Newly Vulnerable Markets in an Age of Pure Information Products:
An Analysis of Online Music and Online News

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Abstract

We describe the emerging competition between music companies and their star acts, and the role of online distribution in this industry. We then contrast this with the lack of competition newspapers will face from their reporters, writers, and photographers, but does identify other possible competitors for newspaper publishers. We examine what resources have previously enabled record companies to lock in their star acts and ways in which technology has altered artists’ ability to reach the market independently and thus their dependency upon record companies. We examine which resources have been eroded in the newspaper industry and the remaining value that the newspaper company does still create, other than bundling stories, adding advertising, and printing and selling the papers. We consider what part of the business is vulnerable, if any, and where threats may arise. We combine the resource-based view of competitive advantage to examine which industry may have become newly easy to enter, and the theory of newly vulnerable markets to assess which industry may actually have become vulnerable as a result. Our analyses are then used to create a computer simulation model to make the implications more explicit under a range of assumptions.

1. Introduction

The advent of digitalization of pure information products has created turmoil and uncertainty in most markets for information goods. Travel agents and stock brokers are facing disintermediation. The music industry is suing Napster even while some labels are seeking strategic alliances with it. At the same time, recording artists are threatening to break with the record companies that have historically produced their material, while some are fighting Napster and others are seeking to work directly through it, bypassing record companies and the traditional retail channel. Newspapers have embraced online distribution of the news with different degrees of enthusiasm, and with very different strategies. The only thing that has been said with certainty is that for information products some markets will undergo more change in industry structure than others, resulting in rapid evolution of strategies for some markets and significant changes in the future prospects of some currently dominant industry participants.

News stories are increasingly written on laptops and filed electronically. Photographs are increasingly taken with digital cameras, or are readily converted into digital files. With html files combining formatted text and digital photographs, news stories can easily and rapidly be communicated over the net, either through publishers’ websites or directly via email or pointcast distribution to interested subscribers. Timeliness, reliability and accuracy matter most when it comes to the delivery of news. Established publishers with reputable brand names have been best positioned to go online. Different from other information goods, consumer valuation for news depreciates quickly. Yesterday’s news may already be worthless today. This is one reason that illegal copying and distribution have not happened often in the news industry. Hence, the big papers generally feel less inhibited about making their content available online.

Similarly, music is increasingly frequently recorded using digital technology, mixed / mastered using digital technology, and distributed on digital media such as compact disks (CDs). Indeed, with digital performance on synthesizers (at one end of the value chain) and digital distribution over the net as MP3 files (at the other end of the value chain) some music can be created, distributed, and enjoyed without ever requiring a physical recording or hard copy.

Protecting digital content from unauthorized distribution has been the industry’s main concern regarding online music. Fear of losing sales combined with some degree of organizational inertia may explain the industry’s initial indifference to the Net as a new business infrastructure and distribution channel. But after start-ups like Napster, Gnutella, and MP3.com began to successfully service massive consumer demand for online music – largely bypassing the record companies - the
incumbents had to accept the new business reality and change their behavior. Rather than introducing competitive online alternatives, the answer was a dual approach of experimenting with new technologies like digital rights management and digital watermarking in order to stop large-scale piracy and simultaneously launching litigation suits against the new Net-based competitors over copyright infringements. While the former approach, attempting to develop and deploy reliable and effective technology to support secure digital music, has not been successful, the latter has.

As noted, a wide range of strategies is being pursued. The online delivery of the New York Times is free to all who register with the Times, and includes online access and email distribution of topics selected by the user, or of late-breaking news; in contrast, the Wall Street Journal has chosen not to make its online services available without charge to non-subscribers to their paper editions. In the music industry, Warner Brothers and Sony are suing Napster, while Bertelsmann is forging a business alliance with them [5, 7].

