this independent variable showed virtually no variation during the 1975—2009 timeframe covered by this model. This is understandable since, by 1975, over 97% of households had a television. Any meaningful variation in the adoption rate of television occurred in the 1950’s and 1960’s. By eliminating these two decades from consideration, Model 6 fails to capture the true trend of the adoption pattern of television, and thus any meaningful changes from year-to-year during this crucial time. As a result, the inability to reject H_1 is as likely to be caused by the failure to capture television’s true adoption pattern as it is likely to be caused by the lack of a causal relationship between this independent variable and the dependent variable of changes in the market structure of the media industry.

The idea that changes in the adoption rate of television *might* be a statistically significant predictor of changes in media market structure is supported by the results of Model 2 and Model

5. Model 2, which eliminates revenues from the nine conglomerates for the 1950—1975 period, finds changes in the adoption rate of television to be a statistically significant predictor of changes in the market structure of the media industry ($b=-.755$, $t=-1.35$).

Similarly, Model 5, which considers adjusted market shares for these nine conglomerates that allow for year-to-year fluctuations during the 1950-1975 timeframe, also finds a statistically significant relationship between this independent variable and the dependent variable ($b=-.685$, $t=1.35$). Given the conflicting results, and given that the model of choice indicates a statistically insignificant relationship, it is prudent to conclude that H_1 is not supported.

Model 6 also indicates that the adoption rate of cable television is a statistically significant predictor of changes in the market structure of the media industry ($b=-.355$, $t=-1.89$). As such, despite the limitations previously discussed with regards to this and the other models, H_2 is supported, which allows us to reject the null hypothesis that changes in the adoption rate of cable television do not result in changes in the market structure of the media industry. Moreover, the results confirm the anticipated positive direction of the relationship between two variables. Regarding the previously discussed limitations, it should be reiterated that this is the only model that finds this independent variable to be a statistically significant predictor of the dependent variable.

To test the final hypothesis (H_3), results from Model 7 are utilized. This hypothesis proposes a causal relationship between changes in the adoption rate of the Internet and changes in media market structure. The model indicates no statistical significance in the independent variable ($b=-.011$, $t=-.11$). Moreover, neither of the control variables are found to be statistically significant predictors of the dependent variable, and the model itself is not a good fit estimate of the relationship between the independent variables (including control variables) and the dependent variable (“Prob > F” = .192).

The null hypothesis, which states that changes in the adoption rate of the Internet do not affect changes in the market structure of the media industry, cannot be rejected. It is likely that the failure to reject the null hypothesis is due to the small sample size ($N=19$). As discussed in Section D, the nature of the relationship between this independent variable and the dependent variable should be examined when more observations allow for a more statistically acceptable sample size.

G. Improving the Model through Future Research Initiatives

At a minimum, the discussion in the previous sections in this chapter supports the idea that future research efforts are warranted to specifically examine the proposed model used in this study for possible refinement, but also to study the general question of what influences help to shape the market structure of the media. Indeed, it may be determined that answering the larger, broader question requires a different approach which ultimately may provide new insight into how best to refine the model that is examined in this study. Conversely, refining the model specifically proposed in this study as the preferred model may lead to improved explanatory and predictive power, which may ultimately help answer the more general questions regarding media market structure.

The results of this study, while inconclusive in most instances, do nothing to take away from the theoretical foundation for the idea of a causal relationship between technological innovation and media market structure. Rather, the empirical basis of this study—reflected in the inability to develop an adequate sample size of relevant and consistent data—proved to be the most problematic aspect of developing a solid model of media market structure. In a sense, the problematic nature of the data is a positive finding because there are several manageable and practical approaches that can be employed in future studies. At a minimum, it is clear that over time, future years of media-only revenue data will provide a larger sample size of observations of

media market structure. As this sample size increases, the need to include early years of unsegmented data is minimized, and the model will be based on data from one standard data set with no variations in data collection or reporting methods.

If future studies are to rely on new years of media-only revenue data, it will probably be necessary to eliminate “Changes in television adoption” as an independent variable. Using media-only revenue data requires the analysis to begin with the year 1975; by this point, over 97% of American households had television, so there is virtually no variation in this variable when the timeframe is 1975 and beyond. Without any variation in this variable, it is impossible to identify any influence that television adoption would have on the variation of any dependent variable.

Another approach to examining this issue, and yet another opportunity for a future research endeavor, is to change the way in which the dependent variable is defined and measured. Doing so would require finding a suitable measure of market structure that can be used in lieu of calculating a measurement based on market shares, as is the case with the HHI. The HHI has been shown to be one of the most robust and respectable measures of market concentration but the problem with the revenue data for the 1950-1975 timeframe makes it difficult to calculate HHI at enough points in time. Accordingly, there is a compelling reason to consider other ways to measure market structure without relying on revenue data.

Several studies have defined an industry’s market structure by tracking the number of firms within an industry (Achs & Audrestch, 1987; Mazzucato, 2000). While there are some weaknesses with this approach, it nonetheless eliminates the problems experienced in this study by having to rely on different data sources that use different methods for calculating and reporting revenue figures for companies with media operations. With this approach, the entire

1950-2009 timeframe could be studied in a way that relies on using only one approach for operationalizing media market structure as the dependent variable.

Both of these two approaches are designed to improve the reliability of the model—through additional observations of the variables by adding subsequent years of observations—and the validity of the model by incorporating variables that are more accurately and fully measuring the desired variable (in this case, market structure). Adding additional observations also increases the degrees of freedom in the model, allowing for additional variables to be included and considered. For example, future studies should examine the interaction between variables, in particular the interaction between each of the independent variables and the control variable of regulatory environment.

It is interesting that none of the models indicated a statistically significant relationship between the regulatory environment and the dependent variable. This seems counter-intuitive and contrary to previous work cited in Chapters Two and Five regarding the effect of regulation on economic conditions in general and market structures in particular. This may be due to the fact that, indeed, regulation does not have a meaningful and predictable effect on media market structure. However, the failure to find significant results may simply indicate the need to find a better way to operationalize the concept of regulation into an appropriate and measureable variable. Future studies should also consider this opportunity, and explore other ways of defining regulation in order to measure its effect on the media industry, specifically as it relates to market structure.

Doing so may create new challenges, including the ability to quantifiably measure a causal relationship between these variables. Several scholars have, indeed, reported on the effect of a specific regulation on the media industry, such as the effect of the Newspaper Preservation Act of 1970 (Martin, 2008). Others have examined how a particular regulation (e.g., The

Financial Interest and Syndication Rules) has specifically impacted media ownership (Einstein, 2004). While such studies may rely on some type of quantitative analysis, generally the quantitative aspect of the analysis has been used to define the variables independently of each other, and not to define or measure a relationship between the variables. These studies show the difficulty in developing a model that effectively quantifies a causal relationship between the particular regulation and media market structure. It may be necessary to assess the impact of regulation on media market structure in a more qualitative or contextual manner; future research efforts should explore this to properly incorporate the effect of regulation on the market structure of the media.

H. Additional Research Initiatives

This study—and the proposed future research opportunities identified in Section G—have focused on examining the market structure of the media industry as a dependent variable in order to better understand those forces which shape media market structure. When considering innovation as a potential influencer of the market structure of the media industry, this study has focused specifically on radical innovations. As discussed in Chapter Three, incremental innovations may have a distinct and possibly different relationship with respect to media market structure. Future research efforts should examine this relationship as well.

The question of what *effects* may result from a concentrated or competitive media industry are equally compelling. Indeed, one of the reasons many media critics are so concerned with media market structure is because of the impact that the media industry has on the free exchange of a diversity of ideas, perspectives, and opinions (Baker, 2007; Nichols & McChesney, 2009).

Numerous studies have attempted to identify the impact that a concentrated media market has on the diversity of *content* produced and distributed by the media industry (Chambers, 2001;

Drushel, 1998). Results of such studies are varied, reflecting the varied approaches to defining the problem, as well as indicating an inconclusive nature with respect to resolving the problem. Such studies will likely continue to be undertaken, but with likely differing results. Future studies examining the effect of media market structure on content diversity would likely be best served by attempting to understand under what conditions a concentrated industry leads to increased content diversity, and under what conditions a concentrated industry leads to decreased content diversity.

Another possible effect of the market structure of the media industry may be in shaping the public's trust of the media. Does a concentrated (or competitive) media industry ultimately result in the public's increased trust or distrust? Such a research question would likely require examining the possibility of intermediate variables. For example, it may be that media market structure influences media content diversity (as discussed above, possibly under certain conditions), which includes news content, which in turn affects the public's trust of the media.

It is also possible that media market structure influences the public's perception of the media, which in turn helps shape the public's level of trust in the media, regardless of any change in content diversity. Such questions are natural extensions of this study, particularly once a reliable and valid measurement of media market structure is identified. Moreover, if any relationship exists between media market structure and the public's trust in the media, it could (and should) have implications when considering future media policy initiatives, particularly as it relates to media ownership issues.

