From:	
To:	FN-OMB-IntellectualProperty
Subject:	IPI submission of comments to IPEC
Date:	Wednesday, March 24, 2010 12:31:41 PM
Attachments:	IPI comments to IPEC.pdf CopyrightPiracy.pdf CostOfPiracy.pdf SoundRecordingPiracy.pdf WillCongressCircumventDMCA.pdf WhatsFair.pdf StillBad.pdf
Importance:	High

Ms. Espinel,

Please accept these documents as comprising IPI's filed comments to the IPEC.

Thank you.

_____

Tom Giovanetti
President
Institute for Policy Innovation (IPI)
www.ipi.org

www.facebook.com/tgiovanetti
www.twitter.com/tgiovanetti

Please consider supporting IPI: http://bit.ly/7z3jep
http://ipi.org/IPI/IPIHome.nsf/Donation%20Content?OpenPage

March 24, 2010

Victoria A. Espinel
United States Intellectual Property
Enforcement Coordinator
Office of Management and Budget
725 17th Street, N.W.
Washington, DC 20503

Dear Ms. Espinel,

The Institute for Policy Innovation (IPI) appreciates the opportunity to comment on your efforts to develop an intellectual property enforcement strategy for the United States.

The Institute for Policy Innovation (IPI) is a non-profit, non-partisan public policy research institute. IPI does not lobby, and we do not represent clients or other parties.

We do, however, believe that property rights, including intellectual property rights, are the foundation of a functioning market economy. Furthermore, we believe that, in an information economy, intellectual property rights are both more important than ever and also under greater threat than ever before.

We therefore commend you for your efforts to foster strong intellectual property protection regimes, both domestically and internationally, and to expand and enhance the coordination and enforcement function of all relevant agencies of the U.S. government.

Our comments will serve to provide evidence of the harm caused to the U.S. economy by piracy and counterfeiting, and second to outline some selected policy implications that result from an assumption of the importance of intellectual property protection.

Comments from the Institute for Policy Innovation (IPI) are comprised of this document, and the following recent IPI publications:

1. *The True Cost of Motion Picture Piracy to the U.S. Economy* by Steven E. Siwek, IPI Policy Report #186, 9/29/2006
2. *The True Cost of Sound Recording Piracy to the U.S. Economy* by Steven E. Siwek, IPI Policy Report #188, 8/21/2007
3. *The True Cost of Copyright Industry Piracy to the U.S. Economy* by Steven E. Siwek, IPI Policy Report #189, 10/3/2007
4. *A Legislators and Consumers Guide to Prescription Drug Importation*, by Merrill Matthews and James Frogue, 1/6/2004
5. *Will Congress Circumvent the DMCA?* By Richard Epstein, IPI Ideas #35, 1/5/2006
6. *Still Bad: A Critique of the Latest Attempt to Gut the DMCA*, by Lee Hollaar, IPI Issue Brief, 4/3/2008

1660 South Stemmons,
Suite 245
Lewisville, TX 75067
(972) 874-5139 voice
(972) 874-5144 fax

email ipi@ipi.org

7. *What's "Fair"? Why Those Concerned About Copyright Fair Use Need to Say What They Mean*, by Lee Hollaar, IPI Issue Brief, 4/11/2007

Evidence of Economic Harm to the U.S. Economy from Piracy and Counterfeiting

The Institute for Policy Innovation (IPI) has conducted original, primary research on the impact of piracy and counterfeiting on the U.S. economy. We hope that our research in this area would be received as valuable input to the Office of the IP Enforcement Coordinator, given that this research directly addresses the first of the two areas of inquiry described in the Federal Register notice.

Three (3) research papers which are included as part of these comments comprise the research IPI has conducted in this area. In the course of this research, methodologies were developed by the principle researcher on the project which are not only described in detail in the research itself, but which lend themselves to peer review, critique and updates when more recent data are available.

Among the core conclusions of this research (based on 2005 data):

- The U.S. economy loses $58.0 billion in total output annually. Output includes revenue and related measures of gross economic performance.
- The U.S. economy loses 373,375 jobs. Of this amount, 123,814 jobs would have been added in the copyright industries or in downstream retail industries, while 249,561 jobs would have been added in other U.S. industries in support of the copyright industries.2
- American workers lose $16.3 billion in earnings annually. Of this total, $7.2 billion would have been earned by workers in the copyright industries or in their downstream retail industries while $9.1 billion would have been earned by workers in other U.S. industries.
- Federal, state and local governments lose at least $2.6 billion in tax revenues annually. Of this amount, $1.8 billion represents lost personal income taxes while $0.8 billion is lost corporate income and production taxes.

We hope the Office of the IP Enforcement Coordinator will take the time to examine the careful research methodology and conclusions of this series of research papers. Included IPI research papers 1, 2 and 3 are related to this topic.

Selected Policy Implications of Intellectual Property Protection

If it is the policy of the administration and of the U.S government to enforce strong intellectual property protections, as the PRO IP Act and the creation of the IP Enforcement Coordinator position suggest, some obvious policy implications logically follow. In the following section we outline some of these policy implications.

1. *Attempts to weaken the Digital Millennium Copyright Act (DMCA)*

   There have been repeated attempts, both by activists and legislators, to weaken or eliminate the careful and successful balancing of rights and responsibilities contained within the Digital Millennium Copyright Act (DMCA).

   Bills have been introduced several times to the U.S. Congress with the intention of undoing or weakening specific content protections in the DMCA. This type of legislation specifically

works against stated administration goals of protecting intellectual property by weakening the primary legislative device designed to protect IP online. The administration should work with members of Congress to dissuade them from introducing or pushing legislation that directly contravenes the stated Administration policy of greater IP protection. IPI research papers 5 and 6 included as part of these comments specifically addresses legislative attempts to weaken or undermine the DMCA.

There have also been specific legal challenges launched against the DMCA. While largely unsuccessful, these legal challenges likewise work against stated Administration policy. Our hope would be that the administration would continue to vigorously defend against legal challenges to the DMCA.

2. *Attempts to reopen and weaken the Trade Related Aspects of Intellectual Property Rights (TRIPS)*

We're certain the Office of the IP Enforcement Coordinator is familiar with the recent history of Thailand and other developing countries attempting to use specific flexibilities within the TRIPS agreement to place compulsory licenses on prescription drugs. These flexibilities were negotiated so that compulsory licensing regimes could be used under certain circumstances to prevent harm to public health as a result of crisis or of the breakdown of negotiations.

Countries are being encouraged by IP skeptic activist organizations to abuse TRIPS flexibilities and to use them inappropriately. It is important for compulsory licensing regimes to not be improperly extended into areas for which they are inappropriate or unintended. IPI encourages the administration to stand strong against the improper use of compulsory licensing by our trading partners.

3. *Negotiation of the Anti-Counterfeiting Trade Agreement (ACTA)*

The proposed Anti-Counterfeiting Trade Agreement (ACTA) is an appropriate trade agreement in an information age, and it is also a logical and creative response to the inability to accomplish coordination and norm-setting through established international institutions. IPI supports the continued negotiations among parties on ACTA.

Some IP skeptic organizations have attempted to undermine ACTA negotiations by implying that maintaining confidentiality of the documents during the negotiation process somehow indicates that nefarious and diabolical plans are in the works.

The Institute for Policy Innovation (IPI) agrees that there is a need for greater transparency between government and its citizens. However, it is obvious that in early stages of treaty negotiations between nations, confidentiality of the various negotiating texts is necessary. While we support reasonable transparency measures, there are obviously some government functions where security and confidentiality is required. Early stage negotiations of sensitive treaty documents between nations require such confidentiality.

The administration should defend the confidentiality of documents being negotiated between governments, including the confidentiality of ACTA, and should continue to negotiate in good faith with our major trading partners on ACTA.

4. *Inclusion of intellectual property protection in trade agreements*

   It is very unfortunate that the U.S. trade agenda has stalled. Not only are WTO trade liberalization attempts at a standstill, but the U.S. seems to have abandoned its previous attempts to pursue bilateral trade agreements (FTAs). Such a setback on trade liberalization is harmful to the U.S. economy, but is even more harmful to the economies of developing countries around the world.

   One factor which may have led to a de-emphasis on FTAs is the argument that it was somehow inappropriate for the U.S. to include IPR protections in FTAs pursued and negotiated. We would argue that it is absolutely necessary for the U.S. government to pursue stronger IP protections abroad, and that trade agreements are an appropriate "carrot" to offer countries along with the "stick" of stronger IP protections. We regret that the current administration is apparently not prioritizing trade liberalization, because walking away from trade liberalization abandons a policy tool for encouraging stronger IP protections among our trading partners.

   IPI would urge the IP Enforcement Coordinator to take every opportunity to encourage efforts to liberalize trade and protect IPRs internationally through trade agreements.

5. *Attempts to extend "fair use"*

   U.S. copyright law wisely defines a number of permissible exceptions to copyright protection. Beyond the permissible exceptions defined in law, U.S. law also wisely allows a "safety valve" to courts to allow for other exceptions to be determined through the judicial process. But these fair use exceptions are not unlimited, and are conditioned upon four clearly defined principles. This regime has largely worked well, and gives courts the flexibility to adapt copyright law and practice to changing technologies and circumstances.

   But many advocates have begun to define fair use themselves, and have carelessly implied fair use as being "convenient use." But fair use is explicitly NOT the same thing as convenient use.

   The fact that anti-copyright activists purposely misuse the term "fair use" in such a way as to propound an unprecedented and extra-legal common understanding of the term is insidious and should be resisted. Efforts to expand fair use beyond legislative and judicial intent are nothing more than strategic attempts to undermine copyright itself, and should be resisted. The IPI research paper number 7 included with these comments specifically addresses misunderstandings of fair use.

6. *Attempt to undermine the right to protect content through technical protection measures (TPMs)*

   Content owners must have the right to attempt to protect their content, a right recognized by the DMCA, especially in the anti-circumvention areas of the legislation. In fact, content owners should be encouraged to do all they can to protect their property, to the extent that they believe their property should be protected.

   This includes the use of technical protection measures (TPMs), including digital rights management (DRM) technologies, should the content owners choose to use such techniques.

   Whether or not to use DRM or other TPMs is a legal and business choice of the content owners. Some content owners may, for business model reasons, decide against using TPMs.

Others may choose to utilize the strongest TPMs available to protect their content. These decisions should remain those of the content owners as determined by their own business strategy and experimentation. Even if only a minority of content owners chooses to utilize TPMs to protect content, their right to do so must be maintained. Fair use exceptions to copyright have no bearing on whether it is more or less convenient to consumers to have to deal with TPMs.

7. *The importance of the "Special 301" process*

   The Institute for Policy Innovation (IPI) supports the Special 301 process and believes that it has led to an overall improvement in awareness of the importance of IP protection among our trading partners. IPI believes that the Special 301 process merits strengthening and expansion.

8. *Suggestions that IPRs are no longer the best way to stimulate innovation*

   Some are urging that intellectual property rights are no longer the most effective means of stimulating innovation and creativity. Unfortunately, those who assert thus base their arguments on ideology and assumptions, rather than on empirical data.

   It's important to note that there is nothing today that precludes innovators from using alternative incentive systems to foster innovation. If creators and inventors wish to forgo their intellectual property rights, use open source or other collaboration models, prize systems, and other variations and alternatives to the intellectual property system, they are free to do so.

   Alternate systems of incentivizing innovation have an opportunity to demonstrate their effectiveness within the marketplace. There is no need to risk damage to our innovative economy in order to experiment with alternate systems of innovation. The administration's stated intention to protect intellectual property should lead the administration to defend and protect the existing intellectual property system against misguided ideological attacks.

9. *Maintaining a level playing field between proprietary and alternate innovation models*

   If the administration is committed to protecting American innovation through protecting intellectual property rights, the administration should resist policies that tilt the playing field between proprietary and other models of innovation.

   A prime example would be software purchasing requirements to purchase, for instance, a certain quota of software that is based on open source development. Some of our trading partners have implemented or attempted to implement such policies that are biased against proprietary models of software innovation. In fact, such proposals have even been floated at the state level. Policies that pick winners and losers between differing models of innovation should be resisted by the administration, both domestically and internationally.

10. *Potential of "network neutrality" regulations to undermine cooperation between broadband providers and content owners*

    After years of conflict between content owners and other stakeholders in the Internet industry, today fruitful and constructive discussions are beginning on ways that content owners and Internet Service Providers (ISPs) can work together to protect the value of content online.

However, current rulemaking proceedings within the Federal Communications Commission (FCC) are designed to open the door toward greater federal regulation of the Internet and broadband networks. In addition, the Federal Trade Commission (FTC) and Congress have also shown interest in proposing regulations upon broadband networks.

These rules, which claim to be designed to foster an "open" and "free" Internet, have profound implications for the protection of copyright on-line. Specifically, rules that prohibit ISPs from filtering content and otherwise policing their networks could make it impossible for content owners to work with ISPs to protect copyright online.

An administration and U.S. government that values and pledges to protect intellectual property should be careful to not allow rules to be propounded by other government agencies that will make it much more difficult or impossible to protect copyright on-line.

Voluntary cooperation between ISPs and content owners, within the existing framework of U.S. law, is the best way to address the problem of online infringement. IPI is concerned that network neutrality rules under consideration by the FCC could thwart efforts by ISPs to work with content owners to identify, track and block infringing content. Indeed, we believe that at least part of the motivation of those pursuing network neutrality rules is to make it more difficult to enforce intellectual property protection online.

IPI urges the IP Enforcement Coordinator to communicate to the FCC the administration's concerns about the impact of proposed network neutrality rules on the ability to enforce IP protection online.

Conclusion

The Institute for Policy Innovation (IPI) appreciates this opportunity to share our thoughts and concerns with the IP Enforcement Coordinator's office. We would be delighted to work with you to accomplish the kind of IP protection regime that is necessary to maintain America's economic competitiveness in the Information Age.

Sincerely,

Tom Giovanetti
President
Institute for Policy Innovation (IPI)

IPI
Institute For Policy Innovation
ISSUE BRIEF

Still "Bad": A Critique of the Latest Attempt to Gut the DMCA

by Lee A. Hollaar, Ph.D.

Synopsis: Congressman Rick Boucher's latest proposal to make significant changes to the Digital Millennium Copyright Act (DMCA) would make substantial and unwise changes to U.S. copyright law based on nonexistent problems, and would put the United States in violation of our trade treaties, all in order to relieve copyright infringers of legal liability. It's still a bad idea.

In the near-decade since Congress passed the Digital Millennium Copyright Act (DMCA),[1] none of the dire predictions of its opponents have come to pass.[2] But that hasn't stopped Rep. Rick Boucher (D-VA-9) from introducing bills to address essentially nonexistent problems in a way that could undercut hard-fought trade treaties important to businesses.[3]

In October 2002, Boucher included his DMCA attack as an "other purpose" of H.R. 5544, a bill touted as protecting consumers from rights-protected CDs that aren't clearly labeled. He tried the same thing the next year in the 108th Congress, getting bill number 107 as a cute play on the section of the copyright statute covering fair use (although the bill had little to do with fair use), and in the 109th Congress, this time getting bill number 1201, this time as a play on the section of the DMCA that he tries to repeal by making it a subset of another section.