The strategies that will be pursued, the effectiveness of these strategies, and outcomes that will result are as yet not clear, but a theoretically sound analysis should enable us to make both predictions and strategic recommendations. In section 2 we will present two relevant theories of competition that have proven valuable in predicting the outcome of competition during and immediately after innovation:

- The theory of **resource-based competitive advantage**
- The theory of **newly vulnerable markets**, that is, of markets that have been rendered easier to attack as a result of technological innovation or other change

In sections 3 and 4 we will exploit these theories to examine two very different industries, popular music and daily newspapers. Our analyses demonstrate that music labels are vulnerable, and that the increase in power that technological changes have given to the most popular musical groups and artists will slash the profit of these labels, despite their currently dominant position. However, our analyses also demonstrate that newspapers are much less vulnerable to attack by their writers, although there is a separate, different form of vulnerability that must be considered, that of alternative distribution of the advertisements that currently, at least in the United States, provide the bulk of the newspapers’ profits. Conclusions and suggestions for future research are presented in section 5.

### 2. Theoretical Underpinnings

There are two theories of competitive strategy that will help structure and inform our analyses:

- **Resource-based competitive advantage** and the role of critical resources in creating and sustaining competitive advantage
- **Newly vulnerable markets**, and the conditions that encourage new entrants and facilitate their success in competition with large, well established, and apparently well positioned incumbents

These theories deal with different issues. The theory of resource based advantage describes when a firm or even an industry is safe from new entrants, due to resource endowments of existing players that represent significant barriers to entry. Newly vulnerable markets deal with a confluence of factors that, when combined, makes a firm or an industry extremely vulnerable to new entrants. We combine the two of them in this paper by showing how a change in the cost of resources or the availability of resources may erode barriers to entry, creating significant vulnerability to previously invulnerable incumbents.

#### 2.1. Resource-Based Competitive Advantage

The theory of resource-based competitive advantage stresses the importance of critical resource differences between firms as a source of sustainable competitive advantage, the idea being that preferred access to essential factors of production, at below market prices, is perhaps the most important market imperfection in assuring sustained advantage relative to competitors who lack equivalent access. Of course, this requires that the firms somehow have gotten access to these materials at a time before their economic value was recognized, or in a way that did not require that they pay current, competitive market prices; thus this theory also recognizes the importance of history, accident, and luck [1, 6].

David Teece provides additional insight on the competitive role of resources, describing the importance of co-specialized assets, which are assets that may be needed to exploit an innovation. The scarcer these assets, and the less the market for them exhibits perfect competition, the greater the ability of the owner of these assets to command a significant share of the value created by an innovation [8].

Additional research has shown that critical resource differences may play an even more important role in gaining advantage from investments in information technology. This is because the innovation itself — online shopping for golf clubs, for example — is rarely protectable. If the innovator is to harvest significant advantage it must be a result of something else and that something is usually a strong ownership position in
critical resources needed to exploit the innovation fully [3].

2.2. Newly Vulnerable Markets

The theory of newly vulnerable markets has three essential components [4]. The market should be:

- Newly easy to enter
- Attractive to attack
- Difficult to Defend

We explore the roles of each of these factors in turn.

2.2.1. Newly easy to enter

A market can become vulnerable if it is newly easy to enter, as a result of regulatory change (regulatory change in Europe increased the vulnerability of financial institutions previously protected by national borders), technological change (cellular telephony increased the pressure on Bell operating companies by offering alternatives to their local service based upon traditional land lines), or consumer preferences (as consumers become more net-savvy online shopping may threaten established mall operators and the owners of large physical stores).

It is important not to overlook the importance of the word “newly.” That is, a market whose entry barriers have not recently changed can be assumed to be more or less in steady state or competitive equilibrium. If it were vulnerable to attack someone would have already attacked it. However, when entry barriers suddenly drop we can expect rapid and massive changes in corporate populations — much as when land bridges end the isolation of islands during low sea levels associated with ice ages, producing massive changes in populations of flora and fauna.

