

DIGITAL PIRACY, FILM QUALITY,
AND SOCIAL WELFARE

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INTRODUCTION

Although there has long been an active public policy debate over the nature, importance, and enforcement of copyright in our legal system, the advent of Internet file sharing in the late 1990s has added a great deal of urgency to the debate. The spread of illegal file sharing of copyrighted material has been a polarizing issue from legal, philosophical, and economic perspectives, with strong opinions emerging both for and against Internet media piracy.¹ However, one trend in the debate on copyright is to portray the clash as consumers (who ostensibly benefit from piracy) versus producers (who ostensibly lose from piracy). This Essay contends that such positioning oversimplifies the relevant economic and social issues resulting from piracy.

The idea that piracy may benefit producers in certain situations has been explored extensively in the theoretical literature.² But the alternate idea—that piracy may harm consumers—does not seem to receive much public attention. For example, in a study of the public's attitude toward piracy, Simone Aliprandi surveyed 1,300 Italian Internet users.³ A majority agreed that the

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¹ Indeed, even the terminology has become somewhat loaded, with some saying that "piracy" is a label that carries an unfair negative connotation, and that "filesharing" is a more neutral term. In this paper, we use both terms interchangeably and with neutrality. This Essay will not delve into the merits of all of these arguments here. For a summary of the economic literature, see generally Brett Danaher et al., *Piracy and Copyright Enforcement Mechanisms* (Nat'l Bureau of Econ Research, Working Paper No. 19150, 2013), <http://www.nber.org/papers/w19150.pdf>.

² See, e.g., Martin Peitz & Patrick Waelbroeck, *Piracy of Digital Products: A Critical Review of the Theoretical Literature*, 18 INFO. ECON. & POL'Y. 449, 461–64 (2006); Julie Holland Mortimer et al., *Supply Responses to Digital Distribution: Recorded Music and Live Performances*, 24 INFO. ECON. & POL'Y 3, 4 (2012); Ashutosh Prasad & Vijay Mahajan, *How Many Pirates Should a Software Firm Tolerate? An Analysis of Piracy Protection on the Diffusion of Software*, 20 INT'L J. OF RES. MARKETING 337, 338 (2003).

³ See Simone Aliprandi, *Il Diritto D'autore Nell'era Digitale: Uno Studio Pilota Su Comportamenti, Percezione Sociale e Livello di Consapevolezza*, 4 J.LIS.IT 45, 50 (2013).

phenomenon of online piracy damages the publishers of media content, though they were more divided over whether it harms the creators of the content.⁴ But in the best translation of the Italian study that could be found, the respondents overwhelmingly did not agree that piracy causes damage to the “socioeconomic fabric.”⁵

Our goal in this Essay is to use economic theory and empirical evidence to explore whether and how consumers—and society as a whole—might be harmed by piracy. Specifically, the Essay asks whether reduced revenues from Internet file sharing will reduce the quantity or quality of media products that are brought to market. The discussion focuses on the film industry, describing the process by which films are financed and made, and exploring how these processes might be affected by reduced revenues due to piracy. An analysis of available empirical and anecdotal evidence demonstrates that, although there is not strong evidence of a decrease in the total number of products being made, there is evidence consistent with more subtle negative impacts on the creative process. However, further research is required to verify these preliminary results.

I. THE ECONOMICS OF PIRACY

There are a number of non-economic arguments made against piracy, often appealing to standards of fairness or morality associated with enjoying the creations of another without permission or compensation. The economics profession, however, traditionally concerns itself with efficiency, or maximizing the overall social benefit of a market. In what economists refer to as “short run effects,” it is assumed that the fixed costs to produce a product and bring it to market have been paid. Economically, it is clear that the short run effect of piracy is to increase social welfare, as described by Rafael Rob and Joel Waldfogel.⁶ When individuals who would have purchased the good for market price (in the absence of piracy) choose to pirate the good instead, producers lose the purchase price of the product but consumers gain that same amount (by consuming the product for free)—meaning that the net social effect is a wash. However, when consumers who valued the good less than its market price, and therefore would not have purchased it, choose to pirate the good, they gain some welfare and producers lose nothing. Thus, piracy may redistribute some welfare from producers to consumers but it also increases the total size of the “welfare pie” in the short run because more people get to consume the good.

⁴ See *id.* at 62–65.

⁵ See *id.* at 64. Quotes used to denote a translation from Italian.

⁶ See Rafael Rob & Joel Waldfogel, *Piracy on the High C's: Music Downloading, Sales Displacement, and Social Welfare in a Sample of College Students*, 49 J.L. & ECON. 22, 30–32 (2006).