There is some preliminary data showing a strong correlation between a competitive (i.e., deconcentrated) media market structure and the public's trust in the media. Since 1997, Gallup Polling has conducted frequent surveys designed to measure the public's trust of the media

(Morales, 2012).¹⁰ Results of those indicating a “great deal” or “fair amount” of trust are negatively correlated with the level of ownership concentration in the media, as measured by HHI. Table 14 shows the correlation, and Figure 7 illustrates this relationship over the 13-year period. To be sure, thirteen observations or measurements of the public’s trust in the media is too small of a sample size to reach any conclusions. Further, it is clear that a strong correlation does not in itself support the idea that there is a causal relationship. Nevertheless, such a strong correlation warrants—at a minimum—a closer look at this relationship in order to further understand if and how the market structure of the media industry does in fact have an influence on the level of trust that citizens place in the media.

Table 14. Pearson Correlations: HHI and Media Trust.

	HHI	Media Trust
HHI	1.0000	-0.748*
Media Trust	-0.748*	1.0000
<u>*Correlation is significant at the p<.001 level (two-tailed)</u>		

¹⁰ Specifically, the organization has asked the following question: *“In general, how much trust and confidence do you have in the mass media – such as newspapers, TV, and radio – when it comes to reporting the news full, accurately, and fairly – a great deal , a fair amount, not very much, or none at all?”*

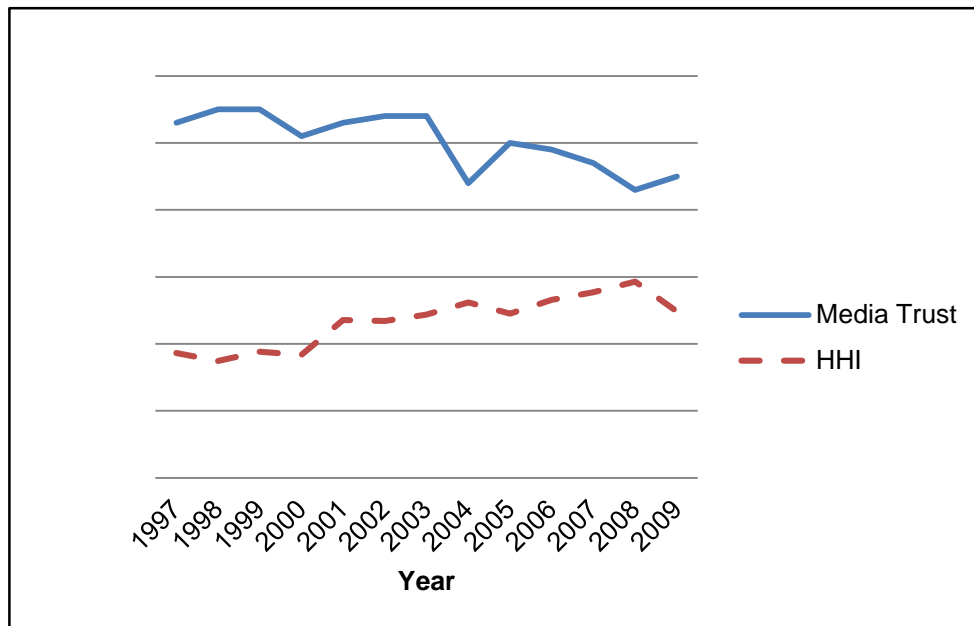


Figure 7. Media Concentration and Media Trust, 1997—2009. (Illustration of the relationship between media concentration—as measured by HHI, and the public’s level of trust in the media, as measured by Gallup polls, 1997—2009.)

Chapter Eight

Conclusion

This study has examined the media industry in order to identify and measure how technological innovations affect the industry's market structure. Building upon previous studies of individual segments within the media industry, this study has approached the research question in a new way by considering the media industry as a whole. This approach recognizes the changing nature of the media industry due to convergence of multiple media platforms and the related horizontal and vertical integration that continues to occur within the industry. Any new approach to examining a research question generally requires new ways of defining and operationalizing variables, and new models to incorporate these variables. In examining the relationship between technological innovation and the market structure of the media industry as a whole, this study proposes an initial model that can be further refined. This model considers specific technological innovations that have impacted the media industry over the last 60 years, while also considering other exogenous variables such as government regulation and economic conditions as other influences of media market structure.

Results from this study are inconclusive in terms of explaining how technological innovation influences the market structure of the media industry. At a minimum, the study does not contradict the idea that technological innovation influences the market structure of the media industry. Indeed, both TV adoption and Cable TV adoption, as measured by changes in their respective adoption rates, were found to be statistically significant predictors of media market structure in at least one variation of the proposed model. Rather, the inconclusive findings point to the need to find a way to capture more observations of the variables.

Indeed, the multiple models considered in Chapter Six, and the ultimate strength of this model will come from not just from understanding how technological innovation influences the

market structure of the media industry, but also how such innovation interacts with other variables in achieving this influence. Having a more complete understanding of how and why the market structure of the media industry changes can certainly provide a foundation for government's efforts to develop sound media policy, or for businesses looking to make strategic decisions within the competitive landscape of the media industry. Until then, agencies and businesses face the risk of making strategic decisions that may be well-intentioned, but ultimately prove to be problematic and counterproductive. The media industry is full of such decisions: In 2001 AOL and Time Warner decided that a merger-of-equals was sound business policy, only to decide eight years later that the merger had failed, and announced the two operations would split back into two separate companies (Musgrove & Ahrens, 2009). Similarly, the FCC ultimately concluded that its Financial Interest and Syndication Rules were ineffective in ensuring competition among producers of media content (Einstein, 2004).

In a sense, the tentative findings resulting from this study could be viewed as consistent with the work of previous scholars who have concluded that innovation's effect on market structures, while present and significant, is best understood in contextual terms, allowing for the unique characteristics of each innovation, each industry, and each situation. As stated early in this dissertation, Mansfield acknowledged that an industry could become more concentrated after the introduction of new technology, but that such an effect would "depend on the nature and sources of the new technology" (p. 209, 1983). In addition, the words of Scherer presented earlier are also appropriate. In discussing the debate over Schumpeterian theory, Scherer's observation could be extended to the general debate over innovation and market structure when he noted, "the links between market structure, innovation, and economic welfare are extremely complex" (p. 1421, 1992). This complexity, however, should not be seen as an excuse to dismiss

or ignore these links, but rather, as an inspiration and motivation to continue to study and better understand them.

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Appendix A. Companies Included in Study

Year Reported: 2009

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| 1. A.H. BELO | 44. LIONS GATE ENTERTAINMENT CP |
| 2. ALLBRITTON COMMUNICATIONS
CO | 45. LODGENET INTERACTIVE CORP |
| 3. ANSWERS CORP | 46. MARTHA STEWART LIVING
OMNIMEDIA |
| 4. AOL | 47. MCCLATCHY |
| 5. BEASLEY BROADCAST GROUP | 48. MCGRAW HILL |
| 6. BELO | 49. MEDIA GENERAL |
| 7. CABLEVISION | 50. MEDIACOM COMMUNICATIONS
CORP |
| 8. CARMIKE CINEMAS INC | 51. MEREDITH CORP |
| 9. CBS | 52. MICROSOFT |
| 10. CHARTER COMMUNICATIONS INC | 53. MORRIS PUBLISHING GRP LLC |
| 11. CINEMARK HOLDINGS INC | 54. NEW FRONTIER MEDIA INC |
| 12. CITADEL BROADCASTING CORP | 55. NEW YORK TIMES CO -CL A |
| 13. CLEAR CHANNEL
COMMUNICATIONS | 56. NEWSCORP |
| 14. CLEARWIRE CORP | 57. NEXSTAR BROADCASTING GROUP |
| 15. COGENT COMMUNICATIONS GRP | 58. NTN BUZZTIME INC |
| 16. COMCAST | 59. OUTDOOR CHANNEL HLDGS INC |
| 17. COMTEX NEWS NETWORK INC | 60. PEARSON PLC -ADR |
| 18. CROWN MEDIA HOLDINGS | 61. PLAYBOY ENTERPRISES |
| 19. CUMULUS MEDIA INC | 62. RADIO ONE |
| 20. DAILY JOURNAL CORP | 63. REGENT COMMUNICATIONS INC |
| 21. DIRECT TV | 64. RHI ENTERTAINMENT INC |
| 22. DISCOVERY COMM | 65. SAGA COMMUNICATIONS -CL A |
| 23. DISH NETWORK CORPORATION | 66. SALEM COMMUNICATIONS CORP |
| 24. DISNEY | 67. SALON MEDIA GROUP INC |
| 25. DREAMWORKS SKG | 68. SCHOLASTIC CORP |
| 26. EARTHLINK INC | 69. SCRIPPS |
| 27. EMMIS BROADCASTING | 70. SCRIPPS NETWORK INTERACTIVE |
| 28. ENTERCOM COMMUNICATIONS
CORP | 71. SEVEN ARTS PICTURES PLC |
| 29. ENTRAVISION | 72. SHENANDOAH TELECOMMUN CO |
| 30. FISHER COMMUNICATIONS INC | 73. SINCLAIR |
| 31. GANNETT | 74. SIRIUS |
| 32. GATEHOUSE MEDIA INC | 75. SONY |
| 33. GENERAL ELECTRIC | 76. SUREWEST COMMUNICATIONS |
| 34. GOOGLE | 77. THESTREET.COM |
| 35. GRAY TELEVISION | 78. THOMSON-REUTERS CORP |
| 36. IAC/INTERACTIVECORP | 79. TIME WARNER CABLE |
| 37. INTERNET AMERICA INC | 80. TIME WARNER |
| 38. JOURNAL COMMUNICATIONS INC | 81. TIVO |
| 39. KINGS ROAD ENTERTAINMENT | 82. UNITED ONLINE INC |
| 40. LAMAR ADVERTISING | 83. UNIVISION |
| 41. LEE ENTERPRISES | 84. VIACOM |
| 42. LIBERTY | 85. VIVENDI |
| 43. LIN TV CORP | 86. WARNER MUSIC GROUP CORP |

Year Reported: 2009 (cont'd.)