2.2.2. Attractive to attack

We have found two conditions that are associated with markets that are vulnerable to successful attack. The first is the presence of a strong customer profitability gradient, that is, the presence of extreme differences in profitability between the best and the worst customers in a market. This is most frequently due to uniform pricing in the presence of great differences in customers’ cost to serve, although other forms of simplistic pricing can produce similar effects. This difference in profitability, due to simplistic pricing, is equivalent to massive cross-subsidies of the worst (least profitable, or “kill you”) accounts by the best (most profitable, “love ‘em”) accounts, which we have described as money pump between different customer segments. The most publicized example of an industry vulnerable to attack due to simplistic pricing has been credit cards [4].

Such cross subsidies do indeed create vulnerabilities, related to opportunistic pickoff of the best accounts, also called cream skimming or cherry-picking. A new entrant that targets profitable accounts and forgoes the kill yous and the losses that they produce can successfully attack, even in the presence of higher unit operating expenses. That is, a new entrant can have higher costs, capture market share by offering lower prices to its intended customer base, and still be profitable. Again, this is because it is operating without subsidizing losses from unattractive customers. We view these cross subsidies as indicative of a vulnerable market, much as Baumol viewed the presence of cross subsidies as indicative that a market was not contestable, but rather was operating under conditions that allowed it to earn monopoly profits [2].

Additionally, cross subsidies can come from one product line being used to subsidize another, rather than one customer group. Thus, in the UK, where all customers are entitled to no-minimum-balance free checking accounts, these accounts must be subsidized somehow; the necessary funds are provided by banks that historically over-charge customers for bank credit cards. This makes opportunistic pickoff even easier; a new entrant that does not need to subsidize bad accounts and does not need to subsidize additional lines of business is ideally positioned to make better offers to the customers it does want to attract, in the product markets it does want to enter. When the UK banks’ simplistic pricing for credit cards (resulting in a first cross subsidy) is augmented by overcharging all customers to offset losses from free checking (a second cross subsidy) the combination created even greater incentives for Capital One and other UK card issuers to attack.

2.2.3. Difficult to defend

Of course, without some barrier to prevent incumbents from immediately replicating the strategy of the attackers, there would over the long term be no profits for the attackers to capture. The profits would be competed away as market efficiency and more accurate pricing eliminate transfers and cross subsidies. New entrants would be spoilers, but not profitable, and with foresight one might expect them to conclude that the market was not really worth attacking, reducing incumbents’ vulnerability. There is a wide range of potential barriers to rapid replication, including regulatory restrictions on incumbents, fixed commitments to existing customers to maintain current prices, and investments in inappropriate systems or physical infrastructure.

3. The Recording Industry

3.1. Current Structure of the Industry
The major players in the industry include the following:
- The **artists**, who create the works of music (compose, write, and perform)
- The record companies, also called **labels**, who sign the groups, promote the groups, produce master recordings for most of the groups, produce copies or arrange for their production, and sell copies to retailers
- Various **production facilities**, including recording studios and factories to produce copies of records, tapes, and CDs, most of which are owned by the labels
- **Retailers**, who do most of the actual selling to consumers

The essential activities performed by these players can be summarized as follows:
- creation (by the artists)
- creation management (selection and promotion, generally by the labels)
- production (recording, mastering, and production of physical copies, generally by facilities owned by the labels)
- retailing (by traditional stores, the labels themselves, online sellers of physical copies, and to some extent online sellers of pure digital products)

3.2. Potential Sources of Record Company Vulnerability

The analysis of section 2 suggests that the following are potential vulnerabilities of the labels. However, for each there has historically been an effective source of defense against these vulnerabilities.

3.2.1. Cross Subsidies of Talent and Opportunistic Pickoff

The principal source of vulnerability will come from the threat of opportunistic pickoff, as described in section 2.2. In a real sense the artists are captive “customers” of the labels, buying promotion and production services in exchange for giving up their copyrights and accepting royalty payments as compensation. There is a strong customer profitability gradient (CPG) among these groups; some acts desperately require the promotional services that the labels can offer, while others have little need for these services, or to obtain them from their record companies. Thus, one of the marks of strategic vulnerability is present: the best, most popular, and most profitable groups under any labels control are being forced to subsidize their less popular and less profitable stable-mates.