But economists are concerned with long run effects, which are defined as the period of time in which producers have a choice over whether to invest the fixed costs to produce new products. In this case, expectations of reduced revenues due to piracy may reduce the incentive to pay the fixed cost of development in the first place. This is especially true for media goods like movies, where the fixed costs are substantial while the marginal cost of reproducing additional copies are quite low.⁷ Consider the production and marketing budgets associated with large blockbuster films, which can run into the hundreds of million of dollars. If piracy lowers the expected revenues of a film to the point where they are less than the fixed cost of production (plus, perhaps, some reasonable premium for taking on the financing risk), then the film will not be made and brought to market, and all social welfare disappears. Thus, in this scenario, piracy causes harm to producers *and* consumers (who otherwise would have accessed this movie). This is the economic argument in favor of protecting copyrighted works against file sharing.⁸

This argument relies on two assumptions: first, that piracy harms revenues to artists and media firms, and second that reduced revenues will cause a reduction in the supply of creative works. The first assumption is supported by nearly all of the relevant peer-reviewed journal articles in the academic literature. Indeed, a recent review of the academic literature found twenty-three peer reviewed papers demonstrating that piracy harms sales of media goods, while only three papers find no evidence of harm.⁹ However, there is no consensus in the literature regarding the second assumption—that reduced revenues due to piracy have been detrimental to the supply of new creative works. This Essay contends that this is the most important open and unsettled question on the economics of copyright.

II. EMPIRICAL LITERATURE ON PIRACY AND THE SUPPLY OF CREATIVE WORKS

Several empirical studies touch on the subject of whether piracy affects the supply of creative works. Two studies ask whether the entrance of Napster and Internet music piracy in 1999 altered the pre-existing trend of the supply of new creative works of music.¹⁰ One study, conducted by Christian Handke, finds that the number of German album releases has continued to

⁷ Brett Danaher & Michael D. Smith, *Gone in 60 Seconds: The Impact of the Megaupload Shutdown on Movie Sales*, 33 INT'L J. INDUS. ORG. 1, 2 (2014).

⁸ See Brett Danaher et. al., *Piracy and Copyright Enforcement Mechanisms*, in 14 INNOVATION POLICY AND THE ECONOMY 25, 26 (Josh Lerner & Scott Stern, eds., 2014).

⁹ Brett Danaher et. al., *Copyright Enforcement in the Digital Age: Empirical Evidence and Policy Implications*, 60 COMMS. OF THE AMC 68, 68 (2017).

¹⁰ See generally Christian Handke, *Digital Copying and the Supply of Sound Recordings*, 24 INFO. ECON. & POL'Y 15 (2012); Joel Waldfogel, *Copyright Protection, Technological Change, and the Quality of New Products: Evidence from Recorded Music Since Napster*, 55 J.L. & ECON. 715, 719 (2012).

expand along its prior trend following the spread of digital music piracy.¹¹ In another study, Joel Waldfogel also examined the supply of new music albums since the rise of Napster and compared it to the pre-existing trend, asking whether there has been a change in the supply of albums that surpass a certain time-invariant quality threshold.¹² Waldfogel defines this threshold by creating a novel index of new “quality” music creation based on the number of songs from each year that make it onto various “best of” lists—such as the best of the decade list at Rolling Stone magazine.¹³ First, the evidence did not show a decrease in the number of high quality new albums released post-Napster.¹⁴ Furthermore, there was an increase in the value consumers are getting from newer music by using measures of airplay and sales, after controlling for age.¹⁵

However, each of these studies acknowledges that their results measure the net impact of technological advances associated with digitizing music and film, which includes both piracy and cost-reducing technologies.¹⁶ It remains possible that the marginal impact of piracy alone diminished output, but that this effect was simply dominated by the positive effect of reduced costs on the supply side.

Acknowledging that possibility, Rahul Telang and Joel Waldfogel analyzed a natural experiment where piracy increased without associated reductions in production costs.¹⁷ The analysis focused on the explosion of VHS film piracy that began in 1985 in India, asking how this increase in piracy¹⁸ impacted the supply of “Bollywood” films to the Indian market.¹⁹ While film revenues in India grew from 1960 to 1985, the advent of VHS movie piracy (which began around 1985) coupled with lax copyright enforcement policies from the government led to a sharp turn in this trend, and revenues fell consistently from 1985 until 2000 (at which point the entrance of Bollywood to the international film scene finally stopped the decline).²⁰ Telang and Waldfogel also found that from 1960 to 1985, when revenues were expanding, the number of Bollywood films rose or remained consistent from year to year.²¹ However, shortly after 1985 and the spread of video piracy, the number of films released began to fall consistently from year to year, and this decline

¹¹ Handke, *supra* note 10, at 15–16.

¹² Waldfogel, *supra* note 10, at 719.

¹³ *Id.*

¹⁴ *Id.* at 731–35.