87. WARWICK VALLEY TELEPHONE
CO
88. WASHINGTON POST
89. WEBMD HEALTH CORP
90. WESTWOOD ONE

91. WILEY (JOHN) & SONS -CL A
92. WORLD WRESTLING ENTMT INC
93. YAHOO

Year Reported: 2005

1. A.H. BELO
2. ACME COMMUNICATIONS
3. ADELPHIA
4. ALASKA COMMUNICATIONS SYS GP
5. ALLBRITTON COMMUNICATIONS CO
6. ALLIANCE ATLANTIS COMM -CL B
7. AMERICAN MEDIA OPERATIONS
8. ANSWERS CORP
9. BEASLEY BROADCAST GROUP
10. BELO
11. CABLEVISION
12. CARMIKE CINEMAS INC
13. CBS
14. CHARTER COMMUNICATIONS INC
15. CINEMARK HOLDINGS INC
16. CITADEL BROADCASTING CORP
17. CKRUSH INC
18. CLEAR CHANNEL COMMUNICATIONS
19. CLEARWIRE CORP
20. CNET NETWORKS INC
21. COGENT COMMUNICATIONS GRP
22. COMCAST
23. COMTEX NEWS NETWORK INC
24. COX COMMUNICATIONS
25. COX RADIO INC -CL A
26. CROWN MEDIA HOLDINGS
27. CT COMMUNICATIONS INC
28. CUMULUS MEDIA INC
29. D & E COMMUNICATIONS INC
30. DAILY JOURNAL CORP
31. DIRECT TV
32. DISCOVERY COMM
33. DISNEY
34. DOW JONES
35. DREAMWORKS SKG
36. DSL.NET INC
37. EARTHLINK INC
38. ECHOSTAR
39. EMMIS BROADCASTING
40. ENTERCOM COMMUNICATIONS CORP
41. ENTRAVISION
42. EQUITY MEDIA HOLDINGS CORP
43. FAMILY ROOM ENTMT CORP
44. FISHER COMMUNICATIONS INC
45. FUSION TELECOMMUNICATIONS
46. GANNETT
47. GATEHOUSE MEDIA INC
48. GEMSTAR-TV GUIDE INTL INC
49. GENERAL ELECTRIC
50. GOOGLE
51. GRANITE BROADCASTING
52. GRAY TELEVISION
53. HEARST-ARGYLE
54. HECTOR COMMUNICATIONS CORP
55. HOLLINGER
56. HOUGHTON MIFFLIN CO
57. IAC/INTERACTIVECORP
58. IBROADBAND INC
59. INSIGHT COMMUNICATIONS CO
60. INTERNET AMERICA INC
61. JOURNAL COMMUNICATIONS INC
62. JOURNAL REGISTER CO
63. KINGS ROAD ENTERTAINMENT
64. KNIGHT RIDDER
65. LAMAR ADVERTISING
66. LEE ENTERPRISES
67. LIBERTY
68. LIN TV CORP
69. LIONS GATE ENTERTAINMENT CP
70. LODGENET INTERACTIVE CORP
71. MARTHA STEWART LIVING OMNIMD
72. MCCLATCHY
73. MCGRAW HILL
74. MEDIA GENERAL
75. MEDIACOM COMMUNICATIONS CORP
76. MEDIANEWS GROUP INC
77. MEREDITH CORP
78. METRO INTL SA -CL B
79. MICROSOFT
80. MONARCH SERVICES INC
81. MORRIS PUBLISHING GRP LLC
82. NAPSTER INC
83. NASPERS LTD -ADR
84. NELSON (THOMAS) INC
85. NEW FRONTIER MEDIA INC
86. NEW YORK TIMES CO -CL A
87. NEWSCORP
88. NEXSTAR BROADCASTING GROUP
89. NTN BUZZTIME INC
90. OUTDOOR CHANNEL HLDGS INC
91. PAXSON COMMUNICATIONS
92. PEACE ARCH ENTMT GROUP INC

Year Reported: 2005 (cont'd.)

- 93. PEARSON PLC -ADR
- 94. PIXAR
- 95. PLAYBOY ENTERPRISES
- 96. PROTSOURCE CORP
- 97. RADIO ONE
- 98. READERS DIGEST
- 99. REGENT COMMUNICATIONS INC
- 100. REUTERS PLC(GBR)-ADR
- 101. SAGA COMMUNICATIONS -CL A
- 102. SALEM COMMUNICATIONS CORP
- 103. SALON MEDIA GROUP INC
- 104. SCHOLASTIC CORP
- 105. SCRIPPS
- 106. SHENANDOAH TELECOMMUN CO
- 107. SINCLAIR
- 108. SIRIUS
- 109. SONY
- 110. SUN-TIMES MEDIA GROUP INC
- 111. SUREWEST COMMUNICATIONS
- 112. THESTREET.COM
- 113. THOMSON CORP
- 114. TIME WARNER
- 115. TIVO
- 116. TRIBUNE CO
- 117. UNITED BUSINESS MEDIA -ADR
- 118. UNITED ONLINE INC
- 119. UNIVISION
- 120. VIACOM
- 121. VIVENDI
- 122. WARNER MUSIC GROUP CORP
- 123. WARWICK VALLEY TELEPHONE CO
- 124. WASHINGTON POST
- 125. WEBMD HEALTH CORP
- 126. WESTWOOD ONE
- 127. WILEY (JOHN) & SONS -CL A
- 128. WORLD WRESTLING ENTMT INC
- 129. XANADOO CO
- 130. XM SATELLITE
- 131. YAHOO
- 132. YOUNG BROADCASTING

Year Reported: 2000

1. ACKERLEY GROUP INC
2. ACME COMMUNICATIONS
3. ADELPHIA
4. ALASKA COMMUNICATIONS SYS
GP
5. ALLBRITTON COMMUNICATIONS
CO
6. ALLIANCE ATLANTIS COMM -CL B
7. AMERICA ONLINE
8. AMERICAN LAWYER MEDIA INC
9. AMERICAN RADIO SYS CORP-CL A
10. ARAHOVA COMMUNICATIONSC-1
11. ASCENT ENTERTAINMENT GROUP
12. ASK JEEVES INC
13. AT&T
14. BEASLEY BROADCAST GROUP
15. BELO
16. BENEDEK COMMUNICATIONS
CORP
17. BERTLESMANN
18. BIG CITY RADIO INC -CL A
19. BRILL MEDIA CO LLC
20. CABLEVISION
21. CARMIKE CINEMAS INC
22. CHANCELLOR BROADCASTNG -CL
A
23. CHARTER COMMUNICATIONS INC
24. CHRIS CRAFT
25. CINCINNATI BELL INC
26. CINEMARK USA INC
27. CINEMASTAR LUXURY THEATERS
28. CITADEL BROADCASTING CORP
29. CLARK (DICK) PRODUCTIONS INC
30. CLASSIC COMMUNICATIONS INC
31. CLEAR CHANNEL
COMMUNICATIONS
32. CNET NETWORKS INC
33. COMCAST
34. COMTEX NEWS NETWORK INC
35. COX COMMUNICATIONS
36. COX RADIO INC -CL A
37. CROWN MEDIA HOLDINGS
38. CT COMMUNICATIONS INC
39. CTN MEDIA GROUP INC
40. CUMULUS MEDIA INC
41. DAILY JOURNAL CORP
42. DISCOVERY COMM
43. DISNEY
44. DOW JONES
45. DSL.NET INC
46. EARTHLINK INC
47. EASYRIDERS INC
48. ECHOSTAR
49. ELEPHANT TALK COMM INC
50. EMMIS BROADCASTING
51. ENTERCOM COMMUNICATIONS
CORP
52. ENTRAVISION
53. EZ COMMUNICATIONS INC -CL A
54. FAMILY ROOM ENTMT CORP
55. FASTNET CORP
56. FILM ROMAN INC
57. FIRST LOOK MEDIA INC
58. FISHER COMMUNICATIONS INC
59. GANNETT
60. GEMSTAR-TV GUIDE INTL INC
61. GENERAL ELECTRIC
62. GENERAL MEDIA INC
63. GENERAL MOTORS
64. GOLDEN BOOKS FAMILY ENTMT
65. GOODHEART-WILLCOX CO INC
66. GOOGLE
67. GRANITE BROADCASTING
68. GRAY TELEVISION
69. HARCOURT GENERAL INC
70. HEARST CORPORATION
71. HEARST-ARGYLE
72. HECTOR COMMUNICATIONS CORP
73. HIGH SPEED ACCESS CORP
74. HISPANIC BROADCASTING -CL A
75. HISPANIC TV NETWORK INC
76. HOLLINGER
77. HOUGHTON MIFFLIN CO
78. HUNGRY MINDS INC
79. IAC/INTERACTIVECORP
80. INFINITY BROADCASTING -CL A
81. INSIGHT COMMUNICATIONS CO
82. INTEGRITY MEDIA INC
83. INTERMEDIA MKTG SOLUTNS INC
84. INTERNET AMERICA INC
85. INTERVISUAL BOOKS INC -CL A
86. ITC DELTACOM INC
87. JAMES CABLE PARTNERS LP
88. JONES MEDIA NETWORKS LTD
89. JOURNAL COMMUNICATIONS INC
90. JOURNAL REGISTER CO
91. KINGS ROAD ENTERTAINMENT
92. KNIGHT RIDDER

Year Reported: 2000 (cont'd.)