Historically, record companies were able to protect themselves from opportunistic defection, a form of opportunistic pickoff in which the most profitable groups leave the label at the end of the contract and begin to promote themselves and record and sell their own works. The labels’ defenses came from the following sources:
- In the beginning of the performing careers, artists had limited reputations, limited funding, and thus limited access to the promotional process other than through the labels, with their talent scouts and development system. Groups initially needed contracts with labels simply to “break into” the business.
- Even established groups had limited access to recording studios, mixing technology, and mass production except through the labels, and thus needed contracts to remain in business.
- And, likewise, even established groups had limited access to **distribution** through record stores without endorsement of a major label.

3.2.2. Cross Subsidies of Activities and Opportunistic Pickoff

The value creation comes from the artists and the revenue comes from producing and selling physical copies, which may no longer be necessary for distribution and consumption of music. This decoupling of value creation and revenue production creates a second cross subsidy between these two activities, which are presently linked only because physical production and distribution capability historically were co-specialized assets needed to capture value from creation of the work of art. This creates a second force towards opportunistic pickoff as groups can distribute their works at much lower cost if they neither subsidize other acts nor subsidies the labels’ other activities.

A typical record company contract offers a mere 10%-15% royalty to the artists, while the labels and the retailers divide the rest. That means the artists receive only less than $2 for each CD sold with the average retail price of about $15. Clearly, the artists can receive a bigger portion of the revenue if they can deliver the music directly online.

3.3. Changes that Exacerbate Vulnerability

Recent changes in the cost or value of assets owned by the labels have undercut the labels’ defenses. The ease with which groups can now produce their own master recordings with inexpensive digital recording studios, and the ease with which these recordings can be copied with inexpensive CD-burners, is sufficient to create ease of entry where once significant barriers existed. These changes make it newly easy for groups to defect and enter the music business without labels. As we have already
seen, these markets are also attractive to attack, creating the first two necessary conditions for newly vulnerable markets. If artists were to gain access to production and distribution they would no longer need to forfeit roughly 85% of the sale price of their music to the labels and the distribution channel. In the past the costs of independent production and distribution were so high that this option was available only to the most wealthy and powerful artists. Perhaps the only group to clear this high hurdle and operate their own label in the age of vinyl records was the Beatles, with their creation of the Apple label in the late 1960s. However, digital recording and mastering, to produce the original recording of the performance, and net-based online distribution in purely digital form, dramatically lower this hurdle and make self production available to a far wider range of artists.

As a result, the best groups will be able to opt out of the record companies’ promotional activities, which offer them little, and will be able to record and distribute directly to consumers online.

We have created a computer simulation model to allow us to examine the implications of our analyses more concretely, using a range of assumptions. The assumptions of these simulations are included in the appendix. Our simulation results illustrate the following:

- **A base case** run in which the studios are profitable, on average groups are profitable, but the bulk of the profits come from the best groups.

- **Rapid defection / self promotion** in which many of the best groups choose to defect from their labels soon after the end of their contract periods. Record companies soon become much less profitable. The groups that self promote do indeed enjoy an increase in profitability.

- **Rapid and broad defection / self promotion** in which many groups, across a broader spectrum, choose to leave their labels and self promote. Record companies cease to be profitable. The earnings of successful groups do indeed increase, but as record companies cease to promote, fewer bands enter the industry and consumer choice actually declines.

- **Slower defection/ self promotion**, in which the top groups leave, but less rapidly. Record companies earn less, groups earn more.

- **Rapid adoption of piracy** in which about 75% of the top acts’ sales are stolen, and about 25% of the remaining acts’ sales are stolen. Record companies lose money, artists earn less, and fewer groups choose to enter the recording industry. Consequently, consumer choice is reduced.