¹⁵ *Id.*

¹⁶ See Handke, *supra* note 10, at 22–23; Waldfogel, *supra* note 10, at 716.

¹⁷ See Rahul Telang & Joel Waldfogel, *Piracy and New Product Creation: A Bollywood Story* 21–22 (Carnegie Mellon Univ., Working Paper, 2014), <http://ssrn.com/abstract=2478755>.

¹⁸ Which, unlike the music examples cited above, was not correlated with significant cost-reducing advances associated with digitization.

¹⁹ See Telang & Waldfogel, *supra* note 17, at 2.

²⁰ *Id.* at 5–9.

²¹ See *id.* at figs. 1a, 1b & 2.

only halted in 2000.²² Likewise, the average rating of films according to the Internet Movie Database (“IMDb”) began to fall after 1985 and until 2000.²³ Thus, the authors found that the disruption caused by widespread piracy—without a compensating reduction in supply-side costs—caused a meaningful decrease in the quantity and quality of films supplied.²⁴

In conclusion, there is no consensus in the literature on whether piracy harms the supply of creative works. At first glance it may appear that there is little evidence of harm, as Hollywood still produces a large number of blockbuster films and Waldfogel’s evidence in the music industry indicates an increase in the number of albums being produced and in the value consumers get from them. However, there are a number of more subtle but important distortions that piracy may cause in the production of new films, and these distortions could, over time, seriously impact the types of films that are made as well as their quality.

III. THE POTENTIAL EFFECT OF PIRACY ON FILM SUPPLY

The first distinction that must be understood in the movie industry is the difference between films produced by the six major Hollywood studios²⁵ and films produced by so-called “independent” studios. The latter category is often used simply to denote any film produced outside of the six major studios—so independent does not necessarily mean small. Indeed, similar to how major studios formed a widely known trade association, the Motion Picture Association, many independent production studios are represented by the Independent Film and Television Alliance (“IFTA”).²⁶ But a major distinguishing factor between major studios and independents is that major studios own their own distribution networks in the United States and abroad.²⁷ Distribution networks are necessary to ensure that a film will be made available in the box office or for sale/rental on DVD, Blu-Ray, or electronic platforms. Thus, if Sony or Fox produces a movie, they can essentially guarantee that it will be distributed in a large number of countries. If, on the other hand, an independent studio wants to produce a movie, it will have to find distributors who agree to distribute the movie and who may guarantee a licensing fee for the right to distribute it. Such distribution deals are “bankable” in that

²² See *id.* at 19.

²³ See *id.* at 19-20.

²⁴ *Id.* at 22.

²⁵ Sony Pictures, Universal Pictures, Walt Disney Pictures, Paramount Pictures, 20th Century Fox, and Warner Brothers. Maya Academy of Advanced Cinematics, *Big Six*, (Dec. 22, 2014), <http://www.maacindia.com/blog/index.php/big-six/>.

²⁶ Patrick Gavin, *IFTA Emerges as Motion Picture Lobby*, POLITICO (Apr. 30, 2012), <http://www.politico.com/story/2012/04/ifta-emerges-as-motion-picture-lobby-075758#ixzz21QUy7o4E>.

²⁷ Allen J. Scott, *Hollywood in the Era of Globalization*, YALEGLOBAL ONLINE (Nov. 29, 2002), <http://yaleglobal.yale.edu/content/hollywood-era-globalization>.

they can be used to collateralize a bank loan toward the production budget of a film.

Of course, before a movie is made—whether a major or independent studio produces it—its budget needs to be financed. A major motion picture studio can afford to self-finance many of its own films, internalizing the risk associated with the films' performance.²⁸ Even if the studio does choose to seek financing from external sources or investors, it maintains an advantage over independent studios by guaranteeing distribution of its films across a number of countries and platforms through its own distribution networks, automatically giving investors some positive signal about whether they will be able to recoup their investment.²⁹ Independent studios, on the other hand, can rarely finance their own movies and typically seek help from outside investors.³⁰ Moreover, independent studios cannot guarantee that distributors in each country will pick up a film.³¹ Thus, investors must take significant risk when agreeing to help finance an independent film relative to films produced by major studios. Independent studios may seek distribution deals in advance of producing a film in order to generate interest from investors or to use as collateral against loans, but they cannot always secure such deals.