This Congress, Boucher has dropped the pretext of protecting consumers from rights-protected media, perhaps because he has realized that it hasn't been the problem DRM-haters felt it would be.

Boucher has again been able to get his clever bill number, H.R. 1201, and this year coupled it with an equally clever title – the "Freedom and Innovation Revitalizing U.S. Entrepreneurship Act of 2007" (or "FAIR USE Act"). But the act has little to do with "freedom," "innovation," "revitalizing entrepreneurship," or even "fair use" as traditionally viewed.

Statutory Damages for Consumers, Not Inducers or Contributors

The first of the bill's ways of "promoting freedom and innovation" is found in Sec. 2(a), which remits (a nicer word than blocks) statutory damages

for those found to have materially contributed to copyright infringement, actively induced others to infringe, or have benefited from the infringement under their control (the three forms of secondary copyright infringement: contributory, inducement, and vicarious). This is called a "Statutory Damages Adjustment." It certainly doesn't reward the innovation or entrepreneurship of the people whose copyrights are being infringed by the help of, and maybe the benefit of, those protected by this bill.

This is special-interest legislation of the worst kind, protecting those who encourage others to infringe copyrights, while ignoring the real problems with statutory damages in today's world. The problem with statutory damages is not confined to secondary infringement, but is a poor fit for every aspect of "file sharing."[4] At the time the Copyright Act of 1978 was being enacted, the most likely infringement, and the one most damaging, was of a small number of works with a large number of copies. There was an overhead associated with infringing each work, such as the setup costs of a printing run, and the effect of that overhead could be minimized only by producing many infringing copies of one or a few works.

In contrast, there is little difference to an infringer between *many* downloads of a *few* works and a *few* downloads of *many* works. Today people making large collections of songs available to the world is the norm. But the consequences in terms of statutory damages of these two different models of infringement is dramatic, because statutory damages are measured by the number of works that are infringed, not the number of infringements.[5] Statutory damages run from $750 to $30,000 per work, and up to $150,000 per work if the infringement is willful. Even if the infringer had no reason to believe that he or she were infringing, the minimum statutory damages are $200 per work.[6]

Even the copyright owners recognize that this is a problem, and while they may sue someone "sharing" a thousand or more songs, they only claim infringement of a couple dozen, lest damages of $750 times a thousand repulse the courts into finding a way around such liability.

But the solution is *not* to give contributors and inducers a free pass and continue the potentially-draconian penalties for their customers. That would be especially reprehensible in the case of some "file sharing" systems that may be tricking users into sharing a vast number of files,[7] so that the users' statutory damage liability can bankrupt them. Yet this bill would let a company that deliberately designs and distributes a system causing that undesired sharing avoid statutory damages completely.

Rather than take the approach of H.R. 1201, which protects only a special interest group (and thus ends their advocating for their customers who face the same problem because "they've got theirs"), Congress should revisit the statutory damages provision to make it workable in the era of people infringing a large number of works a few times each, while continuing to provide a deterrent to copyright infringement.

Codifying Supreme Court Precedents

It's unfortunate that secondary liability was not codified in the Copyright Act of 1976, but was rather left to the courts. You are only sure of whether you are liable if you are "on all fours" with a Supreme Court decision. All the rest is guessing from dicta. But, again, this bill doesn't do the job. Instead, it codifies only the *Sony*[8] exception for supplying a device:

> No person shall be liable for copyright infringement based on the design, manufacture, or distribution of a hardware device or of a component of the device if the device is capable of substantial, commercially significant noninfringing use.

The copyright statutes provide many exceptions to infringement.[9] These include:

- Reproducing by libraries in certain circumstances (§108).
- Performing or displaying a work in a classroom or in a telecourse; a religious assembly; to benefit an educational, religious, or charitable organization if performers or promoters are not being paid; in a public place if received on a TV or radio like those found in a home; by a government body or nonprofit agricultural or horticultural organization at a fair or exposition; by a store to promote the sales of the work; in transmissions to the blind; or by veterans or fraternal organizations if the public is not invited (§110).

- Making copies and adaptations of computer programs to use them on a machine and to archive them (§117).
- Reproducing and distributing in specialized formats for the blind or other people with disabilities (§121).

All of these exceptions have very specific requirements (some reading like the tax code), or pertain only to certain types of works, but because of all these statutory exceptions (and fair use) in copyright law, it is hard to conceive of a hardware device for playback or reproduction that wouldn't fall into at least one of the many exceptions, and therefore arguably be "capable of a substantial ... noninfringing use."

And wouldn't any special interest love to have such an immunity from liability, regardless of the foreseeable consequences of their acts? They can build a business off the intellectual property of others, without any consequences. As Justice Kennedy noted about some "file sharing" systems during the *Grokster* oral arguments, what they

> want to do is to say that unlawfully expropriated property can be used by the owner of the instrumentality as part of the startup capital for his product. … just from an economic standpoint and a legal standpoint, that sounds wrong to me.[10]

Of course that's wrong, and yet that is what H.R. 1201 would clearly encourage.

If the bill were really trying to codify Supreme Court precedent, rather than provide a free ride for manufacturers and distributors, it would also include liability for inducement of infringement based on the Supreme Court's unanimous *Grokster* decision.[11] As I noted in "*Sony Revisited,*"[12] in *Sony's* footnote 19 the Court said that Sony was not an intentional inducer, and so the decision has to be read as addressing the case where there is no inducement. *Grokster* addressed the case when there is inducement. In a memorandum from Justice O'Connor, the swing vote in *Sony*, to Justice Blackmun, at that time writing what was going to be the Court's opinion in the case, she noted that the leading case on secondary liability

> seems to indicate that there are two ways to engage in contributory infringement. First, one may *induce* the infringement. Second, one may *materially contribute* to the infringement. (Emphasis in the original.)

Rep. Boucher ignores the first of these in his purported attempt to codify Supreme Court decisions.

But since H.R. 1201 couldn't blatantly say "designers, manufacturers, and distributors shall not have any secondary liability for copyright infringement from their intentional conduct," it may not provide the easy out from law suits its proponents crave. Does "distribution" cover product advertising or support that promotes infringement? In *Aimster*, Judge Posner found liability despite the *Sony* exception the bill tries to codify because

> In explaining how to use the Aimster software, the tutorial gives as its *only* examples of file sharing the sharing of copyrighted music, including copyrighted music that the recording industry had notified Aimster was being infringed by Aimster's users. The tutorial is the invitation to infringement that the Supreme Court found was missing in *Sony*.[13]

The bill's language most likely will shift a secondary infringement claim to determining whether something is distribution or promotion, something that may not be resolvable at the summary judgment stage, instead requiring a full (and expensive) trial.

The revitalization of inducement liability by the Supreme Court rewards virtuous behavior and punishes acts that encourage infringement by others, viewed in light of the entire record and not isolated acts such as design, manufacture, or distribution. If the company has taken steps to stop or reduce the infringement of its customers, that is a strong indication that it is not inducing infringement. But if H.R. 1201 were viewed as taking inducement out of secondary liability for copyright infringement—as its proponents would like because, after all, why is there a need to codify *Sony* after more than three decades if not to cripple *Grokster* —we will go back to the actions a unanimous Supreme Court clearly condemned.

It's been almost three years since *Grokster*. There is little to show that recognizing inducement liability has had a substantial effect on "freedom," "innovation," or "entrepreneurship." Other than to try to save some special interests from the consequences

of their intentional encouragement of copyright infringement, there is no reason not to codify inducement liability at the same time as contributory infringement.

Codification of Exemptions by the Librarian of Congress

In Section 3(a) the bill tries another approach to provide its backers with a liability shield, this time for circumventing access control systems. It makes the current six three-year exemptions recently granted by the Librarian of Congress[14] permanent. But as I previously noted in *A Bad Trade*,[15] recent trade treaties such as CAFTA restrict the exemptions that can be made to the anticircumvention legislation mandated for all parties to those treaties.

It's not surprising that Rep. Boucher doesn't mind creating problems with our trade treaties. After all, he was against CAFTA when it passed the House 217-215. But that doesn't explain the ten current Republican co-sponsors of H.R. 1201 who voted for CAFTA and yet seem willing to put it in jeopardy with this bill.[16]

Even though the other parties to the treaties did not push for (and probably didn't want) the DMCA provisions, they would certainly use the United States' violation of the provision limiting DMCA exceptions against us if we were to press for their compliance of other provisions important to our industries. CAFTA and our other trade treaties have sections that specifically benefit electronic commerce, particularly in digital products. Their intellectual property sections not only required legislation like the DMCA, but patent cooperation, trademark protection (including criminal penalties), dispute resolution for Internet domain names, stopping counterfeit goods, and limited liability for ISPs. These are things that are important to innovators and entrepreneurs in the United States, and may be lost if this bill becomes law.

But even if codification of the current exemptions didn't create a problem with the trade treaties, it is not a good idea to codify them. Looking at the history of the exemptions, we see that the language of both the exemptions in the first rulemaking was refined in the second rulemaking. And in the third rulemaking, two of the exemptions from the second rulemaking were revised, one was dropped completely, and three new ones were added. It should be clear that the rulemaking was never intended to be cast in stone (or statute), but to be refined as knowledge is gained about their effects.

But there is a problem with the current rulemaking system—it works on a fixed three-year cycle, so it can't respond promptly to problems. Because the rulemaking takes about a year, an abuser can misuse a protection scheme for as long as four years.[17] It would be far better if the rulemaking would be ongoing, both to address new problems and to correct problems with exemptions in force (as we have seen for most of them).

But Wait, There's More…

Having tried to justify his amendments to the DMCA by casting them as a simple codification of the current rules, in Section 3(b) of the bill Rep. Boucher goes on to add a new subparagraph18 with six more broad exceptions to liability for circumvention to access, misleadingly called "Extension to Determinations of Librarian of Congress." But unlike the careful work of the Copyright Office, this bill does not bother to determine if there is a real problem (rather than just something hypothetical) and narrowly craft an exception to address only the real problems.

Like the codification of the current rulemaking, adoping the six new exceptions would most likely violate trade treaty obligations. And yet, in the almost-ten-year history of the DMCA, there is no record of any person held liable for any of the acts in this section. It hardly seems worth the risk.

The new exceptions are amazingly broad, certainly much broader than the balanced ones determined during the Copyright Office rulemaking proceedings. Even the one that tries to look like fair use ("(v) an act of circumvention that is carried out to gain access to a work of substantial public interest solely for purposes of criticism, comment, news reporting, scholarship, or research") ignores the statutory four-factor balancing test. Instead, it quotes some of the examples that the fair use statute says are not infringement if the use is fair, none of which are automatically a fair use. If this bill passes, we'll likely see lots of copies of movies that include a "This is really good" comment, claiming that it is criticism or commentary, to justify breaking the copy protection scheme.

Another new exception allows circumvention to put something on a home network. Its only limita-

tion appears to apply only to things that "prevent uploading" (whatever that means), not circumventing the legitimate protection found on a DVD. And that limitation only applies to protection systems that only prevent "uploading to the Internet for mass, indiscriminate redistribution." Presumably, you would get to circumvent any scheme that allows uploading as long as there is some discrimination in to whom you send the movies or songs.

Other exceptions go well beyond the fair use of a work. For example, it gives an absolute right to circumvent the protection mechanism of DVDs in order to make a compilation for classroom use. But that's needed only for the convenience of the instructor, who could always play the desired parts of each movie on a regular DVD player, albeit with some delay as the scene is queued up. While that might require the help of a teaching assistant or multiple DVD players, it is clear that the DVD protection mechanism does not have to be circumvented to show movie scenes in a classroom. As one of the leading copyright courts, the Second Circuit, observed:

> We know of no authority for the proposition that fair use, as protected by the Copyright Act, much less the Constitution, guarantees copying by the optimum method or in the identical format of the original. ... Fair use has never been held to be a guarantee of access to copyrighted material in order to copy it by the fair user's preferred technique or in the format of the original.[19]

The new exceptions also confuse purpose and effect. The purpose of my circumventing a DVD protection may be to include it in a classroom compilation, which would be legal under the bill, but doesn't also mean that I won't later "share" it with the world.

Only an Illusory Safe Harbor for Traffickers

But the circumventors given all these new exceptions from liability will have to be clever enough to do it all by themselves. Even with all these new carve-outs gutting who can be found liable for circumvention of a legitimate protection technique to access copyrighted material, the bill does not provide the safe harbor against liability that the manufacturers and distributors of circumvention devices likely expect if the bill were to pass.

Sections 1201(a)(2) and (b) state the prohibition against manufacturing or providing circumvention technology or services, and neither are affected by this bill:

> No person shall manufacture, import, offer to the public, provide, or otherwise traffic in any technology, product, service, device, component, or part thereof, that–
>
> (A) is primarily designed or produced for the purpose of circumventing a technological measure that effectively controls access to a work protected under this title;
>
> (B) has only limited commercially significant purpose or use other than to circumvent a technological measure that effectively controls access to a work protected under this title; or
>
> (C) is marketed by that person or another acting in concert with that person with that person's knowledge for use in circumventing a technological measure that effectively controls access to a work protected under this title.

Note that it does not provide any exception for devices that have legal as well as illegal purposes. As the Senate noted in its report on the DMCA:

> Legislation prohibiting circumvention devices is not unprecedented. The Copyright Act in section 1002(c) already protects sound recordings and musical works by prohibiting devices which circumvent any program or circuit that implements a serial copy management system or similar system included in digital audio recording devices and digital audio interface devices. The Communications Act in section 605(e)(4) prohibits devices that are "primarily of assistance in the unauthorized decryption of satellite cable programming."[20]

In the case of the DMCA, as well as the two examples mentioned above, Congress determined that the harm of trafficking in devices that most likely would be used for illegal purposes warranted a complete ban on such devices. But because legitimate devices or computer programs, such as a debugging program, could possibly be used to circumvent a protection scheme, Congress required that circumvention be a primary purpose of the device or computer program.

Again, Is it Worth it?

In *A Bad Trade*, looking at whether it was worth violating our trade treaties to address problems that are essentially hypothetical, I concluded that:

> H.R. 1201 should not be the mechanism for putting the United States in violation of its trade agreements. If such a far-reaching decision is to be made, it should be after careful debate based on an understanding of the anticircumvention provisions. It should not happen by the passage of a misleading bill that repeals the provisions through stealth.

Although that was a different H.R. 1201, the conclusion is the same. Changes to the DMCA (and other copyright provisions, such as statutory damages and secondary liability) should be made carefully, so as not to cause future problems just to give backers of the bill a free-ride from liability for their help with copyright infringement.