### 3.3.1. The Music Industry — Base Case

As can be seen in figure 1, initially the recording studios are quite profitable. Recording artists consistently earn money as well. Since there is initially no self-promotion (that is, no groups are attempting to engage in recording, promotion, and sales, without relying upon a contract with a studio), there is no profit associated with self-promotion. The number of groups recording music available to consumers remains roughly constant.

![Figure 1: Base case for recording industry.](image1)

### 3.3.2. The Music Industry — Rapid and Broad-Based Defection

As can be seen in figure 2, rapid and broad based defection of recording artists is devastating for the recording industry. As the most profitable 10% of recording artists defect and do so at a rate of 50% annually, producing and distributing their own music using alternative technology and alternative channels, the profitability of traditional record labels is destroyed. In contrast, the money that was previously earned by the studios is now earned by the artists themselves, as a result of their adoption of self-production and self-distribution. However, it becomes quite difficult for new groups to enter the industry. Thus, the number of groups recording and the amount of music available for consumers to purchase declines dramatically over time.

![Figure 2: Rapid and broad-based self-promotion](image2)
3.3.3. The Music Industry — Rapid but More Focused Defection

As can be seen in figure 3, rapid but more focused defection of recording artists is still extremely damaging but less immediately devastating for the recording industry than more broad-based defection shown in figure 2. As the most profitable 5% of recording artists defect and do so at a rate of 25% annually, producing and distributing their own music using alternative technology and alternative channels, the profitability of traditional record labels is rapidly eroded, though not quite to the levels caused by more broad based defection. However, given the significant skew in profitability, and the high percentage reflected by the top deciles of the labels’ artists, the loss of even 5% is quite damaging. Once again, much of the money that was previously earned by the studios is now earned by the artists themselves, as a result of their adoption of self-production and self-distribution. Additionally, as with more broad based defection, it becomes quite difficult for new groups to enter the industry and once again the number of groups recording and the amount of music available for consumers to purchase declines over time.

3.3.4. The Music Industry — Slower and More Focused Defection

As can be seen in figure 4, slower and more focused defection of recording artists is only moderately damaging for the recording industry, and significantly less so than the more rapid defection shown in figures 2 and 3. As the most profitable 2% of recording artists defect, but at a slower rate of 25% annually, the profitability of traditional record labels is somewhat eroded. However, given the degree of natural turnover that would have removed many of these groups from their labels collection of recording artists, this is much less damaging than the rapid reduction of groups that would have otherwise remained profitable for their studios. Once again, the money that the studios no longer earn is now earned by the artists themselves, as a result of their adoption of self-production and self-distribution. However, since the studios are no longer under as extreme pressure they are no longer cutting back quite as extensively on their support of new groups, and thus the impact on the music available to consumers is less severe than in figures 2 and 3.

3.3.5. The Music Industry — Online Piracy without Payment for Production or Intellectual Property

As can be seen in figure 5, online piracy rates of 50% has a dramatic impact on the profitability of the recording studios. However, the money being lost by the studios is no longer captured by the recording artists. Consumer advocates might argue that although this may appear unfair to both artists and shareholders in record companies, it is at least producing significant consumer surplus: the money that had previously been earned by artists and record companies is retained by consumers who now have access to music free. However, this issue now appears more complex; an examination of the number of new groups being promoted by record companies is significantly reduced, and hence the selection of music available ultimately is reduced as well.

3.4. Defensive Strategies Available to Labels
We see only two defensive strategies available to the record companies. The first is to try to capture groups longer, by signing all prospects up to longer term contracts. The second is for the record companies to attempt a profound transformation of their basic value proposition, much as travel agencies were forced to do by capitation of ticket prices and the threat by airlines to opt out of the agency-based distribution system for corporate travel. This could entail some combination of the following activities:

- The record labels could provide promotional management and production management services, for competitive fees. They might choose to do this for all groups, or they might choose to offer all new groups the current promotional program and offer fee-for-services contracts to groups at the completion of their initial contracts.
- They could attempt to lock up Napster and Gnutella and other online distribution channels and lock out independent distribution by groups. (However, this appears unlikely to succeed, due to restraint of trade implications and difficulty in preventing new entry by websites without such restrictions)
- They could make stamping out piracy and protecting the intellectual property rights of their artists an essential part of the service that they provide to their groups as part of their contract. (Technically, this has always been one of the services that labels have provided for their groups. However, with the ease of online piracy, this service has become far more valuable, and should be more explicitly stressed by the labels.) They could work with Napster and Gnutella and other online distribution channels, to assure (for a fee) that they and their artists receive compensation every time a copy of their work is exchanged. This may indeed be what Bertelsmann has planned.

4. The Newspaper Industry

4.1. Current Industry Structure

The major industry players, ignoring, for now, online editions, include the following:
- The writers and photographers, who cover and report on the news
- The newspapers, which hire or contract with writers and photographers, edit their works, sell advertising space, bundle their works with advertising, print the paper copies, and distribute them to subscribers and to other retailers
- The various forms of retailers, who do most of the actual selling to consumers not handled directly by the newspapers’ subscription service

The essential activities performed by these players can be summarized as follows:
- creation (by reporters and photographers)
- creation management (selection of stories, editing of stories, and certification of correctness, accuracy, timeliness, and suitability)
- production (bundling with advertising, printing and distributing copies)
- retailing (by subscription services, news agencies, news stands, convenience stores, and other retail outlets)

4.2. Potential Sources of Newspaper Vulnerability

The analysis of section 2 suggests that the following is the principal potential vulnerability of the newspapers. In contrast with the music industry pickoff by the creative staff itself does not appear to be a significant threat. There is a major threat from the cross subsidy of different activities, however, as in the recording industry there has historically been a defense against this threat.

4.2.1. The Advertising Business and Cross Subsidy between News and Advertising

The newspaper industry has consisted of two separate and distinct industries — selling news and selling advertising — that have been coupled together for historical reasons:
- Combining news with advertising yields lower cost distribution of advertisements (economies of scope on cost)
- Consumers are willing to accept advertisements but not willing to pay for them, justifying bundling and charging advertisers
- Consumers, at least in the US, are often not willing to pay full cost of newspaper, justifying bundling advertisements to subsidize newspaper to consumer and thus lower the price that must be charged to consumers

4.2.2. The News Reporting Business

There does not appear to be a strong customer profitability gradient in the news reporting business. That is, when newspaper sales are compared with credit card issuance or health insurance there are not consumers who are significantly more profitable on any individual sale than other consumers. However, we do observe a decoupling of value creation and revenue production, largely analogous with the music industry:
- Value comes from creation of the news story
• Revenue comes from creating and selling physical copies

Although there is no cross subsidy of some customers by others, created by a strong CPG, there is a cross subsidy between the two activities of creation and selling. These activities are linked today only because physical production and distribution capability historically were co-specialized assets, which were needed to capture value from the creation of news stories. Based on the data from Newspaper Association of America, advertising accounts for 81.5% of the total newspaper revenue. The subscription revenue accounts for only 18.5%.

4.3. Changes that Exacerbate Vulnerability

Have newspaper publishers faced changes that undercut their defenses and render them participants in newly vulnerable markets, analogous to the situation faced by music labels? We do not see publishers as vulnerable in the same way, or to the same set of threats; that is, we do not see threats posed by the writers and content production staff of newspapers. Even if reporters could gain access to direct distribution of daily newsletters (Floyd Norris on the Market, Saul Hansell on eCommerce, John Markoff on technology companies) it is not clear that consumers would purchase them:

• Very few reporters are, indeed, consumer brands to the extent that Wings, the Grateful Dead, or even Smashing Pumpkins or Dead Milkmen are to the public that listens to pop music
• News stories need some form of authentication or certification — a story I read in the Times online has a very different level of credibility than something I read in alt.conspiracy.middle-east, and acting on an unsubstantiated rumor can be dangerous or expensive. Reputation and brand name have been recognized as the main corporate assets in the media industry, and especially in the online news market. Papers like the New York Times or the Wall Street Journal have therefore invested heavily in efforts to carry over their reputation for accuracy, timeliness, and relevance of their print versions to their online editions. In contrast, a piece of music that I like is enjoyable to me, regardless of who wrote it or who played it. I have been surprised on occasion when a concerto I heard on the radio was by Bach when I was sure it was by Vivaldi, or a symphony was by Haydn when I thought it was by Mozart; I like it either way, and there is no comparable need for certification.