In addition to differences in risk across major and independent studios due to distribution, films based on well-known franchises like Transformers, Star Wars, or Marvel Comics, or successful books such as *50 Shades of Grey* or *The Hunger Games*—which are typically produced by major studios—likely involve less risk because there is usually a known audience in advance for these franchises or books. On the other hand, the financing of the types of films produced by independent studios often involves a great deal of risk, as there is frequently no “built-in audience” for these productions. The money to produce the film must be secured in advance based only on a script and possibly an actor or director attached to the script and so it is typically harder to predict demand for these films.³²

Economic theory and common sense predict that in order to be willing to take on more risk, investors must expect a greater premium or reward. If piracy is diminishing revenues for films, then the expectation might be for investors to invest less in riskier films and rely more on major studio films with built-in audiences and guaranteed distribution networks. Thus, one sign of an impact from piracy would be a steady or even increasing number of

²⁸ See, e.g., Kim Masters, *Why Studios Don't Pay to Make Movies Anymore (Analysis)*, HOLLYWOOD REPORTER (Dec. 13, 2012), <http://www.hollywoodreporter.com/news/disney-fox-paramount-sony-fox-400727>.

²⁹ *Id.*

³⁰ See, e.g., Michael Cieply, *Independent Filmmakers Distribute on Their Own*, N.Y. TIMES (Aug. 12, 2009), <http://www.nytimes.com/2009/08/13/business/media/13independent.html>; Julia Greenburg, *Netflix and Amazon Offer Indie Filmmakers Hope (and Lots of Money)*, WIRED (Jan. 28, 2016), <https://www.wired.com/2016/01/netflix-and-amazon-offer-indie-filmmakers-hope-and-lots-of-money/>.

³¹ See Cieply, *supra* note 30.

³² Greenburg, *supra* note 30.

major studio films (of lower risk) and a decrease in riskier independent films. This would arguably be a social loss as the movies made by independent studios are still quite important to our culture and, when successful, to the economy.³³ Examples of successful independent films include *Pan's Labyrinth*, *Million Dollar Baby*, and *Hurt Locker*. In other words, independent films, while perhaps lower budget (on average) than large blockbusters, arguably play an important role in art and culture as evidenced by the fact that over half of the movies that have won the Academy Award for Best Picture were produced by IFTA member studios.³⁴

A. *Retreat from Riskier Movies*

Because independent films typically involve more risk, it seems more likely that file sharing might impact production of independent films. What makes it difficult to determine whether this is true, is that only films that do get made are observable—and of course independent films are still being made. As researchers, what we want to know is what movies (if any) would have been made *but for* piracy, or movies that would have been made but were not given eroded revenues. For example, consider the movie *Hurt Locker*. This movie was successfully financed and produced and went on to win the Academy Award for Best Picture in 2009.³⁵ The movie sold about six million tickets in theaters, and it is estimated that it was downloaded illegally on the Internet about ten million times.³⁶ Imagine if one in five of those illegal downloaders would have purchased a ticket absent the ability to pirate the film (an assumption consistent with the Rob and Waldfogel study).³⁷ Then *Hurt Locker* would have generated eight million (or, two million *more*) ticket sales. Now, what if there was another potential film with similar numbers that would, if it were produced, provide similar economic value and receive critical acclaim? But what if this hypothetical film would require an expected seven million ticket sales in order to justify its minimum possible budget? This film would get made in a world without piracy, but not in a world with it, despite the economic and cultural value it would bring to society and consumers. Proving this is very difficult—first it would have to be shown that a

³³ See Scott, *supra* note 27.

³⁴ Fed. Trade Comm'n., Independent Film & Television Alliance, Comment Letter to the FCC in Regards to Preserving the Open Internet Broadband Industry Practices, GN Docket No. 09-191, WC Docket No. 07-52 (Jan. 14, 2010) ("Since 1982, IFTA Members were involved with the financing, development, production and U.S. and international distribution for 63% of the Academy Award Winning Best Pictures . . .").

³⁵ *How Internet Pirates Stole The Hurt Locker's Bounty*, HOLLYWOOD.COM, <http://www.hollywood.com/general/the-hurt-locker-and-piracy-57178741/>.

³⁶ *Id.* The amount of tickets sold is an estimate from the amount of ticket revenue the movie generated. Even if this estimate is low, the point remains valid.

³⁷ See Rafael Rob & Joel Waldfogel, *Piracy on the Silver Screen*, 55 J. INDUS. ECON. 379, 385–93 (2007).

movie that did not get made would have been highly successful if it had been made, and then it would further require a showing that the film ultimately was not made due, at least in part, to expectations regarding piracy. But, at least in theory, the current landscape in which investors have to worry about some of the demand for a potential movie being cannibalized by piracy, there are inevitably some films that are not getting made that could have been financed and turned into a success if those revenues lost to piracy could have been appropriated.