ENDNOTES

1. Pub. L. No. 105-304, 112 Stat. 2860, enacted October 28, 1998.
2. As I noted in *Mountains Out of Molehills: How Believing the Worst Makes Technologists Ineffective, And What They Can Do About It*, IPI Issue Brief , April 26, 2007:
   > The real "unintended consequence" of the EFF paper is to illustrate how little real harm the DMCA has caused. The first version of the paper, which covered the first three years under the DMCA, reported eighteen different episodes, or six per year. …
   >
   > The next year, six new episodes are noted, half of them people concerned about the DMCA even though nobody was actually threatening them. During year five, five new episodes are noted, including an ex-contractor sued for unauthorized access to a company's computers and two students who broke open a college's debit card reader. In years six and seven, nine new episodes are reported, or 4.5 per year, continuing the downward yearly trend despite the EFF trying to include anything even distantly related to the DMCA. At least half of those were businesses trying to use the DMCA in disputes with their competitors.
3. I previously discussed this in *A Bad Trade: Will Congress Unwittingly Repeal the Digital Millennium Copyright Act and Violate Our Trade Treaties?*, IPI Issue Brief, June 23, 2006.
4. This is not the only instance where the copyright statutes, which are based on physical objects ("tangible medium of expression") are a poor fit with the digital world. See "Copyright Laws are a Bad Fit," in my treatise *Legal Protection of Digital Information*. http://digital-law-online.info/lpdi1.0/treatise30.html#secI.B.
5. Statutory damages are "with respect to any one work." 17 U.S.C. 504(c)(1). If the work is a compilation, such as a record album, all the songs on the album may be considered as a single work. *UMG Recordings v. MP3.com*, 109 F.Supp2d 223, 56 USPQ2d 1374 (SD NY, 2000).
6. The only time when the court does not have to assess these minimum statutory damages is when the infringer had reasonable grounds for believing there was no infringement, such as it clearly being a fair use, and was working for a nonprofit educational institution, library, or archive, or a public broadcasting station. See 17 U.S.C. §504(c).
7. This is discussed in the USPTO report, *Filesharing Programs and 'Technological Features to Induce Users to Share*, http://www.uspto.gov/web/offices/dcom/olia/copyright/oir_report_on_inadvertent_sharing_v1012.pdf. This was also the topic of the July 24, 2007, hearing by the House Committee on Oversight and Government Reform, which highlighted not only the copyright infringement being induced, but also the inadvertent "sharing" of personal information such as tax returns. See http://oversight.house.gov/story.asp?ID=1424.
8. *Sony v. Universal City Studios*, 464 U.S. 417 (1984).
9. See 17 U.S.C. §108 through §122.
10. Transcript of oral arguments, *MGM v. Grokster*, No. 04-480, March 29, 2005, at 36.
11. It's interesting to note that when the electronics industry's intellectual property was being taken by companies copying integrated circuit masks, the remedial legislation they proposed included explicit secondary liability for inducement. See 17 U.S.C. §905(3).
12. http://digital-law-online.info/papers/lah/sony-revisited.htm.
13. *In re Aimster Copyright Litigation*, 334 F.3d 643, 651 (7th Cir. 2003).
14. See http://www.copyright.gov/1201/.
15. See footnote 3.
16. Reps. Akin (MO-2), Bishop (UT-1), Burton (IN-5), Doolittle (CA-4), Franks (AZ-2), Gohmert (TX-1), Kline (MN-2), Souder (IN-3), Tiahrt (KS-4), and Weldon (FL-15). Three Republicans who supported CAFTA were co-sponsors but have withdrawn that support: Reps. Boozman (AR-3), Pickering (MS-3), and Pitts (PA-16).
17. During the second rulemaking cycle, Static Control Components just missed the proposal cutoff, but was still given a chance to make their request. They were concerned about the DMCA being used to force people to buy printer cartridges from Lexmark.
18. For unknown reasons, he adds this as subparagraph (G) even though the last subparagraph in 17 U.S.C 1201(a)(1) is (E). It's not clear whether this is a placeholder for more mischief, a reflection of Rep. Boucher not having read the DMCA, or trying to avoid the grade that this legislation should receive.
19. *Universal City Studios v. Corley*, 273 F.3d 429, 459 (2d Cir. 2001).
20. Sen.Rep. 105–190, at 11.

About the Author

Lee Hollaar is a professor of computer science in the School of Computing at the University of Utah, where he teaches computer networking and intellectual property and computer law. He is the author of *Legal Protection of Digital Information* (BNA Books, 2002), available on the Internet along with a number of his papers at http://digital-law-online.info. He was a Committee Fellow with the Senate Judiciary Committee during the time the DMCA was being drafted.

About the IPI Center for Technology Freedom

The IPI Center for Technology Freedom is the technology division of the Institute for Policy Innovation. The purpose of the Center is to sort out the policy challenges posed by technological change for both the American people and policy makers. The IPI Center for Technology Freedom points the way for a society that encourages freedom to develop new technologies, and the freedom to access them.

Editor & Publisher ..... Tom Giovanetti

IPI Issue Brief is published by the Institute for Policy Innovation (IPI), a nonprofit public policy organization.

Direct inquiries to: **Institute for Policy Innovation**
1660 S. Stemmons Freeway, Suite 475
Lewisville, TX 75067

(972) 874-5139 (Voice)
(972) 874-5144 (FAX)

Email: ipi@ipi.org
Internet Web site: www.ipi.org

What's "Fair"? Why Those Concerned About Copyright Fair Use Need To Say What They Mean

by Lee A. Hollaar, Ph.D.

Synopsis: While many people in the copyright debate talk about "fair use," they seldom say which uses are of concern. But without specifics, it is hard to provide balanced exceptions to copyright protection. Congress should codify "fair use of necessity" and many instances of "economic fair use" so that people will know what is allowed, while reserving fair use primarily for the "transformative" or "productive" uses that reflect the goal of copyright.

The idea of the "fair use" of a copyrighted work plays a prominent role in the current discussions of the scope of copyright, particularly on the part of opponents to legislation such as the Digital Millennium Copyright Act.

But there is a vast misunderstanding of what fair use really is. From the very start, fair use has not been something definite, but instead shorthand for a very complex doctrine representing a large number of cases, much like "free speech" or "privacy." Justice Story's 1841 decision in what may be the very first fair use case[1] begins "This is one of those intricate and embarrassing questions, arising in the administration of civil justice, in which it is not, from the peculiar nature and character of the controversy, easy to arrive at any satisfactory conclusion, or to lay down any general principles applicable to all cases."

Even experienced copyright law judges have termed the doctrine "the most troublesome in the whole law of copyright" and have advised against resorting to it unless it is necessary.[2]

For that reason, those claiming that "fair use is hurt" by particular legislation, litigation, or technology need to say what they mean when they talk about fair use, identifying the types of use that will be affected and justifying why that use is fair. Without doing that, it is impossible for those proposing legislation to try to meaningfully consider fair use.

Noninfringing, Permissible, And Fair Uses

The Copyright Act of 1976 gives copyright owners broad rights to their works. Unless there is some exception in the statutes, it is an infringement not only to reproduce the work, but also to distribute it, adapt it to another form, and perform or display it publicly.[3] But while the rights granted are broad, there are still uses that are not infringing. You can sing copyrighted songs in the shower because it is not a public performance, or at least not intended to be, and nonpublic performances or displays are not included in the grant of rights to the copyright owner.

Permissible Uses. Congress has also stated a wide variety of exceptions in the copyright statutes.[4] These are not "fair uses," but rather permissible uses, and include:

- Reproductions in certain cases by libraries and archives. (Section 108.)
- The redistribution, with exceptions for sound recordings and computer software, of lawfully-made copies by the owner of the copy. (Section 109.)
- Performance or display of works in a class, church service, governmental body, or agricultural organization. (Section 110.)
- Playing a radio in a public section of a business. (Section 110(5).)
- Making copies or adapting computer software as needed to run on a machine, and making archive copies of computer software. (Section 117.)
- Taking pictures of an architectural work from a public place. (Section 120.)

Each of these exceptions pertain to particular classes of copyrighted works and have specific conditions that must be met. (Some read like the tax code.) And some limit other permissible activities. For example, Section 117, which permits adaptations of computer software, requires that the copyright owner authorize any transfers of the adaptations, contrary to the general "first sale" provisions of Section 109.

"Fair Use." But Congress could not write every exception into the statutes, and even if it could, that would result in a law that was too confining. So, it put in a "safety valve" provision that provides a defense to copyright infringement based on a court's evaluation of four factors.[5] But in setting down those factors, Congress noted that:

> Although the courts have considered and ruled upon the fair use doctrine over and over again, no real definition of the concept has ever emerged. Indeed, since the doctrine is an equitable rule of reason, no generally applicable definition is possible, and each case raising the question must be decided on its own facts. On the other hand, the courts have evolved a set of criteria which, though in no case definitive or determinative, provide some gauge for balancing the equities. These criteria have been stated in various ways, but essentially they can all be reduced to the four standards which have been adopted in section 107.[6]

The four factors, along with a short indication of their nature, are:

- The purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes. "The crux of the profit/nonprofit distinction is not whether the sole motive of the use is monetary gain but whether the user stands to profit from exploitation of the copyrighted material without paying the customary price."[7]

- The nature of the copyrighted work. "In general, fair use is more likely to be found in factual works than in fictional works."[8]
- The amount and substantiality of the portion used in relation to the copyrighted work as a whole. "There are no absolute rules as to how much of a copyrighted work may be copied and still be considered a fair use. In some instances, copying a work wholesale has been held to be fair use, while in other cases taking only a tiny portion of the original work has been held unfair."[9]
- The effect of the use upon the potential market for or value of the copyrighted work. This has been characterized as "undoubtedly the single most important element of fair use."[10]

Each of the four factors listed above must be considered in determining fair use, but all four factors need not be met, nor must all four factors be weighted equally by the court. Often, the first two factors color the consideration of the others.

Going Beyond "Transformative" Use

Originally, fair use was restricted to "productive" or "transformative" uses – those where a new work is created using a small portion of a previous work. In its last word on fair use, the Supreme Court noted the special nature of transformative works.

> The enquiry here may be guided by the examples given in the preamble to Section 107, looking to whether the use is for criticism, or comment, or news reporting, and the like. The central purpose of this investigation is to see, in Justice Story's words, whether the new work merely "supersedes the objects" of the original creation, or instead adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message; it asks, in other words, whether and to what extent the new work is "transformative." Although such transformative use is not absolutely necessary for a finding of fair use, the goal of copyright, to promote science and the arts, is generally furthered by the creation of transformative works. Such works thus lie at the heart of the fair use doctrine's guarantee of breathing space within the confines of copyright, and the more transformative the new work, the less will be the significance of other factors, like commercialism, that may weigh against a finding of fair use.[11]

Economic Fair Use. Court decisions have started to find fair use when the entire work has been copied with little or no change, often based on an economic justification. In its *Betamax* decision,[12] the Supreme Court found that recording copyrighted TV shows for playback shortly after they were broadcast was a fair use. The fundamental difference between the opinion and the dissent was whether a work had to be transformative for it to be a fair use or not. The Court found that the complete copying, without change, of a broadcast television program for playback soon after it was recorded was a fair use, even though it was not transformative, because there was little or no harm to the copyright owners.[13]

In fact, the Court noted the district court's determination that "It is not implausible that benefits could also accrue to plaintiffs, broadcasters, and advertisers, as the Betamax makes it possible for more persons to view their broadcasts."[14] But to avoid commercials with the Betamax recorder at issue, you had to either pause the recording or fast-forward over the recorded commercial. Both required viewing the commercial, perhaps with more concentration than when watching live TV so that the start of the next program segment was not missed. Since fair use determinations are very fact-specific, it is not clear whether the *Betamax* determination would hold for a recorder that automatically skips commercials. Certainly, it could no longer be said that benefits would accrue to the advertisers who are paying for the programming but whose commercials would not be seen.

Fair Use Of Necessity. In addition to "transformative fair use" and "economic fair use," there can be "fair use of necessity," particularly for works in digital form. Intermediate copies are made when the work is read from a disk into the computer's memory so that it can be executed or be used as data by an executing program. Other intermediate copies are made in buffers as the work is being sent and received on a network, and in the memory of the routers that are used to pass the information along the network. The world of digital works encompasses countless intermediate copies as the

works are being seen, heard, or used. Congress recognized the need for making such copies when running a computer program,[15] but not for digital works in general. Because those intermediate copies would violate the reproduction right,[16] and because they are not addressed in a statutory permissible use, the only legal justification for such necessary copying is fair use.

When faced with the need to create an intermediate copy through disassembly of a computer program so that unprotected aspects of the program could be studied, two appellate courts found that the technical necessity of making the copies supports a finding of fair use.[17]

Fair Today, Unfair Tomorrow

But when fair use is based on economic considerations, what is a fair use can change when the underlying economic factors change.

In *Williams & Wilkins v. U.S.*,[18] the court found that the copying of medical articles by government libraries was a fair use, in part because of the difficulty in paying royalties to copyright owners whenever a copy is made. The court doubted that a viable license system "can be created without legislation," and Congress didn't seem inclined to create a new compulsory licensing scheme. But four years later, publishers and others established the Copyright Clearance Center[19] to provide a convenient way for those copying journal articles to pay a royalty, either on a per-copy basis or under a blanket license. So when the question of copying of articles was before a court again, the copying was no longer a fair use.

> Though the publishers still have not established a conventional market for the direct sale and distribution of individual articles, they have created, primarily through the CCC, a workable market for institutional users to obtain licenses for the right to produce their own copies of individual articles via photocopying. ... [I]t is not unsound to conclude that the right to seek payment for a particular use tends to become legally cognizable under the fourth fair use factor when the means for paying for such a use is made easier. This notion is not inherently troubling: it is sensible that a particular unauthorized use should be considered "more fair" when there is no ready market or means to pay for the use, while such an unauthorized use should be considered "less fair" when there is a ready market or means to pay for the use.[20]

In other words, as transaction costs get lower and licensing becomes more convenient, non-transformative fair uses shrink.

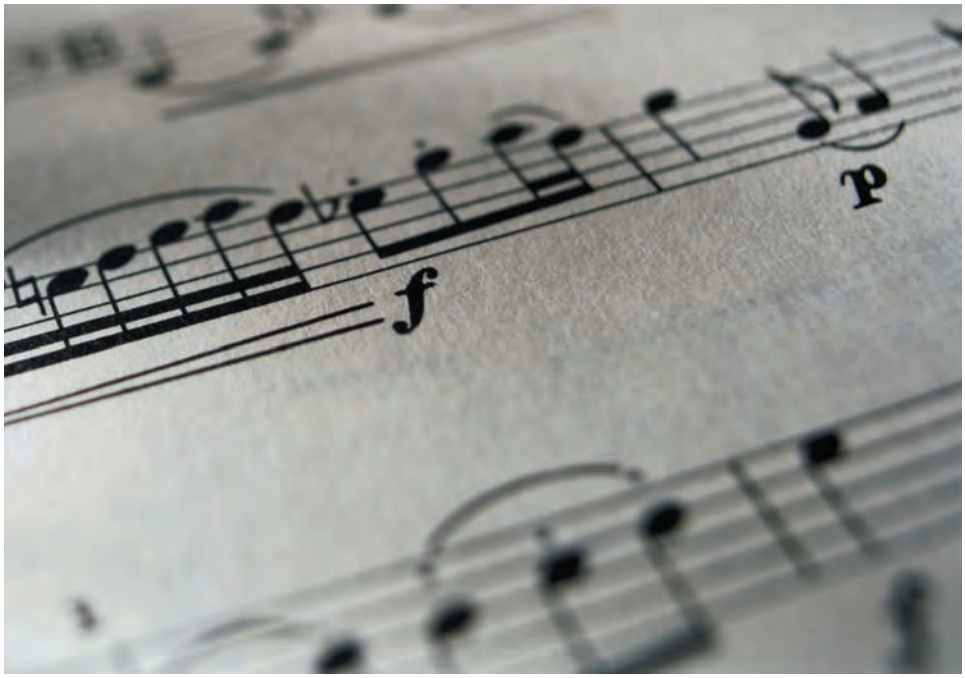
Many people discussing the *Betamax* decision forget the fact-specific nature of fair use determinations, and read it as a general condoning of "time-shifting," the viewing of a television program some time after it was broadcast. That is clearly not the case.[21] Some even stretch the decision to claim a general right not only

to "time-shift," but also to "space-shift." Each new technology or changes in the market require a new evaluation of whether a use remains fair.