There has been a change in the difficulty of obtaining assets needed to produce and distribute a news story or photograph, but this does not seem to have resulted in a change in competitive position of the newspaper, in its most obvious business of covering the news:

• Reporters and photographers do indeed have access to low-cost production of their digital stories and photographs, and low cost access to consumers of the news via online direct distribution
• However, the certification / authentication role of the editorial function remains intact. This is in sharp distinction with online distribution of digital music: if I enjoy a performance I may not care whether or not it is an authorized recording; indeed, many take a real joy in purchasing a bootleg recording of a concert that was never commercially released. However, I cannot invest wisely or make other plans based on a story whose accuracy I can neither trust nor confirm.

As long as the certification role remains intact, and an essential role of the newspaper editorial staff rather than the individual news story creator, then it will be difficult for individual content producers to compete effectively with their papers. Thus we may conclude that the industry is neither easy to enter, either by reporters themselves or by new entrants who do not yet enjoy a strong reputation for reliability and timeliness, nor attractive to attack, based on the absence of a strong customer profitability gradient.

The industry based on selling of advertising space within newspapers will need to be analyzed separately. Selling physical copies of the story does indeed cross subsidize the creation of the story, and online distribution does indeed appear to offer lower cost ways of reaching readers, but at the moment the bundling of advertising is simply too important, and bundling of advertising into online editions is simply too uncertain to encourage entry by online competitors. Can we conclude, therefore, that newspapers are safe?

Perhaps the advertising space business of newspapers may prove vulnerable. There may indeed be an untapped and unexploited customer profitability gradient, and possibly a strong one. Online advertisers might be able to locate it and find ways to exploit it. Two of the authors of this paper are upper-middle income professionals who have recently taken up golf. Both need clubs. Both can afford to pay a bit more for clubs that promise — rightly or wrongly! — to deliver longer and straighter shots, and both actually would be willing to do so. This information would make them much more valuable consumers of golf product advertisements, and would enable a well-informed online advertising company to create and exploit a customer profitability gradient. Moreover, we have agreed that, as in the music industry, the physical distribution of the paper and its ads is cross subsidizing other activities; this cross subsidy may
indicate that advertisers are being over-charged by newspapers, now that alternative means of distribution may be available to advertisers. This in turn creates significant vulnerabilities for newspapers.

We do observe changes that undercut defenses of newspapers, creating a newly vulnerable market. In particular:

• The direct distribution of paperless advertisements makes the advertising portion of the newspapers’ business easy to enter.
• Technology facilitates exploiting the customer profitability gradient among consumers who respond to advertising, terminating cross subsidies of consumers who read the news but do not respond to advertising, focusing on point-casting advertising to consumers who will respond, and terminating support of other activities that do not add value to advertisers. All these combine to make the industry attractive to attack.
• For reasons that we will explore below, it will be difficult for newspapers to respond to this threat, making the industry difficult to defend.

Hence we conclude that the three conditions required for newly vulnerable industries are indeed present. The news side of the business will not be attacked. However, the advertising revenue base will come under increasingly intense assault.

But why do we believe that it will be difficult for industry participants to defend themselves? Most importantly, their core competence is in producing engaging and reliable news, producing and distributing paper-based copies of news and advertising to the widest readership in a cost effective and timely fashion, day after day. However, these are the skills needed to support precisely the activities that the advertiser-based services will terminate. They are not ideally situated to compete in any way against pure, targeted distribution of advertisements.