93. KUSHNER LOCKE CO
94. LAMAR ADVERTISING
95. LAS AMERICAS BROADBAND INC
96. LASER-PACIFIC MEDIA CORP
97. LEE ENTERPRISES
98. LIBERTY
99. LIN TV CORP
100. LIONS GATE ENTERTAINMENT CP
101. LODGENET INTERACTIVE CORP
102. MARKETWATCH INC
103. MARTHA STEWART LIVING
OMNIMD
104. MCCLATCHY
105. MCGRAW HILL
106. MEDIA GENERAL
107. MEDIACOM COMMUNICATIONS
CORP
108. MEDIANEWS GROUP INC
109. MEREDITH CORP
110. METRO GLOBAL MEDIA INC
111. METRO GOLDWYN MAYER INC
112. METRO INTL SA -CL B
113. MILLBROOK PRESS INC
114. MONARCH SERVICES INC
115. MORRIS PUBLISHING GRP LLC
116. NELSON (THOMAS) INC
117. NEW FRONTIER MEDIA INC
118. NEW YORK TIMES CO -CL A
119. NEWS COMMUNICATIONS
120. NEWSCORP
121. NEXSTAR BROADCASTING GROUP
122. NEXTMEDIA OPERATING INC
123. NORTHLAND CABLE TELEVISION
124. NTN BUZZTIME INC
125. NUCENTRIX BROADBAND
NETWORKS
126. ON COMMAND CORP
127. OUTDOOR CHANNEL HLDGS INC
128. PAXSON COMMUNICATIONS
129. PEARSON PLC -ADR
130. PEGASUS
131. PIXAR
132. PLAYBOY ENTERPRISES
133. PROTOSOURCE CORP
134. PULITZER
135. RADIO ONE
136. RAINBOW MEDIA GROUP
137. RAYCOM MEDIA
138. READERS DIGEST
139. REGENT COMMUNICATIONS INC
140. REUTERS PLC(GBR)-ADR
141. RNETHEALTH INC
142. SAGA COMMUNICATIONS -CL A
143. SALEM COMMUNICATIONS CORP
144. SALON MEDIA GROUP INC
145. SCHOLASTIC CORP
146. SCRIPPS
147. SEAGRAM'S
148. SFX BROADCASTING INC -CL A
149. SHENANDOAH TELECOMMUN CO
150. SINCLAIR
151. SONY
152. SPECTRASITE INC
153. SPORTSLINE.COM INC
154. STC BROADCASTING INC
155. SUN-TIMES MEDIA GROUP INC
156. SUSQUEHANNA MEDIA CO
157. TEAM COMMUNICATIONS GROUP
158. TERRA NETWORKS SA -ADR
159. THESTREET.COM
160. THOMSON CORP
161. TIME WARNER
162. TIMES MIRROR
163. TIVO
164. TM CENTURY INC
165. TRIATHLON BROADCAST CO -CL A
166. TRIBUNE CO
167. TRIMARK HOLDINGS INC
168. TV GUIDE INC
169. UNITED BUSINESS MEDIA -ADR
170. UNITED ONLINE INC
171. UNITED TELEVISION INC
172. UNIVISION
173. VIACOM
174. VIVENDI
175. WARWICK VALLEY TELEPHONE
CO
176. WASHINGTON POST
177. WEBMD HEALTH CORP
178. WESTWOOD ONE
179. WILEY (JOHN) & SONS -CL A
180. WORLD WRESTLING ENTMT INC
181. WRC MEDIA INC
182. XANADOO CO
183. YAHOO
184. YOUNG BROADCASTING
185. ZIFF DAVIS MEDIA INC

Year Reported:1995

1. ACKERLEY GROUP INC
2. ADELPHIA
3. ALL AMERICAN COMMUNICATIONS
4. ALLBRITTON COMMUNICATIONS CO
5. AMERICA ONLINE
6. AMERICAN MEDIA INC -CL A
7. AMERICAN TELECASTING INC
8. AMFM INC
9. ARGYLE
10. ASCENT ENTERTAINMENT GROUP
11. BEASLEY BROADCAST GROUP
12. BELO
13. BERKSHIRE HATHAWAY
14. BERTLESMANN
15. BET HOLDINGS INC -CL A
16. BIG CITY RADIO INC -CL A
17. BOX WORLDWIDE INC
18. BRILL MEDIA CO LLC
19. CABLE MICHIGAN INC
20. CABLEMAXX HOLDINGS INC
21. CABLEVISION
22. CABLEVISION INDUSTRIES CORP
23. CAPITAL CITIES/ABC
24. CARMIKE CINEMAS INC
25. CENTRAL NEWSPAPERS -CL A
26. CENTURY COMMUN -CL A
27. CHRIS CRAFT
28. CINEMARK USA INC
29. CINEMASTAR LUXURY THEATERS
30. CINERGI PICTURES ENTMT INC
31. CLARK (DICK) PRODUCTIONS INC
32. CLASSIC COMMUNICATIONS INC
33. CLEAR CHANNEL
COMMUNICATIONS
34. CNET NETWORKS INC
35. COMCAST
36. COMMONWLTH TELE ENTER
37. COMTEX NEWS NETWORK INC
38. CONTINENTAL CBLVISION -CL A
39. COWLES MEDIA CO -COM
40. COX COMMUNICATIONS
41. COX RADIO INC -CL A
42. CTN MEDIA GROUP INC
43. DAILY JOURNAL CORP
44. DISCOVERY COMM
45. DISNEY
46. DOW JONES
47. EARTHLINK INC
48. EMMIS BROADCASTING
49. ENTRAVISION
50. FILM ROMAN INC
51. FIRST NATIONAL ENTERTAINMENT
52. FOUR MEDIA CO
53. GANNETT
54. GARDEN STATE NEWSPAPERS
55. GENERAL ELECTRIC
56. GENERAL MEDIA INC
57. GOLDEN BOOKS FAMILY ENTMT
58. GOLDWYN (SAMUEL) CO
59. GOODHEART-WILLCOX CO INC
60. GRANITE BROADCASTING
61. GRAY TELEVISION
62. HARCOURT GENERAL INC
63. HEARST CORPORATION
64. HEARST-ARGYLE
65. HECTOR COMMUNICATIONS CORP
66. HISPANIC BROADCASTING -CL A
67. HOLLINGER
68. HOUGHTON MIFFLIN CO
69. IAC/INTERACTIVECORP
70. INFINITY BROADCASTING -CL A
71. INFINITY MEDIA
72. INTEGRITY MEDIA INC
73. INTERVISUAL BOOKS INC -CL A
74. INTL FAMILY ENTERTAIN -CL B
75. JACOR COMMUNICATIONS
76. JONES INTERCABLE -LP-CL A
77. JONES MEDIA NETWORKS LTD
78. JOURNAL COMMUNICATIONS INC
79. KING WORLD PRODUCTIONS INC
80. KINGS ROAD ENTERTAINMENT
81. KNIGHT RIDDER
82. KUSHNER LOCKE CO
83. LAMAR ADVERTISING
84. LANCIT MEDIA ENTMT LTD
85. LASER-PACIFIC MEDIA CORP
86. LEE ENTERPRISES
87. LIBERTY
88. LIN TV CORP
89. LIVE ENTERTAINMENT
90. LODGENET INTERACTIVE CORP
91. MCCLATCHY
92. MCGRAW HILL

Year Reported: 1995 (cont'd.)