Fair Use Is Not Convenient Use

Many people concerned with "restrictions on fair use" confuse fair use with convenience. But as the Second Circuit, a leading court with respect for fair use because of the many cases coming from the music and publishing industries in New York, noted:

> The Appellants have provided no support for their premise that fair use of DVD movies is constitutionally required to be made by copying the original work in its original format. Their examples of the fair uses that they believe others will be prevented from making all involve copying in a digital format those portions of a DVD movie amenable to fair use, a copying that would enable the fair user to manipulate the digitally copied portions. One example is that of a school child who wishes to copy images from a DVD movie to insert into the student's documentary film. We know of no authority for the proposition that fair use, as protected by the Copyright Act, much less the Constitution, guarantees copying by the optimum method or in the identical format of the original. ... Fair use has never been held to be a guarantee of access to copyrighted material in order to copy it by the fair user's preferred technique or in the format of the original.[22]



Very few digital rights management systems prevent transformative fair use of a work, such as including quotes from a work in a criticism, comment, or news report. An authorized user can certainly read or watch the work (after all, that is the purpose for having the work) and can transcribe text from the work into the new, productive work, not much different from including something that you found in a library book. It may not be as convenient as pointing, clicking, and pasting, and it might not have the same quality as from digital copying, but that shouldn't lessen its transformative or productive expression.

Addressing Fair Use

People still criticize the Digital Millennium Copyright Act (DMCA) anticircumvention provisions,[23] other proposed legislation, or digital rights management systems as restricting or eliminating "fair use." But they seldom identify the particular fair use of concern or indicate whether they are talking about transformative fair use, economic fair use, or fair use of necessity. Without knowing the nature of the fair use allegedly being hurt, it is impossible to assess whether their argument is valid or whether there are alternatives to lessen the impact of the restriction.

Too often, such arguments are made instead to try to piggyback some activity that people will recognize as improper, such as the copying of an entire movie, by arguing for something reasonable, like allowing a film critic to include snippets of a movie in a review.

Change a Fair Use To a Permissible Use. In the last Congress, Rep. Lofgren's H.R. 4536 proposed adding a new permissible use to the copyright stat-

utes, addressing digital works much as Section 117 addresses computer programs, as well as extending the "first sale" doctrine of Section 109 to cover digital works.[24] There are problems with what she proposes,[25] but at least it was a starting point in removing technical necessities from fair use.[26]

Her proposal shows the advantages of changing to a permissible use by requiring certain things to qualify for the exception. For example, her "digital first sale" required that the seller not retain a copy of the work after the sale, giving the public clear bounds on what is permissible and what isn't, although it isn't clear how that can be assured.

This is far better than justifying such activity under fair use, since unintended consequences can result from the interplay of fair use and the other exceptions in the copyright statutes. The Copyright Office has noted that because of the language of sections 107 and 109, "It appears that the language of the Copyright Act could lead a court to conclude that, by operation of section 109, copies of works made lawfully under the fair use doctrine may be freely distributed."[27] In other words, if a recording of a television program is made because it is a fair use time-shifting under the *Betamax* decision, it might then be legally rented or sold under the first sale rules.

Or Change the Economics Of Use. For some uses, legislation may not be necessary, as we saw in the development of the Copyright Clearance Center, and how it addressed copying of journal articles by researchers.

For example, the concern about a film critic not being able to copy scenes of a movie into a review, or instructor in a film class not being able to create a compilation disk of scenes for students, is often used to show of how the DMCA and the protection mechanism for DVDs blocks fair use.[28] But these are more restrictions on convenience, not on commenting on a movie or showing it to students. And convenience is not a part of fair use analysis.

To address such examples, as well as the parody or satirical movie trailers – such as "Brokeback to the Future" – that are clearly transformative uses of a minimal part of a movie, the movie industry might follow the Copyright Clearance Center example and establish an organization that would provide clips of movies that could be used for such purposes, at a nominal royalty or perhaps gratis in some instances.

While this is not a solution that would have met the requirement of the Lofgren bill "to make publicly available the necessary means to make such noninfringing use without additional cost or burden," it may provide a more attractive solution because it can limit misuse. The clips could be digitally watermarked so that any unauthorized copies could be traced back to their source. This would also prevent the assembling of a complete copy of a movie from

"fair use" snippets, since it would raise questions when there was a request for an uninteresting portion of a movie.

And it would make it much harder for a person to make a fair use argument for copying a movie or trafficking in a tool that decrypts movies, since there would now be a market solution for getting movie clips being circumvented by the purported "fair use."

Conclusion

"Fair use" is a term tossed about in most copyright discussions today, but those using it seldom identify a particular use or indicate whether they are talking about transformative fair use, economic fair use, or fair use of necessity. Without knowing the nature of the fair use allegedly being hurt, it is impossible to assess whether their arguments are valid or whether there are alternatives to lessen the impact of the restrictions.

Those concerned about copyright "fair use" need to say what they mean, or else no meaningful discussion can take place and no solution to their concerns can be found.

Endnotes

1. *Folsom v. Marsh* (9 F.Cas. 342, C.C.D. Mass. 1841).
2. *Dellar v. Goldwyn*, 104 F.2d 661, 662 (2d Cir. 1939).
3. 17 U.S.C. § 106.
4. See 17 U.S.C. § 108-122.
5. See 17 U.S.C. § 107.
6. H.R. Rep. No. 94-1478, at 65.
7. *Harper & Row v. Nation*, 471 U.S. 539, 562 (1985).
8. *Stewart v. Abend*, 485 U.S. 207, 237 (1990).
9. *Maxtone-Graham v. Burtschaell*, 803 F.2d 1253, 1263 (2d Cir. 1986), citations omitted.
10. *Harper & Row v. Nation*, 471 U.S. 539, 567 (1985).
11. *Campbell v. Acuff-Rose Music*, 510 U.S. 569, 578-579 (1994), the "2 Live Crew" case.
12. *Sony v. Universal City Studios*, 464 U.S. 417 (1984). The movie studios claimed that Sony was a contributory infringer because it supplied the Betamax VCR used to make infringing copies of TV shows. The Court held that because there were substantial noninfringing uses for the VCR, including recording permitted by some shows' copyright owners and fair use "time-shifting," and Sony had not intentionally induced any users' infringements, it was not liable as a contributory infringer.
13. The Court held that "noncommercial use of a copyrighted work requires proof either that the particular use is harmful, or that if it should become widespread, it would adversely affect the potential market for the copyrighted work." 464 U.S. at 450.
14. 464 U.S. at 454.
15. See 17 U.S.C. § 117.
16. See *MAI v. Peak*, 991 F.2d 511 (9th Cir. 1993).
17. "When the nature of a work requires intermediate copying to understand the ideas and processes in a copyrighted work, that nature supports a fair use for intermediate copying." *Atari v. Nintendo*, 975 F.2d 832, 843 (Fed. Cir. 1992); "We conclude that where disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law." *Sega v. Accolade*, 977 F.2d 1510, 1527-1528 (9th Cir. 1992).
18. 487 F.2d 1345 (Ct. Cl. 1973).
19. http://www.copyright.com.
20. *American Geophysical Union v. Texaco*, 60 F.3d 913, 930-931 (2d Cir. 1993) (citations omitted).
21. Justice Brennan, one of the five justices in the majority, felt that "library building" of shows was different from time-shifting, and would not be a fair use. While the dissent discusses librarying, the opinion only mentions it in footnote 39, which refers to a nonexistent section of the opinion. See Lee Hollaar, "Sony Revisited: A new look at contributory copyright infringement," http://digital-law-online.info/papers/lah/sony-revisited.htm.
22. *Universal City Studios v. Corley*, 273 F.3d 429, 459 (2d Cir. 2001).
23. 17 U.S.C. § 1201.
24. Other bills just use "fair use" as an excuse for making other changes to the copyright laws. For example, in the last Congress Rep. Boucher's H.R. 1201 proposed "fair use amendments" that would not affect what is a permissible use, but would permit circumvention to access a work if the use is noninfringing, making the circumvention-to-access provisions of Section 1201(a) redundant in light of the circumvention-to-infringe provisions of Section 1201(b).
    Rep. Boucher has recently introduced the latest version of his bill, also numbered H.R. 1201. While titled the "FAIR USE Act" (for "Freedom and Innovation Revitalizing U.S. Entrepreneurship Act of 2007"), it also does not address permissible uses of copyrighted works, but does add new exceptions to the DMCA whether the use is fair or not.
25. It continued the problem with the archive privilege of Section 117, requiring that all copies be "destroyed or rendered permanently inaccessible in the event that continued possession of the work should cease to be rightful." Section 117 applies only to an "owner of a particular copy," and therefore may not apply if the work is licensed. And having one set of rules for computer programs and another for their data is likely to cause confusion and problems, especially if the two sections diverge in later amendments.
26. Unfortunately, it also confused fair use with convenience ("DMCA failed to give consumers the technical means to make fair uses of encrypted copyrighted works") and then allowed any circumvention of a digital rights management system to make a noninfringing use of a work, such as copying a portion of a movie into a commentary on the movie, if "the copyright owner fails to make publicly available the necessary means to make such noninfringing use without additional cost or burden."
    That represents a considerable expansion of fair use which, as noted above, "has never been held to be a guarantee of access to copyrighted material in order to copy it by the fair user's preferred technique or in the format of the original." And since it is not possible to construct a device or computer program that can determine whether a use is fair or not, what it likely does is open the door for unfair uses.
27. U.S. Copyright Office, *DMCA Section 104 Report*, August 2001, page 155, http://www.copyright.gov/reports/studies/dmca/sec-104-report-vol-1.pdf.
28. In its latest round of DMCA exemption rulemaking, the Copyright Office provided that it would not be a violation to circumvention the access controls for "Audiovisual works included in the educational library of a college or university's film or media studies department, when circumvention is accomplished for the purpose of making compilations of portions of those works for educational use in the classroom by media studies or film professors," although it continues to be a DMCA violation to traffic in circumvention tools even for such purposes, or to circumvent when a copyright infringement results. For information about the rulemaking, see http://www.copyright.gov/1201/.

About the Author

Lee Hollaar is a professor of computer science in the School of Computing at the University of Utah, where he teaches computer networking and intellectual property and computer law. He is the author of *Legal Protection of Digital Information*. He

was a Committee Fellow with the Senate Judiciary Committee during the time the DMCA was being drafted.

About the Institute for Policy Innovation

The Institute for Policy Innovation (IPI) is a non-profit, non-partisan educational organization founded in 1987. IPI's purposes are to conduct research, aid development, and widely promote innovative and nonpartisan solutions to today's public policy problems. IPI is a public foundation, and is supported wholly by contributions from individuals, businesses, and other non-profit foundations. IPI neither solicits nor accepts contributions from any government agency.

IPI's focus is on developing new approaches to governing that harness the strengths of individual choice, limited government, and free markets. IPI emphasizes getting its studies into the hands of the press and policy makers so that the ideas they contain can be applied to the challenges facing us today.

About the IPI Center for Technology Freedom

The IPI Center for Technology Freedom is the technology division of the Institute for Policy Innovation. The purpose of the Center is to sort out the policy challenges posed by technological change for both the American people and policy makers.

The IPI Center for Technology Freedom points the way for a society that encourages freedom to develop new technologies, and the freedom to access them.

Editor & Publisher ..... Tom Giovanetti

IPI Issue Brief is published by the Institute for Policy Innovation (IPI), a non-profit public policy organization.

Direct inquiries to: **Institute for Policy Innovation**
1660 S. Stemmons Freeway, Suite 475
Lewisville, TX 75067

(972) 874-5139 (Voice)
(972) 874-5144 (FAX)

Email: ipi@ipi.org
Internet Web site:

Institute For Policy Innovation
IPI Ideas
Innovative Insights on Today's Policy Debates
NO. 35 FROM THE IPI CENTER FOR TECHNOLOGY FREEDOM JANUARY 2006

WILL CONGRESS CIRCUMVENT THE DMCA?

By Richard A. Epstein

One constant theme of the consumer rights movement is that firms should make full disclosure of the terms on which they sell their wares. That theme is central to understanding H.R. 1201, the "Digital Media Consumers' Rights Act of 2005."

The problem is that H.R. 1201 itself doesn't engage in full disclosure when it claims to address "mislabeled copy-protected music" and "*other purposes*." It turns out that those unnamed purposes are no small add-on, but could eviscerate the already inadequate protection that federal law provides against copyright piracy.

PIRACY, PIRACY EVERYWHERE.

As is well known today, copyright piracy is rampant. The source of the problem is easy to identify, but hard to solve. It is so cheap, and so tempting, to make copies of protected music that millions do it, with scarcely a tinge of guilt or regret. There is at present no effective remedy against these systematic violations, which probably amount to a healthy majority of all copies made today of copyrighted works.

But there are two legal approaches to this problem that have had at least some role in stemming the piracy tide.

THE ROLE OF SECONDARY LIABILITY.

In copyright law there are the twin doctrines of secondary liability. One deals with deliberate inducement of copyright violation; the second tackles contributory infringement. Both doctrines start from the common premise that it is very costly for copyright owners to attack countless acts of copyright piracy on a case-by-case basis.

The use of *inducement* and *contribution* in tandem generally allows the copyright holder some challenge to any third party whose activities either purposively *induces* or substantially *contributes* to mass copyright infringement.

The unassailable logic behind these two doctrines is that one action against a key third party might stop multiple individual acts of infringement. The recent *Grokster* decision was, in the end, won on a purposive inducement theory when it was shown that Grokster had orchestrated huge peer-to-peer exchanges to facilitate illegal copying from which it gained, indirectly, advertising revenues.

IS THERE AN INTENT TO INFRINGE?

Inducement, an intentional tort, is generally easy to defend. The contribution side of the equation is more difficult to deal with because there are all sorts of technologies that contribute to copyright infringement, for which this form of secondary liability looks inappropriate.

This level of piracy could not take place without the Internet, and yet we don't hold liable all companies that supply the equipment and services that make the Web hum. The simple explanation is that this blunderbuss approach would cut too deeply into legitimate activities.

The Supreme Court, in its 1984 *Betamax* decision, set the initial balance strongly in favor of device producers when it held that Sony Corporation did not infringe with its Betamax technology so long as it was "capable of a substantial noninfringing use." There are genuine differences of opinion as to whether this test is a bit too forgiving to hardware producers or whether it has it about right. I have not heard anyone say that it is too tough on contributory infringers.

In the *Grokster* situation, there is no reason to chase after any supplier or servers when the obvious target was Grokster, an intentional wrongdoer. So the law here is best understood as resting in an unhappy but not indefensible place.