This scenario—one where an expectation of piracy causes some types of content not be created, is consistent with an anecdote from an independent film distributor recently recounted in a *Wall Street Journal* article:

Last year, Kathy Wolfe, who owns a small independent U.S. film-distribution company, Wolfe Video, found more than 903,000 links to unauthorized versions of her films, which she sells around the world for \$3.99 per download. She estimates that she lost over \$3 million in revenue in 2012 as a result of stolen content from her top 15 titles. On top of that, she spends over \$30,000 a year—about half her profit—just to send out takedown notices for her titles. She said the losses to piracy, combined with the recent recession, forced her to trim her marketing budget in half, cut pay for her 11 employees and stop giving herself a salary. “It’s changed us,” she said. “It’s a very damaging trend.”³⁸

Why should consumers care about the potential that piracy is impacting the types of films that get made—and possibly with a disproportionate impact on small independent studio films? First, as mentioned earlier, many of these independent, riskier films have actually been quite successful, generating a great deal of surplus to both producers *and consumers*. Second, it seems reasonable to suggest that many of these independent films have artistic value and have added to our culture in ways that may not be directly measurable in terms of economic surplus, but which still have intrinsic value. Third, many of today’s leading actors and actresses got their starts in smaller, riskier “breakout” movies. For example, Brad Pitt, known for starring in many major blockbusters today, was discovered in a risky independent film in 1991 called *Thelma and Louise* (which became both a critical and commercial success).³⁹

Because many of today’s popular actors were discovered in this way, if fewer risky films are made because of piracy, it is possible that there will be fewer vehicles through which the next generation of great actors and actresses can be discovered. One might ask whether the list of top “serious” actors—those stars whose performances can drive the success of a movie—is turning over at a slower rate. This seems a fruitful area for future research as a testable implication of piracy impacting production of risky movies, and it remains a concern for consumers and producers as a potential outcome of the broader impact of online file sharing.

³⁸ Christopher S. Stewart, *As Pirates Run Rampant, TV Studios Dial Up Pursuit*, WALL ST. J. (Mar. 3, 2013), <https://www.wsj.com/articles/SB10001424127887324906004578292232028509990>.

³⁹ See Joanna Robinson, *Thelma & Louise 20 Years Later*, VANITY FAIR (Feb. 9, 2011), <http://www.vanityfair.com/hollywood/2011/02/thelma-louise-20-years-later>.

B. *Neutral Investors Versus Investments “With Strings”*

Regardless of whether piracy influences the decision on which movies get made and which do not, it has the potential to impact *how* movies get made and the content of those movies. In a world where movies make higher returns, a larger number of “artistically neutral” investors will desire to invest in films simply for the potential financial return on investment, where “artistically neutral” is meant to describe investors who have no interest in influencing the content or production of the film at all. But if revenues are reduced it follows that artistically neutral investors would be less interested on the margin, and producers may be forced to turn to investors who have a stronger interest in influencing the creative elements of the movie.

For example, imagine that the script for a fictional movie that portrays China starting a third World War. When the parties interested in making this movie are looking for investors, it would help if they could have already secured a deal for theatrical distribution in China with the Chinese government. But the government, knowing that the producers are relying on this, may negotiate terms that include altering the script so that China is portrayed differently. Alternatively, a wealthy individual investor with an interest in influencing art might offer to finance five percent of the budget contingent on several changes to the plot or art of the film. In the absence of artistically neutral investors, screenwriters and producers might be forced to accept these terms. In speaking with independent studio executives we heard a number of stories where similar events had actually played out, but because most of them are undocumented we can only put this idea forward as a potentially subtle impact of piracy on artistic creation.

However, it should be noted that “production incentives” have become a larger part of financing a movie than they once were.⁴⁰ Production incentives arise when producers are given financial incentives, not necessarily to alter the plot of a film, but to produce it in a certain manner or setting.⁴¹ For example, the Canadian government gives tax breaks to studios when they film movies in Canada and hire a Canadian crew.⁴² A studio attempting to finance a movie can offer to film it in Canada and then, having committed to do so, collateralize this future tax break against a loan from a bank, which might finance thirty percent of the film’s budget. It remains possible that in a hypothetical world with higher revenues due to the elimination of file sharing, producers would be less reliant on such incentives and could choose film locations that they believe are artistically superior to those that guarantee them the funds they need to produce the movie. Should society care if a

⁴⁰ See William Luther, *Movie Production Incentives: Blockbuster Support for Lackluster Policy*, TAX FOUND. SPECIAL REPORT 1, 1 (2010) (discussing tax credits as a form of production incentive).

⁴¹ See *id.* at 2.

⁴² Edward Jay Epstein, *Why Are So Many Movies Still Being Shot in Canada?*, SLATE (Feb. 13, 2006), http://www.slate.com/articles/arts/the_hollywood_economist/2006/02/northern_expenditure.html.

movie is filmed in Canada instead of, say, England? Not being filmmakers, it is difficult to evaluate whether these sorts of alterations impact the artistic value of a film, but it is worth pointing out that if reduced revenues from piracy cause artistically-neutral investment money to be less available to filmmakers, the funding for films may well come from sources that influence the very art and content of the films being made. This is another reason consumers might be concerned with the impacts of piracy on the creative industries.