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|--------------------------------------|--------------------------------------|
| 93. MEDIA GENERAL | 138. SOUTHERN STARR BROADCASTG
GP |
| 94. MEDIAONE GROUP INC | 139. SPECTRAVISION INC |
| 95. MERCOM INC | 140. SPELLING ENTMT INC -CL A |
| 96. MEREDITH CORP | 141. SPICE ENTERTAINMENT COS INC |
| 97. METRO GLOBAL MEDIA INC | 142. SPORTS MEDIA INC |
| 98. METRO GOLDWYN MAYER INC | 143. SPORTSLINE.COM INC |
| 99. MONARCH SERVICES INC | 144. STECK-VAUGHN PUBLISHING CP |
| 100. NELSON (THOMAS) INC | 145. STORER COMMUNICATIONS INC |
| 101. NEW WORLD TELEVISION INC | 146. SUNGROUP INC |
| 102. NEW YORK TIMES CO -CL A | 147. SUN-TIMES MEDIA GROUP INC |
| 103. NEWS COMMUNICATIONS | 148. SUSQUEHANNA MEDIA CO |
| 104. NEWSCORP | 149. TCA CABLE TV INC |
| 105. NORTHLAND CABLE TELEVISION | 150. TCI |
| 106. NOSTALGIA NETWORK INC | 151. TELEMUNDO GROUP INC -CL A |
| 107. NTN BUZZTIME INC | 152. TESCOP INC |
| 108. NUCENTRIX BROADBAND
NETWORKS | 153. THOMSON CORP |
| 109. NYNEX CABLECOMM GP PLC -
ADR | 154. TIME WARNER ENTERTAINMENT |
| 110. ON COMMAND CORP | 155. TIME WARNER |
| 111. OUTDOOR CHANNEL HLDGS INC | 156. TIMES MIRROR |
| 112. OUTLET COMMUNICATION -CL A | 157. TM CENTURY INC |
| 113. PAXSON COMMUNICATIONS | 158. TRIBUNE CO |
| 114. PEGASUS | 159. TRIMARK HOLDINGS INC |
| 115. PEOPLES CHOICE TV CORP | 160. TURNER BROADCASTING -CL B |
| 116. PIXAR | 161. TV FILME INC |
| 117. PLAYBOY ENTERPRISES | 162. TV GUIDE INC |
| 118. POLYGRAM NV -ADR | 163. UNITED BUSINESS MEDIA -ADR |
| 119. PROVIDENCE JOURNAL CO -CL A | 164. UNITED TELEVISION INC |
| 120. PULITZER | 165. UNIVISION |
| 121. RADIO ONE | 166. US SATELLITE BROADCAST -CL A |
| 122. RAYCOM MEDIA | 167. VIACOM |
| 123. READERS DIGEST | 168. WASHINGTON POST |
| 124. REGAL CINEMAS INC | 169. WAVERLY INC |
| 125. RENAISSANCE COMMUNICATNS
CP | 170. WESTINGHOUSE |
| 126. REUTERS PLC(GBR)-ADR | 171. WESTWOOD ONE |
| 127. SADLIER (WILIAM H.) INC | 172. WILEY (JOHN) & SONS -CL A |
| 128. SAGA COMMUNICATIONS -CL A | 173. WIRELESS CABLE ATLANTA INC |
| 129. SALEM COMMUNICATIONS CORP | 174. WIRELESS ONE INC |
| 130. SAVOY PICTURES ENTMT INC | 175. XANADOO CO |
| 131. SBC TECHNOLOGIES INC/DEL | 176. YAHOO |
| 132. SCHOLASTIC CORP | 177. YOUNG BROADCASTING |
| 133. SCRIPPS | |
| 134. SEAGRAM'S | |
| 135. SHENANDOAH TELECOMMUN CO | |
| 136. SINCLAIR | |
| 137. SONY | |

Year Reported: 1990

1. 21ST CENTURY FILM CORP
2. ACKERLEY GROUP INC
3. ADELPHIA
4. AFFILIATED PUBLICATIONS
5. ALL AMERICAN COMMUNICATIONS
6. AMERICAN CITY BUS JOURNALS
7. AMERICAN COMMUN & TV
8. AMERICAN MEDIA INC -CL A
9. AMERICAN SCREEN CO
10. AMERICAN TV & COMMUN -CL A
11. BAKER COMMUNICAITONS
12. BELO
13. BERKSHIRE HATHAWAY
14. BOX WORLDWIDE INC
15. BURNHAM BROADCASTING CO -LP
16. CABLEVISION
17. CABLEVISION INDUSTRIES CORP
18. CANNON PICTURES INC
19. CAPITAL CITIES/ABC
20. CARMIKE CINEMAS INC
21. CAROLCO PICTURES INC
22. CBS
23. CC MEDIA HOLDINGS (CLR CHNL)
24. CCH INC -CL A
25. CENTRAL NEWSPAPERS -CL A
26. CENTURY COMMUN -CL A
27. CHRIS CRAFT
28. CLARK (DICK) PRODUCTIONS INC
29. COMCAST
30. COMMONWLTH TELE ENTER
31. COMTEX NEWS NETWORK INC
32. CONTINENTAL CBLVISION -CL A
33. DAILY JOURNAL CORP
34. DANIELS & ASSOCIATES INC
35. DISNEY
36. DOW JONES
37. EMMIS BROADCASTING
38. FILMSTAR INC
39. FRIES ENTERTAINMENT INC
40. GALAXY CABLEVISION -LP
41. GANNETT
42. GENERAL ELECTRIC
43. GOLDEN BOOKS FAMILY ENTMT
44. GOODHEART-WILLCOX CO INC
45. GRANITE BROADCASTING
46. GRAY TELEVISION
47. HARCOURT BRACE JOVANOVIH
48. HARCOURT GENERAL INC
49. HECTOR COMMUNICATIONS CORP
50. HOLDEN-DAY INC
51. HOLLINGER
52. HOUGHTON MIFFLIN CO
53. IMAGINE FILMS ENMT INC
54. INFINITY BROADCASTING -CL A
55. INTERVISUAL BOOKS INC -CL A
56. INTL BROADCAST SYSTEMS -CL A
57. JACOR COMMUNICATIONS
58. JONES INTERCABLE -LP-CL A
59. JONES SPACELINK LTD -CL A
60. JOURNAL COMMUNICATIONS INC
61. KING WORLD PRODUCTIONS INC
62. KINGS ROAD ENTERTAINMENT
63. KNIGHT RIDDER
64. KUSHNER LOCKE CO
65. LASER-PACIFIC MEDIA CORP
66. LEE ENTERPRISES
67. MCCLATCHY
68. MCGRAW HILL
69. MEDIA GENERAL
70. MERCOM INC
71. MERCURY ENTERTAINMENT CORP
72. MEREDITH CORP
73. METRO GOLDWYN MAYER INC
74. MILLICOM INC
75. MULTIMEDIA
76. NELSON (THOMAS) INC
77. NEW CENTURY COMMUNCTN -CL A
78. NEW LINE CINEMA CORP
79. NEW YORK TIMES CO -CL A
80. NEWS COMMUNICATIONS
81. NEWSCORP
82. NOSTALGIA NETWORK INC
83. NTN BUZZTIME INC
84. ORION PICTURES CORP
85. OSBORN COMMUNICATIONS
86. OUTLET COMMUNICATION -CL A
87. PARAMOUNT COMMUNICATIONS
INC
88. PARK COMMUNICATIONS INC
89. PAUL ENTERTAINMENT INC
90. PINELANDS INC
91. PLAYBOY ENTERPRISES
92. PLAZA COMMUNICATIONS INC

Year Reported: 1990 (cont'd.)

- | | |
|--------------------------------------|---------------------------------|
| 93. POLYGRAM NV -ADR | 116. TELEMUNDO GROUP INC -CL A |
| 94. POLYMUSE INC | 117. THOMSON CORP |
| 95. PRICE/STERN/SLOAN INC | 118. TIME WARNER |
| 96. PULITZER | 119. TIMES MIRROR |
| 97. QUEEN CITY BROADCASTING INC | 120. TM CENTURY INC |
| 98. READERS DIGEST | 121. TPC COMMUNICATIONS INC |
| 99. REPUBLIC PICTURES | 122. TRIBUNE CO |
| 100. REUTERS PLC(GBR)-ADR | 123. TRIBUNE/SWAB-FOX COS -CL A |
| 101. SADLER (WILIAM H.) INC | 124. TRIMARK HOLDINGS INC |
| 102. SBC TECHNOLOGIES INC/DEL | 125. TURNER BROADCASTING -CL B |
| 103. SCHOLASTIC CORP | 126. TWENTIETH CENTURY-FOX FILM |
| 104. SCI TELEVISION INC -CL B | 127. UNITED ARTISTS ENT -CL A |
| 105. SCRIPPS | 128. UNITED BUSINESS MEDIA -ADR |
| 106. SHENANDOAH TELECOMMUN CO | 129. UNITED TELEVISION INC |
| 107. SHOP TELEVISION NETWORK INC | 130. VIACOM |
| 108. SOUTHERN STARR BROADCASTG
GP | 131. VIDCOM POST INC |
| 109. SPECTRAVISION INC | 132. VISTA ORGANIZATION LTD |
| 110. SPELLING ENTMT INC -CL A | 133. WASHINGTON POST |
| 111. SPORTS MEDIA INC | 134. WAVERLY INC |
| 112. STORER COMMUNICATIONS INC | 135. WESTWOOD ONE |
| 113. SUNGROUP INC | 136. WILEY (JOHN) & SONS -CL A |
| 114. TCA CABLE TV INC | |
| 115. TCI | |