IS THERE DIRECT INFRINGEMENT?

The second line of defense of copyrighted material is found in the 1998 Digital Millennium Copyright Act. Rather than punish acts of copyright infringement directly, the DMCA targets those individuals who take steps that "circumvent a technological measure that effectively controls access to a [copyrighted] work." (Copyright Act, § 1201 (a)). It then backs up that provision with an additional prohibition that makes it illegal for any person to "manufacture, import . . . or otherwise traffic" in such technologies. (CA § 1201(a)). This one/two punch backstops the Copyright Law by making it illegal for anyone to take actions that either disable encryption devices, or provide equipment that allow others to do so.

Other provisions of the DMCA create narrow exceptions such as the exception to allow reverse engineering to ensure interop-

erability of software programs, though even this exception can be precluded by end user license agreements.

Why Fix What Isn't Broken?

So if there isn't much of a case for law reform in either of these two areas, why is the deceptively labeled Consumers' Rights Act so troublesome? Hidden at the end of the bill are two short provisions that are intended to amend section 1201(c) of the Act. The first of these picks up in Subsection 1, by adding this caveat: "and it is not a violation of this section to circumvent a technological measure in order to obtain access to the work for purposes of making noninfringing use of the work."

The second change, which is added at the end of § 1201(c), reads in its entirety: "(5) Except in instances of direct infringement, it shall not be a violation of the Copyright Act to manufacture or distribute a hardware or software product capable of substantial noninfringing uses."

Big Changes from Small Print.

At one level these two provisions look to be the soul of innocence. Who could possibly object to anyone who wants to gain greater access to copyright materials for the purposes of making suitable "noninfringing uses"?

But means as well as ends matter in the constant struggle to deal with copyright piracy. In looking at the structural problem, the key question is just how much noninfringing use is there relative to the torrent of illegal copying. In answering this question, it's not appropriate to look at the issue of interoperability, because that has already been dealt with first by the DMCA and second by the standard end user licenses. So it is not likely that there is much fair use to worry about.

Once the first of these two provisions is in place, then someone can circumvent the device for the appropriate purpose. But unfortunately H.R. 1201 does not say one word about how the circumvention in question will be limited just to those cases. Nor does it indicate what penalties will be given to individuals who first circumvent for fair use and then proceed, as is likely to be the norm, to circumvent for all other purposes. *So if equipment can be sold for good purposes, then it can be used for bad ones, and the DMCA has lost its teeth.* It is not too much to say that this stealth provision, which is never referred to in the findings of the act could work a comprehensive repeal of the DMCA. Much too much is lost, and very little is gained.

New Subsection (5) fares no better, and indeed if anything it looks worse. As written, it says that manufacturing or distributing a hardware or software product—what other kinds are there?—capable of a noninfringing use it is not a violation of the copyright. The only exception is in cases of direct infringement, which is of course not what manufacturers and distributors do anyhow.

So Just What *Does* It Do?

If the section only means to say that actions for contributory infringement cannot be brought for devices capable of noninfringing uses, then it is just a statutory codification of the *Betamax* rule. Thus read, I would oppose it, because there is enough unhappiness with the rule that we should allow for some case law that contracts its scope in some future case.

But in fact it looks as though this provision may have more bite, although one cannot be sure. Grokster was of course capable of noninfringing uses, and yet it was shut down on the purposive inducement theory. New Subsection (5) purports to say that it is no violation of the Copyright Act *period* to distribute hardware or software that has that power.

The purposive inducement theory is a Copyright Act theory, so it looks as though the decision would give the same protection for purposive inducement that it gives for contributory infringement cases. If so, then *Grokster* is history.

It is the worst form of lawmaking to insert as an addendum to an Act that looks as though it is directed at consumer fraud a provision that could overturn a unanimous decision of the Supreme Court. We need full legislative disclosure.

Conclusion.

Both provisions should be stripped from H.R. 1201 and presented separately and debated on their own merits.

Next, its sponsors ought to explain more clearly what this bill does and why it is needed. Once that is done, I don't think that these provisions are likely to have much of a chance. The current case law under the DMCA and the Copyright Act is not ideal, but it is certainly more nuanced and sensible than this provision.

The problem in this area is that we have too much piracy, not too much piracy prevention. Any reexamination of this issue should start from a clear knowledge of where the greatest dangers lie. If so, these two provisions should be allowed to die a quick and merciful death.

Richard A. Epstein is the James Parker Hall Distinguished Service Professor of Law at the University of Chicago, and the Peter and Kirsten Bedford Senior Fellow, the Hoover Institution. He writes frequently on intellectual property issues generally, and for IPI.

Direct all inquiries to:

Institute for Policy Innovation
1660 South Stemmons, Suite 475
Lewisville, TX 75067

(972)874-5139 [voice]
(972)874-5144 [fax]

Email: **ipi@ipi.org**
Website**: www.ipi.org**

Institute For Policy Innovation

IPI CENTER FOR TECHNOLOGY FREEDOM

The True Cost of Sound Recording Piracy to the U.S. Economy

By Stephen E. Siwek

POLICY REPORT 188

AUGUST 2007

Executive Summary

Synopsis: "Piracy" of recorded music costs the U.S. sound recording industries billions of dollars in lost revenue and profits. These losses, however, represent only a fraction of the impact of recorded music piracy on the U.S. economy as a whole. Combining the latest data on worldwide piracy of recorded music with multipliers from a well established U.S. government model, this study concludes that recorded music piracy costs American workers significant losses in jobs and earnings, and governments substantial lost tax revenue.

There is little debate that U.S. sound recordings are "pirated" in vast numbers in the U.S. and in international markets. Piracy of these works harms the intellectual property owner, who loses the revenue that would have been gained had the legitimate recording been purchased. These "direct" losses, however, represent only part of the story. Piracy also causes significant and measurable harm to the "upstream" suppliers and "downstream" purchasers who also would have benefited from the sale of legitimate, copyright protected sound recordings. Indeed, the harms that flow from pirate activities produce a cascading effect throughout the economy as a whole. These harms include lost output, lost earnings, lost jobs and lost tax revenues.

In order to alert policy makers to the magnitude of these ripple effects, this paper estimates the true impact of piracy in the sound recording industry on the overall U.S. economy. Using the RIMS II mathematical model maintained by the U.S. Bureau of Economic Analysis (BEA), this study estimates the impact of piracy in the sound recording business on the U.S. economy as a whole. The effects of music piracy on the U.S. economy are quantified in terms of lost economic output, jobs, employee earnings and tax revenue.

The true cost of sound recording piracy far exceeds its impact on U.S. producers and distributors of sound recordings. Piracy harms not only the owners of intellectual property but also U.S. consumers and taxpayers.

Specifically, the analysis demonstrates that:

a. As a consequence of global and U.S.-based piracy of sound recordings, the U.S. economy loses $12.5 billion in total output annually. Output includes revenue and related measures of economic performance.

b. As a result of sound recording piracy, the U.S. economy loses 71,060 jobs. Of this amount, 26,860 jobs would have been added in the sound recording industry or in downstream retail industries, while 44,200 jobs would have been added in other U.S. industries.

c. Because of sound recording piracy, U.S. workers lose $2.7 billion in earnings annually. Of this total, $1.1 billion would have been earned by workers in the sound recording industry or in downstream retail industries while $1.6 billion would have been earned by workers in other U.S. industries.

d. As a consequence of piracy, U.S. federal, state and local governments lose a minimum of $422 million in tax revenues annually. Of this amount, $291 million represents lost personal income taxes while $131 million is lost corporate income and production taxes.

As policy makers turn their attention to the viability of the U.S. economy in the global marketplace, it seems obvious that the problem of music piracy should be afforded a high place on the policy agenda in coming years.

Table of Contents

Direct inquiries to: **Institute for Policy Innovation**
1660 S. Stemmons Freeway, Suite 475
Lewisville, TX 75067

(972) 874-5139 (Voice)
(972) 874-5144 (FAX)

Email: ipi@ipi.org
Internet Web site:

The True Cost of Sound Recording Piracy to the U.S. Economy

by Stephen E. Siwek

Introduction

Widespread piracy of copyright protected works through both physical and electronic media harms the companies that create and sell these products. Since many of these companies are U.S. firms, the harm of global piracy falls disproportionately on U.S. companies, their stockholders and employees, and on U.S. federal and state governments.

The U.S. companies that are most directly affected by piracy have long sought to increase understanding of the scope of this problem and to encourage government-wide efforts to address this threat. However, until recently, there has been little reliable economic information available to U.S. policymakers to assist them in balancing the importance of enforcing intellectual property rights as against other priorities. In order to address this issue, in 2005, I published a study entitled *Engines of Growth: Economic Contributions of the U.S. Intellectual Property Industries*.[1] In that study, I analyzed the contributions to the U.S. economy of the U.S. "IP industries" – industries that rely most heavily on copyright or patent protection to generate revenue, employ and compensate workers and contribute to real growth. The study found, among other things, that these IP industries are the most important growth drivers in the U.S. economy, contributing nearly 40% of the growth achieved by all U.S. private industry and nearly 60% of the growth of U.S. exportable products. It also found that the IP industries were responsible for one-fifth of the total U.S. private industry's contribution to GDP and two-fifths of the contribution of U.S. exportable products and services to GDP.

Subsequently, in September 2006, the Institute for Policy Innovation (IPI) published my new study entitled, "*The True Cost of Motion Picture Piracy to the U.S. Economy*."[2] In that study, (hereinafter, the "*Motion Picture Piracy*" study) I measured the true cost of motion picture piracy to the U.S. economy as a whole. I concluded that global piracy of motion pictures resulted in $20.5 billion annually in lost output among all U.S. industries, $5.5 billion annually in lost earnings for all U.S. workers and 141,030 U.S. jobs that would otherwise have been created. In addition, as a result of piracy, governments at the federal, state and local levels are deprived of at least $857 million in tax revenue each year.

The *Motion Picture Piracy* study was an initial effort to measure the economic impact of motion picture piracy on the U.S. economy as a whole.

In the current study, the basic methodology and approach that was pioneered in the *Motion Picture Piracy* study will be applied to another industry—the U.S. Sound Recording industry. In this analysis, as in the motion picture study, estimates of sound recording industry losses to piracy will be used in conjunction with industry-specific multipliers from the U.S. Bureau of Economic Analysis to derive economy-wide

losses in output, employee earnings and jobs. In addition, these estimates, in conjunction with other data, will be used to derive estimates of the tax receipts that are lost as a result of sound recording piracy.

The analysis of the impact of sound recording piracy that is presented here will also serve as an essential input in yet another upcoming IPI study that will consider the *combined* effects of piracy in four separate copyright-dependent industries. The industries to be included in this broader effort will include the U.S. sound recording industry as well as the U.S. motion picture, business and entertainment software and video games industries.

I. Background: Measuring the Harm Caused by Sound Recording Piracy

U.S. Sound Recording Industries

In this study, the principal focus of analysis will be the U.S. Sound Recording Industries that are identified in the North American Industry Classification System as a four-digit industry group - NAICS 5122.[3] This industry group "comprises establishments primarily engaged in

- producing and distributing musical recordings,
- in publishing music,
- or in providing sound recording and related services."[4]

NAICS 5122 is part of the broader Motion Picture and Sound Recording Industry sub sector (NAICS 512) which is, in turn, part of the "Information" industry sector (NAICS 51).

According to the U.S. Census Bureau, the "employer firms" in NAICS 5122 generated revenue of $18.7 billion in 2005.[5] This total represented an increase of $2.2 billion or 13.7% over 2004. In that year, (2004), the Census Bureau also found that the Sound Recording Industries had 25,101 paid employees in 3,405 establishments.[6] These employees received a total payroll of $1.965 billion.

Within the four-digit Sound Recording Industries group, the largest five-digit NAICS industry is NAICS 51222-integrated record production and distribution. In 2005, the NAICS 51222 industry reported revenues of $12.866 billion. Of this total, 87 percent or $11.242 billion was generated through the sale of recordings.[7] In 2005, the NAICS 51222 industry reported total expenses of $11.122 billion. This total represented an increase of 24.6% or $2.194 billion over total expenses in 2004.[8] Personnel costs alone rose from $1.631 billion in 2004 to $2.173 billion in 2005.

U.S. Sound Recording Retail Trade

The full impact of sound recording piracy is not limited to the U.S. companies that create and sell copy protected music products. In particular, U.S. retailers of compact disks face reduced sales and lower profits as a result of pirate activities that occur in the United States. The International Federation of the Phonograph Industry (IFPI) has reported that in 2005, U.S. sales of recorded music generated record company "trade" revenues of $7.012 billion.[9] At the retail level, however, these same sales of recorded music in the U.S. cost consumers $12.270 billion. Clearly, in the U.S., recorded music piracy hurts both producers and retailers of recorded music.

Our Interlocking Economy

In fact, the impact of music piracy flows throughout the U.S. economy. Piracy in one segment of the economy can affect other industries because the economy is an "interlocking" system. Changes in supply or demand in one industry can and do affect supply and demand in other industries.

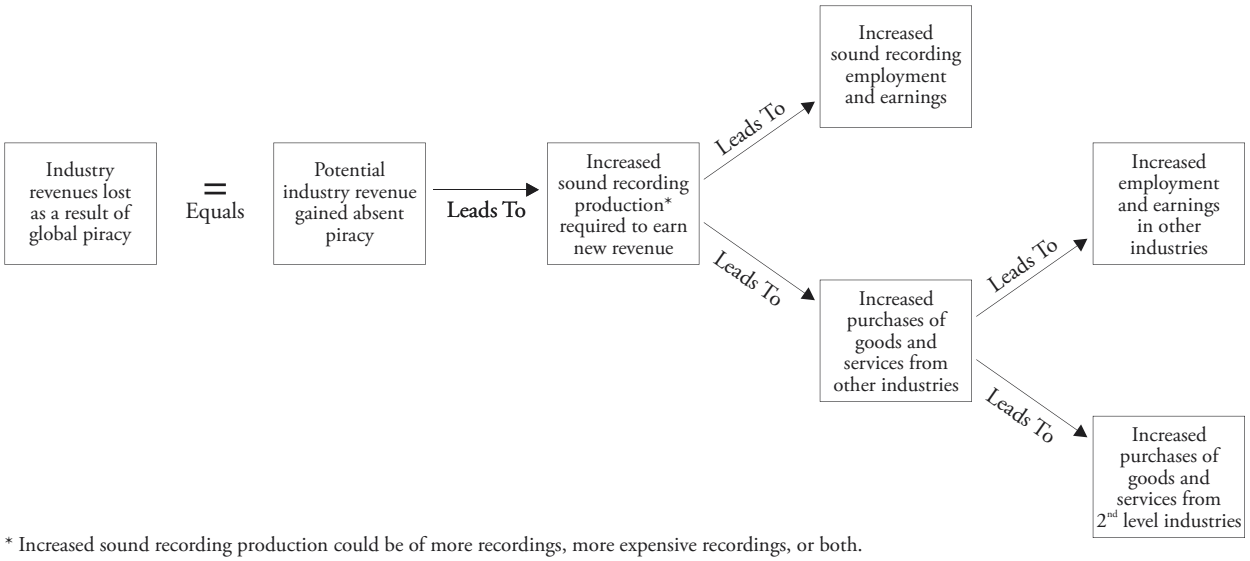
For example, assume that personal watercraft suddenly become very popular and shortages develop. In this situation, the price of personal watercraft will rise and so will the profits of the manufacturers. However, in order to continue to earn these higher profits, the manufacturers will have to make more personal watercraft. In the process, they will buy, among other things, more waterproof seats from seat manufacturers.