4.4. Defensive Strategies Available to Newspapers:

A limited set of defensive strategies may be available to newspaper publishers.

Firstly, but implausibly, they can exit the news business and focus on advertising, although for reasons of core competence, and fixed investments in infrastructure, and commitments to union employees, this appears unlikely.

Alternatively, they can create a changed value proposition:

• They can focus on audience willing to pay for the news
• They can provide a news service that does not require subsidies from advertising
• Perhaps they can develop an advertising business as well, though no reason not to spin this off if it is not heavily synergistic with the news business
• They can use online distribution as an essential adjunct, not a competitor or alternative to, to paper-based business

We notice in passing that Bloomberg has successfully located a market that will pay thousands of dollars a month for information that is accurate, timely, and in some sense certified as correct.

5. Conclusions

We have used the theory of resource-based advantage to examine two markets for information goods, within the context of the theory of newly vulnerable markets. We have concluded that the music industry is vulnerable to attack by the artists and musicians it employs. In contrast, we have shown that newspapers are not vulnerable to attack by content staff but are vulnerable to pickoff from targeted distributors of advertising. Preliminary quantification is provided by simple simulations and computational techniques.

Planned extensions and future research includes the following:

• calibrating our computational results via actual data from the music recording and newspaper industries.
• using our analytical techniques to study additional industries within the collection of markets for pure information products.

Bibliography
Appendix: Modeling Assumptions

Common Assumptions

We assume that record companies compete efficiently with each other to sign the best acts and that acts compete efficiently with each other to sell their recordings. We assume that, as at present, record companies use standardized contracts and that all are therefore equally vulnerable both to piracy (illicit copying) and disintermediation (production and direct distribution by recording artists, without the need for a record contract or the technical and promotional support of a record label). Therefore, without loss of generality, we model the profitability of a single record company.

Maintenance of a Stable of Acts: We assume that the record company seeks to employ a constant stable of 50 signed acts. Each year any and all unprofitable acts are dropped. Moreover, for a variety of reasons, 20% of the profitable acts retire each year. Replacement acts are auditioned and a sufficient number are added to replace those that drop out. However, while groups arrive with a predetermined quality, which will be maintained throughout their recording careers, this quality can only be observed with uncertainty. Thus, if the record company wants to replace R acts it auditions 4R and takes those that it ranks as the top, but these are likely to be randomly selected from the top 2R ranked by true (but unobservable) quality.

Operations: The record company cuts a master disk for each act each year at cost M and promotes the disk at cost P. These costs are subtracted from the act’s royalties, to determine the act’s own profits. If M and P are not fully covered by royalties, and if the record company’s operation of the act is unprofitable, then the act is dropped.

Sales: The record company sells N recordings a year at $5.00 / disk wholesale. Royalties are calculated at 10% of these sales, less production and promotional expenses.

Base Case

Using the assumptions listed under common assumptions above, the model is run until profitability reaches steady state, and then data are captured and displayed for as many periods as desired.

Direct Distribution Cases

The assumptions listed under common assumptions are used once again. However, in each of the direct distribution scenarios we assume that a fraction of the company’s top acts will choose to product and distribute their own recordings. The acts need to fund their own production and promotion, which the tops acts are now able to do. The principal impact of this disintermediation on the record company is that it loses the revenues from these acts. The principal impact on the acts themselves is that they retain the full wholesale price of their recordings. We are able to vary which deciles are liable to engage in direct distribution, and what fraction of these deciles actually chose direct distribution.

Piracy Case

The assumptions listed under common assumptions are used once again. However, in each of the piracy scenarios we assume that a fraction of the company’s sales are lost due to piracy, the illicit coping and distribution of music, either through sales of forged copies or, increasingly, through online swapping of digital recordings. The principal impact of this piracy on the record company is that it loses the revenues that would have come from the sale of legitimate copies of their acts’ recordings. The principal impact on the acts themselves is that they too now lose their share of the revenue from sales lost to piracy.