Year Reported: 1985

1. ACKERLEY GROUP INC
2. ADDISON-WESLEY PUB -CL B
3. AFFILIATED PUBLICATIONS
4. ALL AMERICAN COMMUNICATIONS
5. AMERICAN CABLESYSTEMS -CL A
6. AMERICAN CITY BUS JOURNALS
7. AMERICAN COMMUN & TV
8. AMERICAN NATL ENTERPRISES
9. AMERICAN TV & COMMUN -CL A
10. ASI COMMUNICATIONS INC
11. BAKER COMMUNICAITONS
12. BELO
13. BERKSHIRE HATHAWAY
14. CABLEVISION
15. CAPITAL CITIES
16. CARDIFF COMMUNICATIONS-OLD
17. CAROLCO PICTURES INC
18. CBS
19. CC MEDIA HOLDINGS (CLR CHNL)
20. CCH INC -CL A
21. CHRIS CRAFT
22. CITIZENS CABLE COMM INC
23. COMCAST
24. COMMONWLTH TELE ENTER
25. COMTEX NEWS NETWORK INC
26. CONTINENTAL CBLVISION -CL A
27. DAILY JOURNAL CORP
28. DE LAURENTIIS FILM PTRS -LP
29. DISNEY
30. DOW JONES
31. EMMIS BROADCASTING
32. ESSEX COMMUNICATIONS -CL A
33. FIRST AMERI-CABLE CORP
34. FIRST CAROLINA COMMUNICATNS
35. FOUR STAR INTERNATIONAL INC
36. FRIES ENTERTAINMENT INC
37. G. G. COMMUNICATIONS INC
38. GANNETT
39. GOLDEN BOOKS FAMILY ENTMT
40. GOODHEART-WILLCOX CO INC
41. GRAY TELEVISION
42. GROLIER INC
43. GUBER-PETERS ENTMT
44. HALMI (ROBERT) INC
45. HARCOURT BRACE JOVANOVICH
46. HARCOURT GENERAL INC
47. HARPER & ROW PUBLISHERS INCF-26
48. HOLDEN-DAY INC
49. HOUGHTON MIFFLIN CO
50. INFINITY BROADCASTING -CL A
51. INFLIGHT SERVICES INC
52. JACOR COMMUNICATIONS
53. JONES SPACELINK LTD -CL A
54. JOURNAL COMMUNICATIONS INC
55. KING WORLD PRODUCTIONS INC
56. KINGS ROAD ENTERTAINMENT
57. KNIGHT RIDDER
58. LAUREL ENTERTAINMENT INC
59. LEE ENTERPRISES
60. LORIMAR
61. MACMILLAN INC
62. MALRITE COMMUNICATNS
63. MCA INC
64. MCGRAW HILL
65. MCI INC
66. MCS TELECOMMUNICATIONS INC
67. MEDIA GENERAL
68. MEDIA HORIZIONS -CL A
69. MERCURY ENTERTAINMENT CORP
70. MEREDITH CORP
71. METRO GOLDWYN MAYER INC
72. MGM UA ENTERTAINMENT CO
73. MIZLOU COMMUNICATIONS
74. MULTIMEDIA
75. NATIONAL LAMPOON INC -OLD
76. NELSON (THOMAS) INC
77. NEW LINE CINEMA CORP
78. NEW STAR ENTERTAINMENT INC
79. NEW VISIONS ENMNT CORP
80. NEW WORLD ENTERTNMNT
81. NEW YORK TIMES CO -CL A
82. NORTH AMER COMM CORP-NEW
83. ORION PICTURES CORP
84. PARAMOUNT COMMUNICATIONS INC
85. PARK COMMUNICATIONS INC
86. PEREGRINE ENTERTAINMENT LTD
87. PLAYBOY ENTERPRISES
88. PLAZA COMMUNICATIONS INC
89. POLYMUSE INC
90. PRICE/STERN/SLOAN INC
91. PULITZER
92. RCA

Year Reported: 1985 (cont'd.)

- | | |
|--------------------------------|---------------------------------|
| 93. REPUBLIC PICTURES | 113. TM CENTURY INC |
| 94. REUTERS PLC(GBR)-ADR | 114. TPC COMMUNICATIONS INC |
| 95. ROLLINS COMMUNICATIONS INC | 115. TRI STAR PICTURES INC |
| 96. SADLIER (WILIAM H.) INC | 116. TRIBUNE CO |
| 97. SCHOLASTIC CORP | 117. TRIBUNE/SWAB-FOX COS -CL A |
| 98. SCOTT CABLE COMMUNICATIONS | 118. TURNER BROADCASTING -CL B |
| 99. SCRIPPS | 119. TVX BROADCAST GROUP |
| 100. SHENANDOAH TELECOMMUN CO | 120. TWENTIETH CENTURY-FOX FILM |
| 101. SPECTRAVISION INC | 121. UNITED ARTISTS ENT -CL A |
| 102. SPELLING ENTMT INC -CL A | 122. UNITED CABLE TELEVISION |
| 103. STORER COMMUNICATIONS INC | 123. UNITED TELEVISION INC |
| 104. SUNGROUP INC | 124. VESTRON INC |
| 105. TAFT BROADCASTING CO | 125. VISTA ORGANIZATION LTD |
| 106. TCA CABLE TV INC | 126. WARNER COMMUNICATIONS INC |
| 107. TCI | 127. WASHINGTON POST |
| 108. TELECAST INC | 128. WAVERLY INC |
| 109. TELEPICTURES CORP | 129. WESTWOOD ONE |
| 110. TELSTAR CORP | 130. WILEY (JOHN) & SONS -CL A |
| 111. TIME WARNER | 131. ZONDERVAN CORP |
| 112. TIMES MIRROR | |

Year Reported: 1980

1. ABKCO INDUSTRIES INC
2. ACKERLEY GROUP INC
3. ADDISON-WESLEY PUB -CL B
4. AFFILIATED PUBLICATIONS
5. ALLYN & BACON INC
6. AMERICAN BROADCASTING
7. AMERICAN NATL ENTERPRISES
8. ASI COMMUNICATIONS INC
9. ATHENA COMMUNICATIONS CORP
10. ATLANTIC TELECASTING CORP
11. BELO
12. BERKSHIRE HATHAWAY
13. CADENCE INDUSTRIES CORP
14. CAPITAL CITIES
15. CARDIFF COMMUNICATIONS-OLD
16. CBS
17. CCH INC -CL A
18. CHRIS CRAFT
19. COMCAST
20. COMMONWEALTH THEATRES
21. COX COMMUNICATIONS INC -OLD
22. DISNEY
23. DIVERSIFIED MEDIA INC
24. DOW JONES
25. FOUR STAR INTERNATIONAL INC
26. G. G. COMMUNICATIONS INC
27. GANNETT
28. GOODHEART-WILLCOX CO INC
29. GRAY TELEVISION
30. GROLIER INC
31. GROVE PRESS INC
32. GUBER-PETERS ENTMT
33. HALMI (ROBERT) INC
34. HARCOURT BRACE JOVANOVIH
35. HARCOURT GENERAL INC
36. HARPER & ROW PUBLISHERS INCF-26
37. HARTE-HANKS CABLE INC
38. HOLDEN-DAY INC
39. HOUGHTON MIFFLIN CO
40. INFLIGHT SERVICES INC
41. JOURNAL COMMUNICATIONS INC
42. KNIGHT RIDDER
43. LEE ENTERPRISES
44. MACMILLAN INC
45. MAPLE PRESS CO
46. MCA INC
47. MCGRAW HILL
48. MCI INC
49. MEDIA GENERAL
50. MEREDITH CORP
51. METROMEDIA INC
52. MGM UA ENTERTAINMENT CO
53. MID-AMERICA PUBLISHING CORP
54. MULTIMEDIA
55. NATIONAL LAMPOON INC -OLD
56. NELSON (THOMAS) INC
57. NEW YORK TIMES CO -CL A
58. NEW YORKER MAGAZINE INC
59. NORTH AMERICAN PUBLISHING CO
60. ORION PICTURES CORP
61. PARAMOUNT COMMUNICATIONS
INC
62. PLAYBOY ENTERPRISES
63. POST CORP
64. RCA
65. SADLIER (WILIAM H.) INC
66. SCHOLASTIC CORP
67. SCRIPPS
68. SPECTRAVISION INC
69. SPELLING ENTERTNMT GRP INC
70. STORER COMMUNICATIONS INC
71. SUNGROUP INC
72. TAFT BROADCASTING CO
73. TCI
74. TELEPICTURES CORP
75. TIME WARNER
76. TIMES MIRROR
77. TPC COMMUNICATIONS INC
78. TURNER BROADCASTING -CL B
79. TWENTIETH CENTURY-FOX FILM
80. UNITED ARTISTS ENT -CL A
81. UNITED CABLE TELEVISION
82. WARNER COMMUNICATIONS INC
83. WASHINGTON POST
84. WAVERLY INC
85. WILEY (JOHN) & SONS -CL A
86. ZONDERVAN CORP