C. *Diminished Quality of Film*

Finally, it is possible that production budgets—and therefore production values—could be lower if financiers are only willing to invest in smaller budget projects. Again, we might not expect to see this phenomenon for the next Transformers movie, but one could easily imagine this happening for a riskier project. Perhaps a film with a \$5 million dollar budget could once have secured \$5 million in loans, but in a world where piracy is reducing revenues and thus increasing the risk associated with the film, the producer might only be able to secure \$3.5 million in financing. This might be enough money to make the film, but it may require reducing production quality to bring the budget down to \$3.5 million. There is some anecdotal evidence to this effect in an article from CNN:

In a recent interview with CNN's Jake Tapper, "Game of Thrones" co-creator David Benioff speculated about all the special effects he could buy if those who illegally pirated the show were paying 99 cents or so per download. "You do kind of think, . . . if we just had a little bit of that, we could have had that extra scene with the dragons," he said.⁴³

If this anecdote applies more broadly in the industry it would raise an important empirical question: how much higher would revenues be if not for piracy, and how much of those increased revenues would go into increased budget and production values? This is of course a very difficult question to answer as the counterfactual cannot easily be observed, like the inability to identify objectively which films might have been made (and succeeded) in a world without piracy. What would *Game of Thrones* look like if even one tenth of the piracy could be successfully monetized? What about the next independent film that is a passion project of some up-and-coming director—even if it does get made—what might the director have done with the film if she could have increased her financing (and thus budget) by fifteen percent because investors and distributors saw market outcomes not cannibalized by file sharing?

⁴³ Chris Isidore, *Game of Thrones Premiere Sets Piracy Record*, CNN (Apr. 2, 2013), <http://money.cnn.com/2013/04/02/technology/game-of-thrones-piracy/>.

Of course this discussion, and these possibilities, are theoretical, and further empirical evidence is needed to determine whether these impacts are playing out in the digital age of media. The next Section examines some available data in an attempt to assess whether there is any preliminary evidence to support these claims.

IV. EMPIRICAL TEST

It is beyond the scope of this Essay to implement a rigorous empirical test of whether piracy is impacting the supply of films. But speaking generally, one way to isolate the effects of piracy on supply might be to look at changes in film production in settings where piracy has been less detrimental to revenues as compared to areas where it has been more detrimental, with the expectation that changes should be larger in the latter settings.

Foreign markets (those outside of Hollywood and the United States) have traditionally funded a number of independent films that have had significant artistic and cultural impact both in their local markets and around the world. For example, the film *Amour* was produced in France, was met with great critical acclaim, won a number of film awards (including Best Foreign Film at the 2012 Academy Awards), and was generally considered a financial success.⁴⁴ However, when a foreign studio wants to finance an independent movie, generally one of the first things potential investors will consider is how that movie is likely to perform in its local market, since that is the area most likely to generate strong demand, and because a strong local performance can generate worldwide interest. Of course, securing a good distribution deal in the local market can help to convince potential financiers. But what if demand in the local market has dissipated due to piracy? In that case, even for a great script, distributors or investors may be unwilling to make a commitment due to fears that the film will fail to find a presence in its own local market, making it very difficult for it to have any international success or recoup its costs. Thus, the state of the local market is one important factor in whether high quality foreign films can be produced.

Notably, not all countries have been impacted by piracy in the same ways—a point made by a recent *Wall Street Journal* article showing that it is much harder to translate a dollar of box office revenue into downstream home entertainment revenue in high piracy countries (e.g., China, Russia, South Korea) than in lower piracy countries (e.g., the US or UK).⁴⁵ Anecdotally, in

⁴⁴ See Andrew Pulver, *Oscars 2013: Amour Wins Best Foreign Film*, THE GUARDIAN (Feb. 24, 2013), <https://www.theguardian.com/film/2013/feb/25/amour-oscar-foreign-michael-haneke>.

⁴⁵ Ben Fritz, *For Hollywood, Not All Box Office Dollars Are Equal*, WALL ST. J. (Aug. 29, 2014), <https://www.wsj.com/articles/for-hollywood-not-all-box-office-dollars-are-equal-1409241925>.

speaking with studio executives and financiers, we found that certain countries (e.g., Spain, Italy, and Mexico) featured much more prominently in discussions about piracy.⁴⁶