Of course, it doesn't stop there. In order to produce more seats, the seat manufacturers will have to buy more plastic and more padding. And the plastic and padding manufacturers will have to buy more of the particular materials that they need.

The cascade does not even end with the suppliers of personal watercraft manufacturers but continues downstream as well. The retail sellers of personal watercraft who buy from the manufacturers will also be able to earn more money by raising prices or by increasing volume. These kinds of interactions among industries are captured in input-output tables. Input-output tables measure the interrelationships that exist among different industries. With this information, one can estimate what impact a specific change in one industry will have on other industries.

What is true for personal watercraft is equally true for recorded music. If the revenue generated by making and selling recorded music increases (In this case, not by higher demand but by a decrease in piracy), record companies will make more recordings, invest in higher quality, broader distribution or marketing, or some combination of these activities in order to capture more profits. (See sidebar "A Decrease In Piracy Expands Production").

FIGURE 1 **IMPACT OF PIRACY THROUGHOUT THE ECONOMY**



* Increased sound recording production could be of more recordings, more expensive recordings, or both.

II. METHODOLOGY: PIRACY LOSS ESTIMATES FOR THE SOUND RECORDING INDUSTRY

GLOBAL LOSSES FROM PHYSICAL PIRACY

In the *Motion Picture Piracy* study, estimates of the global losses to the U.S. industry from motion picture piracy were available from the extensive piracy survey analysis conducted for the Motion Picture Association of America by L.E.K. Consulting. At this writing, no such comprehensive analysis of piracy exists for the recorded music industry. However, many of the underlying building blocks of such an analysis do exist in a variety of industry and trade publications. For this study, the most important of these sources was *2006 Global Recording Industry in Numbers* which is published by the International Federation of the Phonogram Industry (IFPI).

The IFPI report contains detailed, country-by-country information on actual sales of recorded music by year and as between physical and digital media. The report also establishes two separate measures of value for the recorded music that is sold in each country. These measures are record company "trade" value and the "retail" value paid by the consumer for the purchase of a music product. The IFPI report shows, by country, the number of physical units sold by medium (i.e. CD, DVD etc.) and the number of single units sold (i.e. songs) by physical and digital media. Finally, the IFPI report publishes an estimate of the physical piracy rate for each market analyzed.[10] Country-by-country data from the IFPI 2006 report are reproduced in Appendix A.

In this report, physical piracy refers to manufactured pirate CDs, copied CDs and manufactured or copied music video DVDs. The calculations used to derive worldwide losses from physical piracy of recorded music are shown in Table 1. The calculations begin with an estimate of the losses sustained by the worldwide recorded music industry from physical piracy. As set forth in Appendix A, the IFPI provides estimates of the physical piracy rates experienced in all major markets of the world. These calculations are used, in conjunction with legitimate sales quantities to derive the number of pirate units sold by market. As shown in Table A-3 of Appendix A, this quantity was 1.398 billion units in 2005. If these units could have been sold at the average retail price that prevailed in each market, the global industry would have earned an additional $6.460 billion (Table A-3).

Substitution of Legitimate Product for Pirate Product — Physical Piracy

However, unlike the calculations in Table A-3, in this analysis it is conservatively assumed that absent piracy, there would be a significant loss of pirate quantities as former consumers of those products would likely have to pay higher (legitimate) prices. Unfortunately, there is no precise measure of the degree to which consumers of pirated CD would continue to purchase those CDs at legitimate prices. In this analysis, we have reviewed results of several surveys of consumers of both pirated and legitimate CDs in different markets. We have also reviewed surveys of home video consumers in markets around the world. These surveys generally conclude that if counterfeit channels were not available, many buyers of counterfeit CDs would purchase CDs legally. While the degree to which these legitimate purchases would occur differs by market, it appears nevertheless, that such purchases would comprise a very significant fraction of the total number of pirated CDs now purchased. Indeed, the "substitution" rates cited by survey respondents range from approximately 40% to 70%.[11] In this study, the weighted average substitution rate used for the physical piracy of recorded music is 65.7%. A calculation of the implied substitution rate for physical piracy is shown in Table 2.

With a weighted average substitution rate of 65.7%, the estimated global loss from physical piracy falls from $6.460 billion (100% substitution at retail prices) to $4.068 billion. (See Table 1) This value must

Table 1 **Sound Recording Industry Direct Losses Due to Piracy**

Sound Recording Industries: NAICS 512200 [a] (Part One)

Part One: Worldwide Losses of U.S. Sound Production/Distribution & Related Industries.

		Billions of U.S. Dollars
Global Loss to U.S. Industry from Physical Piracy		
Estimated Global Losses at Trade Value [b]	$4.068	$4.068
Assumed Net Return to Vendor [c]	60.7%	
U.S. Share of Pirated Physical Works [d]	66%	
Estimated Physical Piracy Losses to U.S. Integrated Firms		**$1.630**
Global Loss to US Industry from Download Piracy		
Global Illegal Songs Downloaded (in millions) [e]	20,000	
Illegal Downloads of U.S. Repertiore (in millions)	13,200	
Lost Legitimate Unit Sales (in millions) (20%) [f]	2,640	
Unit P=$2.31 * Net Return [g]	$1.403	
Estimated Download Piracy Losses to U.S. Integrated Firms		**$3.703**
Sub-Total Piracy Losses (Part One)		**$5.333**

[a] NAICS 512200 - Sound Recording Industries includes production, distribution, music publishing, recording, producing and promoting of sound recordings.
[b] See Appendix A - IFPI Data, Table A-4.
[c] Equals world average trade price ($8.58) divided by world average retail price ($14.13). See Appendix A - IFPI Data, Table A-1, A-2.
[d] Greater investment in U.S. product increases the likelihood that U.S. product will be pirated more frequently than domestic product. Add 10% to assumed split of 60% U.S. product.
[e] Based on IFPI 2006 Global Recording Industry in Numbers, page 9.
[f] Based on review of published articles on the effects of music downloading.
[g] For legitimate downloads (90%), sales at $0.99 per song. For legitimate CDs (10%), average retail price. See Table 2.

TABLE 2 ASSUMPTIONS: SUBSTITUTION RATES AND PRICING

Assumptions for the Substitution of Legitimate Physical Product for Pirated Physical Product.

1. No. of pirated units at **trade price**. See Appendix A, Table A-4

$4,068.15 *divided by* 2.91 *equals* 1,398

2. No. of pirated units at **retail price** if revenue is **held constant**. Table A-5

$4,068.15 *divided by* 4.43 *equals* 918

3. Implied reduction in number of pirate units sold absent piracy 480

4. Implied substitution rate for legitimate product **65.7%**

Assumptions for the Pricing of Legitimate On-Line and Physical Product that would Substitute for Pirate Downloads of Recorded Music.

1. Average Price for a Legitimate Downloaded Song as per IFPI:

Assume Legitimate World and U.S. on-line price of $0.99 per downloaded song. $0.99

2. Average Retail Price for Legitimate CD as per IFPI:

World Average Price $14.13

U.S. Average Price $15.64

3. Weighted Average "But-For" Price Absent Piracy [a]

	World Weight	Price Sub-Total	U.S. Weight	Price Sub-Total
Download	90%	$0.89	90%	$0.89
CD	10%	$1.41	10%	$1.56
	World Price	**$2.30**	**U.S. Price**	**$2.46**

[a] Absent piracy, experienced downloaders would be unlikely to purchase bundled CDs when they could legally download individual songs. Assume 90% of download substitution purchases go to legitimate on-line music services.

then be divided between the music retailer and the music producer. For this purpose, we again use the IFPI data to derive the weighted average world trade price ($8.58) and the weighted average world retail price ($14.13).[12] The ratio of the trade price average to the retail price (60.7%) is used for this purpose. (See Table 1)

Finally, we must determine the share of piracy losses that represents U.S. recorded music. In its Special 301 filings with the U.S. Trade Representative's office, the U.S. industry develops an "estimate of the local pirate market that is classified international repertoire and takes, on average, 60% of this as U.S. repertoire. This figure is based on legitimate market repertoire data."[13] In this analysis, we increase this percentage by 10% (to 66%) to reflect the belief that greater investment in the development and marketing of U.S. product (relative to non-U.S. product) increases the likelihood that U.S. product will be pirate.

Based on these assumptions, the total loss to U.S. sound recording producers from physical piracy is estimated as $1.630 billion. (See Table 1)

GLOBAL LOSSES FROM DOWNLOAD PIRACY

The U.S. recorded music industries sustain losses not only from physical piracy but also increasingly from illegal downloads of recorded music. Many of these songs are downloaded from peer-to-peer (P2P) networks whose users increasingly are responsible for recent declines in the number of legitimate CD

sales in the U.S. IFPI estimates that in 2005, 20 billion songs were illegally downloaded worldwide.[14] In this report, the calculations used to derive the recorded music industries' losses from download piracy are provided in Table 1.

Substitution of Legitimate Product for Pirated Product — Download Piracy

As reported in Table 1, the calculation begins with the IFPI estimate of 20 billion illegal downloads worldwide. For reasons set forth above in connection with the physical piracy estimates, it is further assumed that 66% of all illegal downloads represent downloads of U.S. recorded music. It is then assumed that only 20% (1 in 5) of these downloaded songs would have been purchased legitimately if piracy did not exist.[15]

For the 20% of downloaded U.S. songs that, absent piracy would be purchased legitimately, it is then necessary to derive the legitimate price that these consumers (who formerly downloaded recorded music illegally) would now pay. Since these consumers are all familiar with the Internet and capable of downloading computer files, it is reasonable to assume that most (but not all) of their substitution efforts would occur in the form of legal downloads from legitimate web sites.

For these downloads, we assume a legitimate price of $0.99 per song. (See Table 2) We further assume that 90% of these songs would ultimately be acquired through legitimate music downloads while the remaining 10% of songs would be purchased on a legitimate CD.[16] The weighted average legitimate price used for worldwide downloads of U.S. music is $2.30. (See Table 2)

As shown in Table 1, the legitimate price of $2.30 times the net return to the record producer (60.72%) times the total estimated song substitutions (2.640 billion) yields total download piracy losses to U.S. firms of $3.703 billion. When combined with the physical piracy losses of $1.630 billion, the total piracy loss to the sound recording industries from global piracy equals $5.333 billion. (See Table 1)

U.S. Retail Losses from Sound Recording Piracy

As noted earlier, piracy losses to U.S. industries are not limited to the losses sustained by U.S. producers of recorded music. Recorded music is sold through a wide variety of retail distribution channels and U.S.-based music piracy reduces those legitimate sales. Calculations in support of the piracy losses estimates for U.S. retail industries are provided in Table 3.

The calculations in Table 3 follow on from the calculations provided in Tables 1 and 2. As shown in Table 3, U.S. retail sales and profits are affected by both physical and download piracy. The physical piracy loss estimate begins with the U.S. losses from physical piracy that occur within the United States. As shown in Table 3, this value is $335 million as per IFPI. (See Table A-4, Appendix A). This value is then adjusted to reflect only the retail portion of these losses. The net U.S. retail loss from physical piracy is shown as $151 million. (Table 3)

The download piracy losses to U.S. retailers are calculated using an assumed value of 4.0 billion illegal downloaded songs in the U.S. in 2005. This value (based primarily on a review of confidential sources) implies that of the 20 billion illegal songs downloaded globally in 2005, some 20% or 4 billion were downloaded to U.S. consumers.

Again assuming a 20% substitution rate, these 4 billion downloaded songs translate into 800 million lost legitimate sales. This figure is then adjusted for the weighted average price of legitimate purchases for download consumers and by the retail margin. These calculations lead to download piracy losses to U.S. retailers of $890 million and total U.S. retail losses (from both download and physical piracy) of $1.041 billion. See Table 3.

Table 3 Sound Recording Retail Trade Losses Due to Piracy

U.S. Sound Recording Industries, Retail Trade: NAICS 44-45 [a]

Part Two: U.S. Losses of U.S. Retail industries that sell or rent sound recording products.

			Billions of U.S. Dollars
Losses to U.S. Retail Industires from U.S. piracy of			
Physical	**Sound Recording Products**		
	U.S. Losses in U.S. Market at Trade Value	$0.335	
	Assumed Net Return to U.S. Retail [b]	45.2%	
	Total Losses to U.S. Retail Industries		**$0.151**
Downloaded	**Sound Recording Products**		
	Illegal Downloaded Songs in U.S. (millions) [c]	4,000	
	Lost legitimate unit sales (millions) (20.0%)	800	
	Unit P = $2.46 * (.452)	$1.112	
	Total Losses to U.S. Retail Industries		**$0.890**
	Sub-Total Piracy Losses (Part Two)		**$1.041**

[a] NAICS 44-45 includes all industries engaged in retailing merchandise, generally without transformation, and rendering services to the sale of merchandise.

[b] Assumes US Retail Price of $15.64 and U.S. Trade Value Price of $8.57. See Appendix A.

[c] In March 2007, NPD group reported 3.4 billion song downloads in the U.S. for 2005 and 6.0 billion song downloads in the U.S. for 2006. However, in 2006, the total number of U.S. Households downloading via P2P networks increased by only 8% in 2006. If the number of illegal downloads per P2P household in 2006 had also applied to 2005, there would have been more than 4.6 billion illegal downloads in the U.S. in 2005. In this analysis we adopt a figure of 4.0 billion illegal songs downloaded in the U.S. in 2005.

The Applicable RIMS II Multipliers — Production

The recording industry production and retail losses calculated above reveal only the direct impact of piracy on the sound recording industry and its retail trade. To derive and estimate additional losses throughout the economy, we use multipliers from the RIMS II model.

The RIMS II model contains five types of multipliers for many U.S. industries. For each industry, there are three "Final Demand" multipliers for output, earnings, and employment and two "Direct- Effect" multipliers for "direct" earnings and employment. In this analysis, the Final Demand multipliers tell us the total effects of sound recording piracy on the output, earnings, and employment of all U.S. industries. The Direct Effects multipliers tell us the specific effects of piracy on the sound recording industries themselves. This analysis uses all five types of multipliers.

The RIMS II model defines industries based on the North American Industry Classification System (NAICS), a classification system maintained by the U.S. Government that tracks increasing levels of specialty within each classification. As noted earlier in this report, the U.S. Sound Recording Industries are classified in NAICS 5122.

A total of five multipliers were acquired from the Bureau of Economic Analysis for NAICS 5122. The three Final Demand multipliers are designed to estimate the changes in total economic output, total earnings (of workers), and total employment that result from a specified change in Final Demand. The two Direct Effect multipliers are used to derive the changes in earnings and employment levels only for workers

who are directly employed in the industry under study. In Table 4, all five multipliers are reported for the states of California, New York, Tennessee, Florida and Texas. A detailed discussion of the reasons for this determination is provided in Appendix B.