Year Reported: 1975

1. ABC INDS INC
2. ABKCO INDUSTRIES INC
3. ACTON CORP -OLD
4. ADAMS RUSSELL
5. ADDISON-WESLEY PUB -CL B
6. AFFILIATED PUBLICATIONS
7. ALLYN & BACON INC
8. AMERICAN BROADCASTING
9. AMERICAN TV & COMMUN -CL A
10. ARCHIE ENTERPRISES INC
11. ASI COMMUNICATIONS INC
12. ATHENA COMMUNICATIONS CORP
13. BOOK-OF-THE-MONTH CLUB INC
14. BOOTH NEWSPAPERS INC
15. BUREAU OF NATIONAL AFFAIRS
16. C V INTERNATIONAL CORP
17. CABLECOM GENERAL INC
18. CADENCE INDUSTRIES CORP
19. CAPITAL CITIES
20. CBS
21. CCH INC -CL A
22. CHILTON CO
23. CHRIS-CRAFT INDS
24. CINEMA 5 LTD
25. CINERAMA INC
26. COMCAST
27. COMMONWEALTH THEATRES
28. COMMUNICATIONS PROPERTIES
29. CONESTOGA ENTERPRISES
30. CORDURA CORP
31. COWLES COMMUNICATIONS
32. COX CABLE COMMUNICATIONS INC
33. COX COMMUNICATIONS INC -OLD
34. DISNEY (WALT) CO
35. DIVERSIFIED MEDIA INC
36. DOW JONES
37. FUTURE COMMUNICATIONS
38. GANNETT
39. GOODHEART-WILLCOX CO INC
40. GRAY TELEVISION
41. GROLIER INC
42. GROSS TELECASTING
43. GROVE PRESS INC
44. HARCOURT BRACE JOVANOVIH
45. HARCOURT GENERAL INC
46. HARPER & ROW PUBLISHERS INC
47. HARTE-HANKS CABLE INC
48. HOLDEN-DAY INC
49. HOLIDAY THEATRES INC
50. HOUGHTON MIFFLIN CO
51. ILLUSTRATED WORLD ENCYCLOPDA
52. INFLIGHT SERVICES INC
53. JOURNAL COMMUNICATIONS INC
54. KANSAS STATE NETWORK INC
55. KNIGHT RIDDER
56. LEE ENTERPRISES
57. LIBERTY CORP
58. LIN BROADCASTING
59. LIPPINCOTT (J B) CO
60. MACMILLAN INC
61. MAPLE PRESS CO
62. MCGRAW HILL
63. MEDIA GENERAL -CL A
64. MEREDITH CORP
65. METROMEDIA INC
66. MID-AMERICA PUBLISHING CORP
67. MULTIMEDIA
68. NATIONAL LAMPOON INC -OLD
69. NELSON (THOMAS) INC
70. NEW YORK TIMES CO -CL A
71. NEW YORKER MAGAZINE INC
72. NORTH AMERICAN PUBLISHING CO
73. PANAX CORP
74. PLAYBOY ENTERPRISES -CL B
75. POST CORP
76. PRENTICE-HALL INC
77. RAHALL COMMUNICATIONS CORP
78. RCA
79. REEVES TELECOM CORP
80. SADLIER (WILIAM H.) INC
81. SCHOLASTIC CORP
82. SCRIPPS HOWARD BROADCASTING
83. SONDERLING BROADCASTING CORP
84. SPEIDEL NEWSPAPERS INC
85. STARR BROADCASTING GROUP INC
86. STORER COMMUNICATIONS INC
87. SUNGROUP INC
88. TAFT BROADCASTING CO
89. TCI
90. TIME WARNER
91. TIMES MIRROR
92. TURNER BROADCASTING -CL B

Year Reported: 1975 (cont'd.)

- | | |
|---------------------------------|--------------------------------|
| 93. UA COLUMBIA CABLEVISION | 100. WAVERLY INC |
| 94. UNITED ARTISTS ENT -CL A | 101. WESTERN PUBLISHING INC |
| 95. UNITED CABLE TELEVISION | 102. WILEY (JOHN) & SONS -CL A |
| 96. VISION CABLE COMMUN -CL A | 103. WJDX INC |
| 97. WADSWORTH PUBLISHING CO INC | 104. WOODS COMMUNICATION CORP |
| 98. WARNER COMMUNICATIONS INC | |
| 99. WASHINGTON POST | |

Year Reported: 1970

1. ACTON CORP -OLD
2. ADAMS RUSSELL
3. ADDISON-WESLEY PUB -CL B
4. ALLYN & BACON INC
5. AMERICAN BROADCASTING
6. AMERICAN TV & COMMUN -CL A
7. BANTAM BOOKS INC
8. BARTELL MEDIA CORP
9. BOOK-OF-THE-MONTH CLUB INC
10. BOOTH NEWSPAPERS INC
11. CADENCE INDUSTRIES CORP
12. CAPITAL CITIES
13. CAPITOL INDS-EMI INC
14. CBS
15. CCH INC -CL A
16. CHILTON CO
17. CHRIS-CRAFT INDS
18. CINCINNATI ENQUIRER INC
19. CINEMA 5 LTD
20. CINERAMA INC
21. COLLINS RADIO CO
22. COMMUNICATIONS PROPERTIES
23. CORDURA CORP
24. COWLES COMMUNICATIONS
25. COX CABLE COMMUNICATIONS INC
26. COX COMMUNICATIONS INC -OLD
27. DISNEY (WALT) CO
28. DOW JONES
29. ESQUIRE INC
30. FEDERATED PUBLICATIONS INC
31. GANNETT
32. GRAY TELEVISION
33. GROLIER INC
34. GROSS TELECASTING
35. HARCOURT BRACE JOVANOVIH
36. HARCOURT GENERAL INC
37. HARPER & ROW PUBLISHERS INC
38. HOUGHTON MIFFLIN CO
39. INFLIGHT SERVICES INC
40. IRWIN (RICHARD D) INC
41. KNIGHT RIDDER
42. LEE ENTERPRISES
43. LIN BROADCASTING
44. MACMILLAN INC
45. MCGRAW HILL
46. MEDIA GENERAL -CL A
47. MEREDITH CORP
48. METROMEDIA INC
49. NEW YORK TIMES CO -CL A
50. OUTLET CO
51. POST CORP
52. PRENTICE-HALL INC
53. PUTNAM'S (G P) SONS
54. RCA
55. REEVES TELECOM CORP
56. RIDDER PUBLICATIONS INC
57. SADLER (WILLIAM H.) INC
58. SCHOLASTIC CORP
59. SCRIPPS HOWARD BROADCASTING
60. SFN COS INC
61. SIMON & SCHUSTER
62. SONDERLING BROADCASTING CORP
63. STARR BROADCASTING GROUP INC
64. STERLING COMMUNICATIONS INC
65. STORER COMMUNICATIONS INC
66. TAFT BROADCASTING CO
67. TCI
68. TIME WARNER
69. TIMES MIRROR
70. UNITED ARTISTS ENT -CL A
71. UNIVERSAL PUBLISHING & DISTR
72. WADSWORTH PUBLISHING CO INC
73. WALTER READE ORGANIZATN INC
74. WARNER COMMUNICATIONS INC
75. WESTERN PUBLISHING INC
76. WHDH CORP
77. WILEY (JOHN) & SONS -CL A

Year Reported: 1965

1. ACTON CORP -OLD
2. ADAMS RUSSELL
3. ADDISON-WESLEY PUB -CL B
4. ALLYN & BACON INC
5. AMERICAN BROADCASTING
6. BARTELL MEDIA CORP
7. BOOK-OF-THE-MONTH CLUB INC
8. BOOTH NEWSPAPERS INC
9. CADENCE INDUSTRIES CORP
10. CAPITAL CITIES
11. CAPITOL INDS-EMI INC
12. CBS
13. CCH INC -CL A
14. CHILTON CO
15. CHRIS-CRAFT INDS
16. CINCINNATI ENQUIRER INC
17. CINERAMA INC
18. COLLINS RADIO CO
19. COWLES COMMUNICATIONS
20. COX COMMUNICATIONS INC -OLD
21. CURTIS PUBLISHING CO
22. DISNEY (WALT) CO
23. DOW JONES
24. ESQUIRE INC
25. FEDERATED PUBLICATIONS INC
26. GOODWAY INC
27. GROLIER INC
28. GROSS TELECASTING
29. H & B AMERICAN CORP
30. HARCOURT BRACE JOVANOVIH
31. HARCOURT GENERAL INC
32. HARPER & ROW PUBLISHERS INC
33. IRWIN (RICHARD D) INC
34. JUBILEE INDS INC
35. LIN BROADCASTING
36. MACMILLAN INC
37. MCCALL CORP
38. MCGRAW HILL
39. MEDIA GENERAL -CL A
40. MEREDITH CORP
41. METROMEDIA INC
42. NEW YORK TIMES CO -CL A
43. OUTLET CO
44. PRENTICE-HALL INC
45. RCA
46. REEVES TELECOM CORP
47. SCRIPPS HOWARD BROADCASTING
48. SFN COS INC
49. SIMON & SCHUSTER
50. STERLING COMMUNICATIONS INC
51. STORER COMMUNICATIONS INC
52. TAFT BROADCASTING CO
53. TCI
54. TIME WARNER
55. TIMES MIRROR
56. TRANS-BEACON CORP
57. UNITED ARTISTS ENT -CL A
58. UNIVERSAL PUBLISHING & DISTR
59. WADSWORTH PUBLISHING CO INC
60. WALTER READE ORGANIZATN INC
61. WARNER COMMUNICATIONS INC
62. WESTERN PUBLISHING INC
63. WHDH CORP
64. WILEY (JOHN) & SONS -CL A