The conjecture that piracy harms some countries more than others is consistent with empirical evidence from a recent paper studying the impact of the Megaupload shutdown on movie sales.⁴⁷ Our data showed that Spain, Italy, and Mexico had some of the highest Megaupload penetration rates in the entire set of countries; the percent of Internet accounts from each country that accessed Megaupload at least once before the shutdown was 17%, 12%, and 7%, respectively.⁴⁸ These were significantly higher than the penetration rates in Ireland, the U.S., the U.K., Germany, Australia, and New Zealand, which all had penetration rates in the range of 1-4%.⁴⁹ Furthermore, in Spain and Mexico the ratio of digital sales to piracy was lower than nearly all of the other countries, consistent with the possibility that more of the demand for films in these countries is served by piracy than in other countries.⁵⁰ In short, it seems reasonable to assume that, regardless of how much piracy may be harming sales on average across all countries, it has been more detrimental to the media markets in Spain, Italy, and Mexico than to other countries. Of course, in the 1990s and early 2000s Internet movie piracy was non-existent or nascent, and it was only in the mid-2000s that video markets in these countries began to experience the strong downturn attributed to piracy.⁵¹

If piracy has had a stronger impact on sales in these countries than in others, has the supply of quality movies from these countries diminished more than in other countries? To explore this question, we compiled a list of all movies from 1995 to 2014 that won at least one Academy Award. Of course, winning an Academy Award is just one indicator of a movie's quality, and economists can hardly comment on the selection process for Academy Awards. Nonetheless, Academy Awards provide a useful starting point for analysis of changes in output over time. Specifically, the list highlights all movies winning Academy Awards each year, how many awards they were nominated for and won, and what country or countries financed the movie.

⁴⁶ Admittedly, one might suggest that individuals on the production side of the film industry would not be objective in evaluating the effect piracy has had on their business. But it is important to note that we did not ask them "is piracy hurting your business" but instead asked "where is it hurting most," a question that is less likely to induce a biased response.

⁴⁷ See Danaher & Smith, *supra* note 7, at 2.

⁴⁸ *Id.* at 3 & tbl.1. That paper did not include the data for Italy because we were studying the impact of the shutdown on the legal digital market, and at the time of our study no meaningful digital movie market existed in Italy. Nonetheless, we were able to calculate the Megaupload penetration rate at a later time.

⁴⁹ Danaher & Smith, *supra* note 7, at 3, tbl.1.

⁵⁰ See *id.* at 3-4.

⁵¹ See *id.* at 2.

To analyze how country-level financing changed in the years after the rise of digital motion picture piracy, this Essay relied on financing information from the IMDb, a well-known source for film information.⁵² Because digital movie piracy was not sufficiently developed until the mid-2000s to significantly erode sales,⁵³ and because it might take distributors, investors, and producers a few years to internalize this into their decisions, the period of 1995-2006 is considered to be the “pre-piracy” period and 2007-2014 is considered the “post-piracy” period.⁵⁴ Table 1 lists the number of films from each country winning at least one Academy Award for each period, as well as the total awards won:

Academy Awards by Country, Pre/Post Piracy

	1995 to 2006		2007-2014	
	# of Award Winning Movies	Total Awards	# of Award Winning Movies	Total Awards
Germany	22	40	10	15
UK	27	35	33	68
France	12	14	14	20
Mexico	4	7	1	1
Italy	8	10	2	2
Spain	4	6	3	3

⁵² The question of what country a film should be associated with can be hotly debated. People consider source of financing, nationality of director, where the film is shot and what country/cultures are featured, and the language in which it is filmed. See, e.g., FÉDÉRATION INTERNATIONALE DES ARCHIVES DU FILM, THE FIAF CATALOGUING RULES FOR FILM ARCHIVES 13 (Harriet W. Harrison, ed. 1991) (“[A film’s] country of origin is defined as that of the principal offices of the production company by whom the work was made. In cases where the original title cannot be determined, the title on the item being cataloged may be used as the original title.”); *How is a Movie’s Country of Origin Determined?*, QUORA (Jan. 29, 2016), <https://www.quora.com/How-is-a-movies-country-of-origin-determined> (proposing that a film’s country of origin is either determined by the director’s country of origin or where the financing for the production occurred). We avoid this debate by simply attributing a film to each country from which it received financing according to imdb.com. Future researchers with access to more precise information about specific movies might employ a more precise approach.

⁵³ See Danaher & Smith, *supra* note 7, at 2; Michael D. Smith & Rahul Telang, *Piracy or Promotion? The Impact of Broadband Internet Penetration on DVD Sales*, 22 INFO. ECON. & POL’Y 289, 290 (2010).

⁵⁴ These two periods are not the same length exactly. But since we are comparing the decline in the “higher piracy group” vs. the decline in the “lower piracy” group, this should not matter.