TABLE 4 MULTIPLIERS FOR U.S. SOUND RECORDING INDUSTRIES Part One

U.S. Sound Recording Industries: NAICS 512200

Final Demand Multipliers for Primary States [a]

Output:		
	California	2.0156
	New York	1.8183
	Tennessee	1.9436
	Florida	1.7499
	Texas	1.9659
Earnings:		
	California	0.4250
	New York	0.3190
	Tennessee	0.3827
	Florida	0.3545
	Texas	0.3999
Employment:		
	California	9.6
	New York	6.7
	Tennessee	11.0
	Florida	10.3
	Texas	9.7

Direct Effect Multipliers for Primary States [a]

Earnings:		
	California	2.9689
	New York	2.6418
	Tennessee	2.7321
	Florida	2.5628
	Texas	2.8671
Employment:		
	California	4.3948
	New York	3.6664
	Tennessee	3.0776
	Florida	2.9544
	Texas	4.4529

[a] In the 2002 Census, California, New York, Tennessee, Florida and Texas collectively employed 74.3% of all workers in NAICS 512200. California employed 41.46% of this subtotal while the remaining four states employed the following shares; New York = 39.11%, Tennessee = 9.99%, Florida = 5.41%, and Texas with 4.02%.

The Applicable RIMS II Multipliers — Retail

As noted previously, sound recording piracy affects other U.S. industries in addition to the industries that are classified in NAICS 5122. In particular, U.S. retailers of compact disks face reduced sales and lower profits as a result of piracy. However, the inter-industry relationships that affect these industries differ from the inter-industry relationships that exist in the sound recording industries. As a result, the multipliers that apply to the retailing of compact disks should also differ from the multipliers that were calculated for NAICS 5122. In this study, the economic effects of piracy on U.S. sound recording retailers are measured using multipliers for U.S. retail trade (NAICS 44-45).

The five multipliers used in the retail calculations in this study are shown in Table 5. Multipliers are reported for eight states: California, New York, Texas, Ohio, Pennsylvania, Illinois, Florida, and New Jersey. In the U.S., the retail industries that sell compact disks to consumers are less geographically concentrated than the industries that produce sound recordings. In this study, it is assumed that the retail multipliers for these eight states appropriately and reasonably capture the economic relationships that exist for the U.S. sound recording retailing sector as a whole.

More detailed information on the RIMS II multipliers used in this analysis may be found in Appendix B.

Table 5 Multipliers for U.S. Sound Recording Industries Part Two

U.S. Sound Recording Industries: Retail Trade NAICS 44-45

Final Demand Multipliers for Primary States [a]

States	Output	Earnings	Employment
California	2.2996	0.7244	24.4
New York	2.0293	0.5820	19.9
Texas	2.2242	0.6809	25.1
Ohio	2.1855	0.6692	26.3
Pennsylvania	2.1873	0.6562	25.0
Illinois	2.3286	0.7077	25.3
Florida	2.0600	0.6549	25.3
New Jersey	2.1566	0.6280	21.0

Direct Effect Multipliers for Primary States [a]

States	Earnings	Employment
California	2.1447	1.7520
New York	1.8618	1.5392
Texas	2.0205	1.7222
Ohio	2.0312	1.6773
Pennsylvania	2.0238	1.6387
Illinois	2.1579	1.6914
Florida	1.9406	1.6689
New Jersey	2.0227	1.6420

[a] In the 2002 Census the top eight states for establishments and employment in NAICS 45122 - Prerecorded Tape, Compact Disk and Record Stores, were responsible for 50% of the total establishments and employment in NAICS 45122 for the U.S. as a whole.

III. Findings: The Impact of Sound Recording Piracy on the Overall Economy

Total Lost Output, Employment and Earnings

To produce industry-specific estimates of the impacts of piracy on the U.S. economy, the estimated losses from piracy for the sound recording industry are combined with the appropriate multipliers. The three "Final Demand" estimates of the overall impact of piracy on the U.S. economy are reported in Table 6.

As shown in Table 6, as a result of piracy, the sound recording industries have sustained a reduction in Final Demand for their products in the amount of $5.333 billion in 2005. Using the relevant industry

Table 6 Economic Impacts of Increased Final Demand for Recorded Music

Part One: Absent Piracy, Final Demand in U.S. Sound Recording industries would increase.

State	Allocation Factor	Final Demand ($ Millions)	Output ($ Millions)	Earnings ($ Millions)	Employment (Number)
		$5,333.21			
California	0.4146		$4,456.79	$939.74	21,227
New York	0.3911		$3,792.64	$665.38	13,975
Tennessee	0.0999		$1,035.53	$203.90	5,861
Florida	0.0541		$504.89	$102.28	2,972
Texas	0.0402		$421.48	$85.74	2,080
		Sub-Total	**$10,211.33**	**$1,997.03**	**46,114**

Part Two: Absent Piracy, Final Demand in U.S. Sound Recording Retail would also increase.

State	Allocation Factor	Final Demand ($ Millions)	Output ($ Millions)	Earnings ($ Millions)	Employment (Number)
		$1,040.97			
California	0.2967		$710.25	$223.74	7,536
New York	0.1607		$339.47	$97.36	3,329
Texas	0.1471		$340.58	$104.26	3,843
Ohio	0.0919		$209.08	$64.02	2,516
Pennsylvania	0.0847		$192.85	$57.86	2,204
Illinois	0.0837		$202.89	$61.66	2,204
Florida	0.0798		$171.12	$54.40	2,102
New Jersey	0.0554		$124.37	$36.22	1,211
		Sub-Total	**$2,290.61**	**$699.52**	**24,946**

Economic Impacts of Increased Final Demand for Sound Recordings

Output ($ Millions)	Earnings ($ Millions)	Employment (Number)
$12,501.94	**$2,696.55**	**71,060**

multipliers, this loss is converted into an estimate of the total loss in U.S. output. This total loss figure is $10.211 billion. In addition, the "direct" loss sustained by retailers of U.S. sound recordings ($1.04 billion) would provide an additional $2.290 billion in total lost output to the U.S. economy. As a result, the full impact of sound recording piracy on U.S. output was an overall loss of **$12.501 billion**.

Table 7 Direct Effects of Increased Final Demand for Recorded Music

Part One: Absent piracy, the Direct Effects of increased Final Demand on U.S. Sound Recording industries would increase.

State	Total Employment (Number)	Direct Employment (Number)	Total Earnings ($ Millions)	Direct Earnings ($ Millions)
California	21,227	4,830	$939.74	$316.53
New York	13,975	3,812	$665.38	$251.86
Tennessee	5,861	1,904	$203.90	$74.63
Florida	2,972	1,006	$102.28	$39.91
Texas	2,080	467	$85.74	$29.90
	Sub-Total	**12,019**	$1,997.03	**$712.84**

Part Two: Absent piracy, the Direct Effects of increased Final Demand on the U.S. Sound Recording industries would also increase.

State	Total Employment (Number)	Direct Employment (Number)	Total Earnings ($ Millions)	Direct Earnings ($ Millions)
California	7,536	4,301	$223.74	$104.32
New York	3,329	2,163	$94.36	$52.29
Texas	3,843	2,232	$104.26	$51.60
Ohio	2,516	1,500	$64.02	$31.52
Pennsylvania	2,204	1,345	$57.86	$28.59
Illinois	2,204	1,303	$61.66	$28.57
Florida	2,102	1,259	$54.40	$28.03
New Jersey	1,211	738	$36.22	$17.91
	Sub-Total	**14,841**		**$342.84**

Direct Effects of Increased Final Demand for Sound Recordings

Total Direct Employment (Number)	Total Direct Earnings ($ Millions)
26,860	**$1,055.67**

With regard to lost earnings of U.S. workers, the comparable loss figures are $1.997 billion that stem from the losses sustained by the sound recording production and distribution industries and $699 million from the losses of retail sales of legitimate music CDs. Thus, the total loss in earnings to workers in 2005 was **$2.697 billion**.

Finally, in terms of losses in employment that would have been created, the effects of piracy on the sound recording industries in NAICS 5122 cost the United States 46,114 jobs and the effects on U.S. retail distribution cost 24,946 jobs. Thus, the total loss in U.S. employment that has resulted from piracy of U.S. sound recordings in 2005 was **71,060 jobs**.

Direct Lost Employment and Earnings

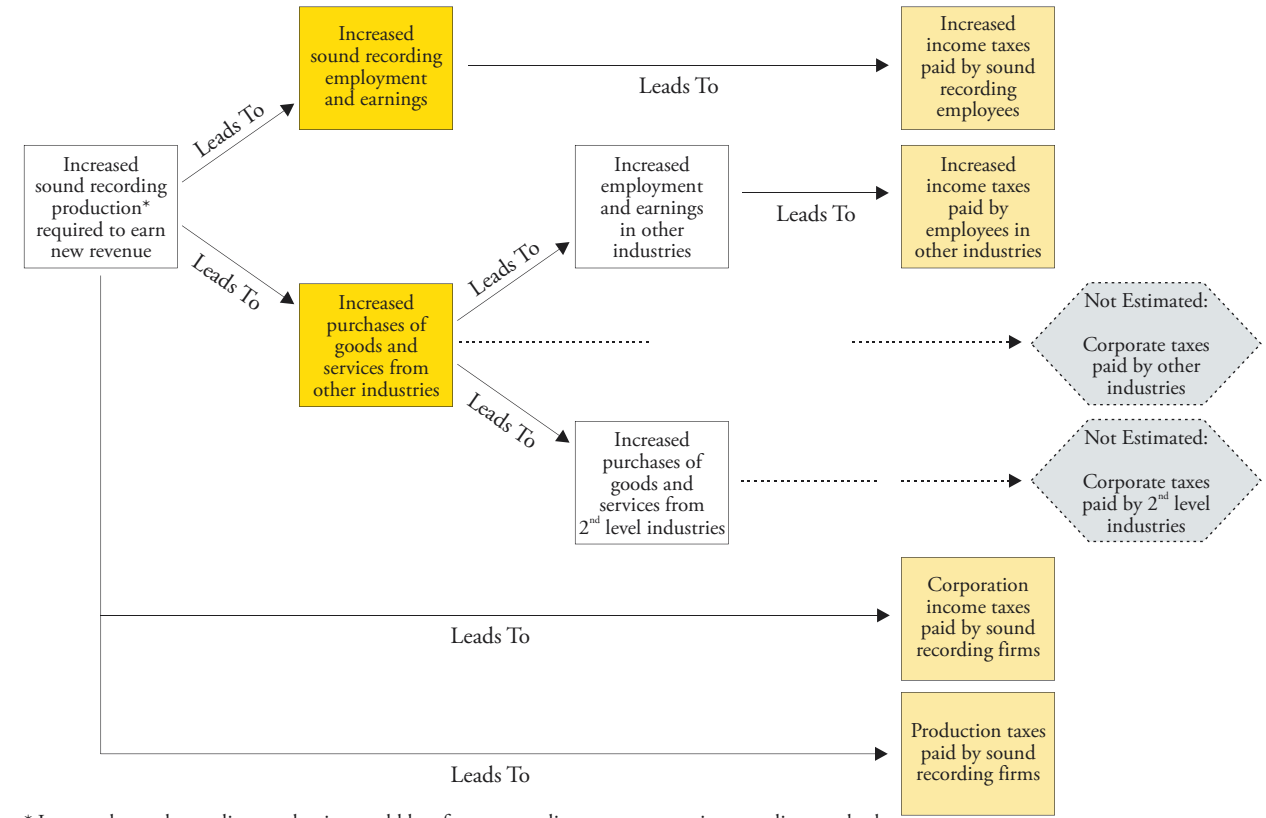
As noted above, the RIMS II model also provides multipliers that measure the economic effects of a change in final demand solely on the industries that are directly affected by that change. Using these multipliers, as shown in Table 7, we estimate that the direct loss in employee earnings in the U.S. sound recording and retail industries that results from pirate activities is **$1.056 billion**. The direct loss in employment at these industries was **26,860 jobs**.

Lost Tax Revenues

In total, sound recording piracy costs government at all levels, conservatively $422 million annually.

Tax multipliers are not provided in RIMS II. For the tax loss estimates presented in this study, the methodology previously used in the Motion Picture Piracy study was again applied to the sound recording industry.

Figure 2 Sound Recording Piracy Tax Effects



* Increased sound recording production could be of more recordings, more expensive recordings, or both.

As in the *Motion Picture Piracy* study, in this study, tax loss estimates are developed for three categories of taxes. These are lost personal income taxes that would have been paid by sound recording industry employees, lost corporate income taxes and lost production and other business taxes. In Table 8A, we calculate the income taxes that would have been paid on the employee earnings that would have been paid absent piracy in sound recordings. As shown in Table 8A, these personal income taxes would have exceeded $113 million from sound recording employees alone and more than **$291 million** from the total employees directly and indirectly affected by sound recording piracy.

TABLE 8A **PERSONAL INCOME TAX LOSSES**

U.S. Sound Recording Industries: NAICS 5122

I. Personal Income Taxes on Lost Employee Earnings: NAICS 5122 Only

	($ Billions)	Assumed Tax Rate [a]	**NAICS 5121** Personal Taxes ($ Billions)
Direct Employee Earnings Loss: NAICS 5122	**$1.056**	**10.8%**	**$0.114**

IA. Personal Income Taxes on Lost Employee Earnings: NAICS 5122 Plus All Input Industries

	($ Billions)	Assumed Tax Rate [a]	**NAICS 5121 Plus All Input Industries** Personal Taxes ($ Billions)
Total Employee Earnings Loss: All Affected Industries	**$2.697**	**10.8%**	**$0.291**

[a] See Appendix C, Table C-1.

In Table 8B, we estimate other tax losses that result from pirate activities in the sound recording industry. For example, focusing only on corporate income taxes, we estimate that the sound recording industry alone would have generated additional taxes of **$81 million** each year. In addition, lost "production" taxes from the U.S. sound recording industry would have exceeded **$50 million** annually.

It is important also to recognize that the tax loss estimates presented here do not encompass a full accounting of all tax losses attributable to piracy. The estimates for both corporate income tax losses and production tax losses reflect only the direct losses sustained by the sound recording industries themselves. The estimates do not include additional tax losses that would result from lower income and lower sales in those U.S. industries that supply inputs to the U.S. copyright industries. *Thus the corporate income tax and production tax estimates do not include tax losses sustained at U.S. industries that are indirectly affected by piracy.*

CONCLUSION

As set forth in this report, the U.S. sound recording industries are now sustaining approximately $5.33 billion in losses as a result of global and U.S. piracy. In addition, U.S. retailers are losing another $1.04 billion. These estimates suggest total "direct" losses to all U.S. industries from music piracy that exceed $6.37 billion.

These direct losses then cascade through the rest of the U.S. economy and the losses of economic output, jobs and employee earnings "multiply."

Based on the analyses set forth in this paper, because of music piracy, the U.S. economy loses a total of $12.5 billion in economic output each year.