Year Reported: 1960

- | | |
|---------------------------------|----------------------------------|
| 1. ALLYN & BACON INC | 23. IRWIN (RICHARD D) INC |
| 2. AMERICAN BROADCASTING | 24. JUBILEE INDS INC |
| 3. BOOK-OF-THE-MONTH CLUB INC | 25. MACMILLAN INC |
| 4. CADENCE INDUSTRIES CORP | 26. MCGRAW HILL |
| 5. CAPITAL CITIES | 27. MEREDITH CORP |
| 6. CAPITOL INDS-EMI INC | 28. METROMEDIA INC |
| 7. CBS | 29. NEW YORK TIMES CO -CL A |
| 8. CHRIS-CRAFT INDS | 30. OUTLET CO |
| 9. CINCINNATI ENQUIRER INC | 31. PRENTICE-HALL INC |
| 10. CINERAMA INC | 32. RCA |
| 11. COLLINS RADIO CO | 33. REEVES TELECOM CORP |
| 12. COWLES COMMUNICATIONS | 34. SFN COS INC |
| 13. CURTIS PUBLISHING CO | 35. STORER COMMUNICATIONS INC |
| 14. DISNEY (WALT) CO | 36. TAFT BROADCASTING CO |
| 15. ESQUIRE INC | 37. TIME WARNER |
| 16. FEDERATED PUBLICATIONS INC | 38. TIMES MIRROR |
| 17. GOODWAY INC | 39. TRANS-BEACON CORP |
| 18. GROLIER INC | 40. UNITED ARTISTS ENT -CL A |
| 19. H & B AMERICAN CORP | 41. UNIVERSAL PUBLISHING & DISTR |
| 20. HARCOURT BRACE JOVANOVIH | 42. WARNER COMMUNICATIONS INC |
| 21. HARCOURT GENERAL INC | 43. WESTERN PUBLISHING INC |
| 22. HARPER & ROW PUBLISHERS INC | 44. WHDH CORP |

Year Reported: 1955

- | | |
|---------------------------------|-------------------------------|
| 1. ALLYN & BACON INC | 11. MACMILLAN INC |
| 2. AMERICAN BROADCASTING | 12. MCGRAW HILL |
| 3. BOOK-OF-THE-MONTH CLUB INC | 13. MEREDITH CORP |
| 4. CHRIS-CRAFT INDS | 14. SFN COS INC |
| 5. COLLINS RADIO CO | 15. STORER COMMUNICATIONS INC |
| 6. CURTIS PUBLISHING CO | 16. TAFT BROADCASTING CO |
| 7. DISNEY (WALT) CO | 17. TIME WARNER |
| 8. GROLIER INC | 18. TIMES MIRROR |
| 9. HARCOURT BRACE JOVANOVIH | 19. WESTERN PUBLISHING INC |
| 10. HARPER & ROW PUBLISHERS INC | 20. WHDH CORP |

Year Reported: 1950

1. RCA
2. TIME WARNER
3. CURTIS PUBLISHING CO
4. CBS
5. AMERICAN BROADCASTING
6. MACMILLAN INC
7. CHRIS-CRAFT INDS
8. MCGRAW HILL
9. WESTERN PUBLISHING INC
10. TIMES MIRROR
11. MEREDITH CORP
12. GROLIER INC
13. WHDH CORP
14. SFN COS INC
15. BOOK-OF-THE-MONTH CLUB INC
16. COLLINS RADIO CO
17. DISNEY (WALT) CO
18. STORER COMMUNICATIONS INC
19. HARCOURT BRACE JOVANOVICH
20. TAFT BROADCASTING CO

Appendix B.
HHI Concentration Ratios for the Media Industry

Year	HHI
1950	2097.47
1951	1899.11
1952	1880.01
1953	1959.95
1954	2049.59
1955	2026.73
1956	1948.64
1957	1812.05
1958	1771.78
1959	1808.88
1960	1511.2
1961	1466.65
1962	1500.63
1963	1357.38
1964	1178.53
1965	1187.56
1966	1183.62
1967	1229.16
1968	1074.32
1969	956.509
1970	947.783
1971	987.398
1972	916.128
1973	892.659
1974	889.384
1975	911.142
1976	497.811
1977	525.785
1978	501.171
1979	500.701

Year	HHI
1980	498.328
1981	495.352
1982	456.004
1983	420.987
1984	429.587
1985	381.868
1986	351.804
1987	328.81
1988	330.028
1989	373.854
1990	410.114
1991	416.34
1992	404.023
1993	378.772
1994	356.673
1995	359.465
1996	374.731
1997	374.228
1998	348.325
1999	377.59
2000	365.884
2001	469.968
2002	467.906
2003	487.4
2004	523.847
2005	490.199
2006	531.208
2007	553.92
2008	586.235
2009	497.124

Appendix C.
Adoption Rates for Television, Cable Television, and the Internet,
1950—2009

Year	TV Adoption Rate	CATV Adoption Rate	Internet Adoption Rate
1950	12		
1951	24		
1952	39		
1953	56.8		
1954	58.1		
1955	67.2	0.5	
1956	76	0.9	
1957	83	0.9	
1958	84.5	1.1	
1959	86	1.3	
1960	88	1.4	
1961	89	1.5	
1962	90	1.7	
1963	91.5	1.9	
1964	93	2.1	
1965	92	2.4	
1966	93	2.9	
1967	94	3.8	
1968	95	4.4	
1969	95	6.1	
1970	96	7.6	
1971	96	9.2	
1972	96	9.7	
1973	96	11.3	
1974	97	12.4	
1975	97.1	13.6642	
1976	97.4	14.8215	
1977	97.4	16.0503	
1978	97.6	17.0985	
1979	97.7	18.2335	
1980	97.9	19.5935	

Year	TV Adoption Rate	CATV Adoption Rate	Internet Adoption Rate
1979	97.7	18.2335	
1980	97.9	19.5935	
1981	98	22.2174	
1982	98	29	
1983	98	37.2	
1984	98	41.2	
1985	98	44.6	
1986	98	46.8	
1987	98	48.7	
1988	98.1	49.4	
1989	98.2	52.8	
1990	98.2	56.4	0.8
1991	98.2	58.9	1.19
1992	98.3	60.2	1.75
1993	98.3	61.4	2.31
1994	98.3	62.4	4.974
1995	98.3	63.4	9.39
1996	98.2	65.3	16.37
1997	98.2	66.5	22.01
1998	98.2	67.2	30.66
1999	98.2	67.5	36.55
2000	98.2	68	43.94
2001	98.2	68	50.1
2002	98.2	69.4	60.5
2003	98.2	69.8	63.1
2004	98.2	68.1	66.26
2005	98.2	67.5	69.57
2006	98.2	72.4	70.57
2007	98.2	69.3	73.52
2008	98.2	61.6	75.77
2009			78.14

Appendix D

Control Variables—Regulatory Climate and Annual GDP

Year	Regulatory Climate	GDP
1950	0	293.7
1951	0	339.3
1952	0	358.3
1953	1	379.3
1954	1	380.4
1955	1	414.7
1956	1	437.4
1957	1	461.1
1958	1	467.2
1959	1	506.6
1960	1	526.4
1961	0	544.8
1962	0	585.7
1963	0	617.8
1964	0	663.6
1965	0	719.1
1966	0	787.7
1967	0	832.4
1968	0	909.8
1969	1	984.4
1970	1	1038.3
1971	1	1126.8
1972	1	1237.9
1973	1	1382.3
1974	1	1499.5
1975	1	1637.7
1976	1	1824.6
1977	0	2030.1
1978	0	2293.8
1979	0	2562.2

Year	Regulatory Climate	GDP
1980	0	2788.1
1981	1	3126.8
1982	1	3253.2
1983	1	3534.6
1984	1	3930.9
1985	1	4217.5
1986	1	4460.1
1987	1	4736.4
1988	1	5100.4
1989	1	5482.1
1990	1	5800.5
1991	1	5992.1
1992	1	6342.3
1993	0	6667.4
1994	0	7085.2
1995	0	7414.7
1996	0	7838.5
1997	0	8332.4
1998	0	8793.5
1999	0	9353.5
2000	0	9951.5
2001	1	10286.2
2002	1	10642.3
2003	1	11142.2
2004	1	11853.3
2005	1	12623
2006	1	13377.2
2007	1	14028.7
2008	1	14369.1
2009	0	13939

For “Regulatory Climate” a ‘1’ indicates the federal government was led by a Republican administration; a ‘0’ indicates the federal government was not led by a Republican administration.
For “GDP”: Data Source” <http://www.usgovernmentspending.com/>

Appendix E

Descriptive Statistics

		HHI	TV Adoption	Cable TV Adoption	Internet Adoption	Regulatory Environment	GDP
Observations		60	59	54	20	60	60
Mean		871.84	90.2	33.29	38.87	0.62	6616.69
Median		524	97.7	22.21	36.55	1	5855
Std. Deviation		577.64	17.84	27.58	29.45	0.49	3532.02
Range	Low	328.81	12	0.5	0.8	0	2006
	High	2097.47	98.3	72.4	78.14	1	13206.4

Vita

Thomas Edward Vizcarrondo, born in San Juan, Puerto Rico, received his Bachelor of Science in Business Administration degree from the University of Tulsa in 1983. After a successful career in business spanning two decades, he returned to academia to pursue his interest in the study of the media industry. He received a master's degree from the University of Central Florida in 2005, and began his doctoral studies in 2009 at The Manship School of Mass Communication and Public Affairs at Louisiana State University. He will graduate in August, 2013.