Table 1⁵⁵

Consistent with the idea that piracy and film quality are correlated, these data demonstrate that in the U.K. and France, two countries where piracy has had less of an impact on the market, both the number of award-winning films and the number of awards won increased from the pre-piracy to the post-piracy period. In Germany the numbers diminished meaningfully, but a number of award winning films were still produced in the later period. In contrast, Italy—a country where relatively higher piracy levels have strongly impacted local demand—went from winning ten awards in the early period to only two in the later. Similarly, Mexico went from winning seven awards to only one, and that one award was actually for a 2006 short animated film, *Peter & the Wolf*, that won the 2008 Best Short Film (Animated) Award (and was also co-produced with three other countries).⁵⁶ In short, Mexico produced a string of four culturally relevant, award-winning movies in the late 1990s and early 2000s, but following the widespread adoption of Internet piracy has failed to continue this trend.

The case in Spain is more complex. Since 2006 there have been three award-winning movies produced in Spain (compared to four in the earlier period) in spite of the high levels of piracy in Spain. However, two of these films, *Vicky Cristina Barcelona* and *Midnight in Paris*, were co-produced by the United States and directed by Woody Allen,⁵⁷ whose association with a Spanish producer may be personal and unrelated to the overall production climate in Spain. In contrast, in the pre-period none of the Spanish award-winning movies were co-produced with the United States and most had Spanish directors. Thus, while this evidence shows that the Italian and Mexican markets have had difficulty in financing and producing award-winning films since Internet piracy eroded demand in their markets, there is no clear evidence of this phenomenon in Spain despite its reputation as a country where piracy has eroded the local market.⁵⁸ That said, it is worth noting that in the pre-piracy period, Spain typically directly funded the bulk of its award winning movies (which had Spanish directors), but that in the post-piracy period, two out of the three award winning films associated with Spain were also heavily associated with the United States and directed by Woody Allen.⁵⁹

⁵⁵ Data on file with authors. For more information on the data compiled in this list, see *Academy Awards, USA*, IMDB.COM (Feb. 22, 2015), <http://www.imdb.com/event/ev0000003/overview>.

⁵⁶ See *Academy Awards, USA, Awards for 2008*, IMDB.COM (Feb. 24, 2008), <http://www.imdb.com/event/ev0000003/2008>; *Peter & the Wolf (2006)*, IMDB.COM (Feb. 15, 2008), <http://www.imdb.com/title/tt0863136/>.

⁵⁷ See *Vicky Christina Barcelona (2008)*, IMDB.COM (Aug. 15, 2008), <http://www.imdb.com/title/tt0497465/>; *Midnight in Paris (2011)*, IMDB.COM (June 10, 2011), <http://www.imdb.com/title/tt1605783/>.

⁵⁸ See *supra* at note 46 and accompanying text.

⁵⁹ Data on file with authors.

This simple study in no way conclusively proves the hypothesis that piracy is the cause of the significant reduction in award-winning films coming from Mexico and Italy or the changes in Spanish film. But it does present evidence consistent with the hypothesis that piracy is diminishing investment in riskier, but culturally relevant, Academy Award winning films. More rigorous analysis is needed to determine whether high piracy countries have witnessed larger decreases in the output of locally funded artistic projects and films than other countries have.

CONCLUSION

The economic literature clearly indicates that piracy has harmed sales, and yet economists have failed to provide conclusive evidence that diminished revenues have led to lower quantity or quality of artistic works being produced. It seems theoretically unambiguous that reduced revenues should diminish creative incentives, but the lack of empirical evidence makes it harder to provide economic support for stronger copyright enforcement or to make the argument that piracy harms consumers.

This Essay suggests that this lack of evidence may be due to the fact that it is much harder to prove an effect of piracy on supply (if it exists) than to prove the effect on demand. If an individual who would have purchased a creative work pirates it instead, then demand is instantly reduced. But if expected revenues from films or music are reduced due to piracy, it could take the creative industries some time to internalize and change their production levels, making it harder to link cause and effect. And if the effect is subtler than simply the reduced quantity supplied (like the effects described in this study), then those effects will be even harder to measure. However, given the importance of social welfare considerations to policy outcomes, empirical research on copyright should focus on the question of whether piracy impacts the supply of creative works, in spite of the difficulty in answering this question.

This Essay has suggested that observing supply changes in low piracy settings versus supply changes in high piracy settings might allow for a causal link to be established over a period of a number of years. For example, it was shown that the number of Academy Award winning films financed by higher piracy countries has decreased relative to the number of Academy Award winning films financed by lower piracy countries. But there were exceptions, and the number of Academy Award winning films is a limited measure that cannot capture the types of nuanced supply distortions described in this Essay. Future researchers might rely on a similar methodology, but with better data and with qualitative but meaningful measures of output.

If such evidence were to become available, it would imply that consumers are harmed by the presence of piracy, and it would go a long way in making the argument that the interests of producers and consumers are more

aligned than is commonly recognized when it comes to the importance of copyright protection.