Table 8B — Corporate Income and Production Tax Losses

U.S. Sound Recording Industries: NAICS 5122

II. Corporate Income Taxes Lost: NAICS 5122 Only

	($ Billions)	Apply to Direct Earnings NAICS 5122 ($ Billions)	Estimate of Other GOS NAICS 5122 ($ Billions)
Other GOS (Corporate) NAICS 512	$12.028		**$0.550**
Employee Compensation NAICS 512	$23.100	**$1.056**	
Ratio of Other GOS to Employee Comp.			
Assumed Tax Rate [a]			**14.8%**
Equals Estimated Corporate Income Tax Loss in NAICS 5122			**$0.081**

III. Taxes on Production Lost: NAICS 5122 Only

	($ Billions)	Apply to Direct Earnings NAICS 5122 ($ Billions)	Estimate of Taxes on Production NAICS 5122 ($ Billions)
Taxes on Production NAICS 512 [b]	$1.100		**$0.550**
Employee Compensation NAICS 512 [b]	$23.100	**$1.056**	
Ratio of Taxes on Prod. to Employee Comp.	**4.8%**		
Equals Estimated Production Tax Loss in NAICS 5122			**$0.050**

[a] See Appendix C, Table C-1.
[b] See Appendix C, Table C-2.

Furthermore, the U.S. economy also loses 71,060 jobs. Of this amount, 46,114 jobs are lost at the U.S. production level for sound recordings while 24,946 jobs are lost at the U.S. retail level.

Because of global piracy in recorded music U.S. employees lose $2.7 billion in total earnings annually. Of this total, $2.0 billion is lost at the U.S. production level while $700 million is lost at the U.S. retail level.

Finally, as a consequence of piracy in sound recordings, U.S. federal, state and local governments lose a minimum of $ 422 million in tax revenues annually. Of this amount, $291 million represents lost personal income taxes while $131 million is lost corporate income and production taxes.

Appendix A — IFPI Reference Data

The International Federation of the Phonographic Industry (IFPI) is an international organization that represents the recording industry worldwide. Its membership comprises some 1,400 major and independent companies in more than 70 countries. It also has affiliated industry national groups in 48 countries.

The data shown in Tables A-1 through A-5 were obtained from an IFPI report entitled: *2006 Global Recording Industry in Number*.

Table A-1 IFPI Global Recording Industry Data - Retail Values of Legitimate Units

Rank	Country	Retail Value ($ Millions)	Less: Digital	Equals: Physical Units at Retail Value ($ Millions)	Physical Units Sold (Millions)	Retail Price Per Unit
1	USA	$12,269.5	$636.0	$11,633.5	743.7	$15.64
2	Japan	$5,448.2	$277.5	$5,170.7	235.5	$21.96
3	UK	$3,446.0	$69.2	$3,376.8	182.0	$18.55
4	Germany	$2,210.6	$39.1	$2,171.5	133.7	$16.24
5	France	$1,990.0	$28.1	$1,961.9	112.2	$17.49
6	Canada	$731.9	$14.7	$717.2	56.8	$12.63
7	Australia	$674.4	$7.5	$666.9	41.8	$15.95
8	Italy	$669.3	$15.7	$653.6	33.4	$19.57
9	Spain	$555.1		$555.1	34.6	$16.04
10	Brazil	$394.2		$394.2	53.3	$7.40
11	Mexico	$411.6		$411.6	67.4	$6.11
12	Netherlands	$430.6	$4.9	$425.7	25.2	$16.89
13	Switzerland	$267.3		$267.3	16.4	$16.30
14	Russia	$387.6		$387.6	96.5	$4.02
15	Belgium	$329.4		$329.4	15.0	$21.96
16	South Africa	$254.4		$254.4	23.2	$10.97
17	Sweden	$240.4		$240.4	16.1	$14.93
18	Austria	$284.9		$284.9	11.2	$25.44
19	Norway	$252.6		$252.6	11.4	$22.16
20	Denmark	$180.1		$180.1	9.9	$18.19
21	India	$156.2		$156.2	103.6	$1.51
22	Turkey	$147.5		$147.5	27.2	$5.42
23	Taiwan	$109.1		$109.1	10.0	$10.91
24	Ireland	$149.0		$149.0	8.3	$17.95
25	Finland	$132.4		$132.4	7.8	$16.97
26	Portugal	$113.9		$113.9	8.3	$13.72
27	China	$119.7		$119.7	57.9	$2.07
28	New Zealand	$122.0		$122.0	7.2	$16.94
29	South Korea	$132.4	$11.8	$120.6	10.6	$11.38
30	Thailand	$106.3		$106.3	28.0	$3.80
31	Hong Kong	$79.4		$79.4	6.8	$11.68
32	Greece	$143.0		$143.0	7.4	$19.32
33	Poland	$99.7		$99.7	9.8	$10.17
34	Argentina	$108.2		$108.2	14.9	$7.26
35	Indonesia	$66.7		$66.7	30.1	$2.22
36	Hungary	$53.4		$53.4	5.3	$10.08
37	Singapore	$38.3		$38.3	4.8	$7.98
38	Colombia	$58.0		$58.0	7.2	$8.06
39	Czech Republic	$42.0		$42.0	3.6	$11.67
40	Chile	$38.8		$38.8	5.4	$7.19
41	Malaysia	$28.4		$28.4	4.3	$6.60
42	Phillipines	$24.8		$24.8	4.7	$5.28
	TOTAL	**$33,497.3**	**$1,104.5**	**$32,392.8**	**2,292.5**	**$14.13**

TABLE A-2 IFPI GLOBAL RECORDING INDUSTRY DATA - TRADE VALUE OF LEGITIMATE UNITS

Rank	Country	Trade Value ($ Millions)	Less: Digital Sales	Equals: Physical Units at Trade Value ($ Millions)	Physical Units Sold (Millions)	Sales Price Per Unit
1	USA	$7,011.9	$636.0	$6,375.9	743.7	$8.57
2	Japan	$3,718.4	$277.5	$3,440.9	235.5	$14.61
3	UK	$2,162.2	$69.2	$2,093.0	182.0	$11.50
4	Germany	$1,457.5	$39.1	$1,418.4	133.7	$10.61
5	France	$1,248.3	$28.1	$1,220.2	112.2	$10.88
6	Canada	$544.3	$14.7	$529.6	56.8	$9.32
7	Australia	$440.0	$7.5	$432.5	41.8	$10.35
8	Italy	$428.5	$15.7	$412.8	33.4	$12.36
9	Spain	$368.9		$368.9	34.6	$10.66
10	Brazil	$265.4		$265.4	53.3	$4.98
11	Mexico	$262.7		$262.7	67.4	$3.90
12	Netherlands	$246.3	$4.9	$241.4	25.2	$9.58
13	Switzerland	$205.9		$205.9	16.4	$12.55
14	Russia	$193.7		$193.7	96.5	$2.01
15	Belgium	$161.8		$161.8	15.0	$10.79
16	South Africa	$158.8		$158.8	23.2	$6.84
17	Sweden	$148.2		$148.2	16.1	$9.20
18	Austria	$138.7		$138.7	11.2	$12.38
19	Norway	$133.1		$133.1	11.4	$11.68
20	Denmark	$113.1		$113.1	9.9	$11.42
21	India	$111.6		$111.6	103.6	$1.08
22	Turkey	$105.3		$105.3	27.2	$3.87
23	Taiwan	$99.7		$99.7	10.0	$9.97
24	Ireland	$91.2		$91.2	8.3	$10.99
25	Finland	$81.2		$81.2	7.8	$10.41
26	Portugal	$81.1		$81.1	8.3	$9.77
27	China	$79.8		$79.8	57.9	$1.38
28	New Zealand	$77.5		$77.5	7.2	$10.76
29	South Korea	$77.4	$11.8	$65.6	10.6	$6.19
30	Thailand	$77.2		$77.2	28.0	$2.76
31	Hong Kong	$66.2		$66.2	6.8	$9.74
32	Greece	$65.1		$65.1	7.4	$8.80
33	Poland	$63.9		$63.9	9.8	$6.52
34	Argentina	$51.4		$51.4	14.9	$3.45
35	Indonesia	$50.2		$50.2	30.1	$1.67
36	Hungary	$33.4		$33.4	5.3	$6.30
37	Singapore	$33.1		$33.1	4.8	$6.90
38	Colombia	$27.0		$27.0	7.2	$3.75
39	Czech Republic	$24.8		$24.8	3.6	$6.89
40	Chile	$24.1		$24.1	5.4	$4.46
41	Malaysia	$23.1		$23.1	4.3	$5.37
42	Phillipines	$19.1		$19.1	4.7	$4.06
	TOTAL	**$20,771.1**	**$1,104.5**	**$19,666.6**	**2,292.5**	**$8.58**

Table A-3 IFPI Global Recording Industry Data - Retail Value of Pirate Units

Country	Legitimate Units Sold (Millions)	Retail Price Per Unit	IFPI Midpoint Piracy Rates [a]	Total Physical Units [b] (Millions)	Pirate Units Sold [c] (Millions)	Pirate Sales at Retail Prices ($ Millions)
USA	743.7	$15.64	5%	782.8	39.1	$612.3
Japan	235.5	$21.96	5%	247.9	12.4	$272.1
UK	182.0	$18.55	5%	191.6	9.6	$177.7
Germany	133.7	$16.24	5%	104.7	7.0	$114.3
France	112.2	$17.49	5%	118.1	5.9	$103.3
Canada	56.8	$12.63	5%	59.8	3.0	$37.7
Australia	41.8	$15.95	5%	44.0	2.2	$35.1
Italy	33.4	$19.57	38%	53.9	20.5	$400.6
Spain	34.6	$16.04	17%	41.7	7.1	$113.7
Brazil	53.3	$7.40	38%	86.0	32.7	$241.6
Mexico	67.4	$6.11	63%	179.7	112.3	$686.0
Netherlands	25.2	$16.89	17%	30.4	5.2	$87.2
Switzerland	16.4	$16.30	5%	17.3	0.9	$14.1
Russia	96.5	$4.02	63%	257.3	160.8	$646.0
Belgium	15.0	$21.96	5%	15.8	0.8	$17.3
South Africa	23.2	$10.97	38%	37.4	14.2	$155.9
Sweden	16.1	$14.93	5%	16.9	0.8	$12.7
Austria	11.2	$25.44	5%	11.8	0.6	$15.0
Norway	11.4	$22.16	5%	12.0	0.6	$13.3
Denmark	9.9	$18.19	5%	10.4	0.5	$9.5
India	103.6	$1.51	63%	276.3	172.7	$260.3
Turkey	27.2	$5.42	63%	72.5	45.3	$245.8
Taiwan	10.0	$10.91	38%	16.1	6.1	$66.9
Ireland	8.3	$17.95	5%	8.7	0.4	$7.8
Finland	7.8	$16.97	17%	9.4	1.6	$27.1
Portugal	8.3	$13.72	17%	10.0	1.7	$23.3
China	57.9	$2.07	88%	482.5	424.6	$877.8
New Zealand	7.2	$16.94	5%	7.6	0.4	$6.4
South Korea	10.6	$11.38	17%	12.8	2.2	$24.7
Thailand	28.0	$3.80	38%	45.2	17.2	$65.2
Hong Kong	6.8	$11.68	17%	8.2	1.4	$16.3
Greece	7.4	$19.32	38%	11.9	4.5	$87.6
Poland	9.8	$10.17	38%	15.8	6.0	$61.1
Argentina	14.9	$7.26	63%	39.8	24.9	$180.7
Indonesia	30.1	$2.22	88%	250.8	220.7	$489.1
Hungary	5.3	$10.08	38%	8.5	3.2	$32.7
Singapore	4.8	$7.98	5%	5.1	0.3	$2.0
Colombia	7.2	$8.06	63%	19.2	12.0	$96.7
Czech Republic	3.6	$11.67	38%	5.8	2.2	$25.7
Chile	5.4	$7.19	63%	14.4	9.0	$64.7
Malaysia	4.3	$6.60	38%	6.9	2.6	$17.4
Phillipines	4.7	$5.28	38%	7.6	2.9	$15.2
	2,292.5			**3,690.7**	**1,398.2**	**$6,460.08**
			Average Piracy Rate 38%			

[a] Countries with Piracy Rates > 50% divided into <75% and >75% sub-groups.
[b] Equals Legitimate Units Sold divided by (1 - piracy rate).
[c] IFPI reports that in 2005, 1.2 million pirate CDs, or 37% of all CDs were purchased.

Table A-4 IFPI Global Recording Industry Data - Pirate Sales at Trade Prices

Country	Legitimate Units Sold (Millions)	Retail Price Per Unit	IFPI Midpoint Piracy Rates [a]	Total Physical Units [b] (Millions)	Pirate Units Sold [c] (Millions)	Pirate Sales in Retail Prices ($ Millions)
USA	743.7	$8.57	5%	782.8	39.1	$335.6
Japan	235.5	$14.61	5%	247.9	12.4	$181.1
UK	182.0	$11.50	5%	191.6	9.6	$110.2
Germany	133.7	$10.61	5%	140.7	7.0	$74.7
France	112.2	$10.88	5%	118.1	5.9	$64.2
Canada	56.8	$9.32	5%	59.8	3.0	$27.9
Australia	41.8	$10.35	5%	44.0	2.2	$22.8
Italy	33.4	$12.36	38%	53.9	20.5	$253.0
Spain	34.6	$10.66	17%	41.7	7.1	$75.6
Brazil	53.3	$4.98	38%	86.0	32.7	$162.7
Mexico	67.4	$3.90	63%	179.7	112.3	$437.8
Netherlands	25.2	$9.58	17%	30.4	5.2	$49.4
Switzerland	16.4	$12.55	5%	17.3	0.9	$10.8
Russia	96.5	$2.01	63%	257.3	160.8	$322.8
Belgium	15.0	$10.79	5%	15.8	0.8	$8.5
South Africa	23.2	$6.84	38%	37.4	14.2	$97.3
Sweden	16.1	$9.20	5%	16.9	0.8	$7.8
Austria	11.2	$12.38	5%	11.8	0.6	$7.3
Norway	11.4	$11.68	5%	12.0	0.6	$7.0
Denmark	9.9	$11.42	5%	10.4	0.5	$6.0
India	103.6	$1.08	63%	276.3	172.7	$186.0
Turkey	27.2	$3.87	63%	72.5	45.3	$175.5
Taiwan	10.0	$9.97	38%	16.1	6.1	$61.1
Ireland	8.3	$10.99	5%	8.7	0.4	$4.8
Finland	7.8	$10.41	17%	9.4	1.6	$16.6
Portugal	8.3	$9.77	17%	10.0	1.7	$16.6
China	57.9	$1.38	88%	482.5	424.6	$585.2
New Zealand	7.2	$10.76	5%	7.6	0.4	$4.1
South Korea	10.6	$6.19	17%	12.8	2.2	$13.4
Thailand	28.0	$2.76	38%	45.2	17.2	$47.3
Hong Kong	6.8	$9.74	17%	8.2	1.4	$13.6
Greece	7.4	$8.80	38%	11.9	4.5	$39.9
Poland	9.8	$6.52	38%	15.8	6.0	$39.2
Argentina	14.9	$3.45	63%	39.8	24.9	$85.8
Indonesia	30.1	$1.67	88%	250.8	220.7	$368.1
Hungary	5.3	$6.30	38%	8.5	3.2	$20.5
Singapore	4.8	$6.90	5%	5.1	0.3	$1.7
Colombia	7.2	$3.75	63%	19.2	12.0	$45.0
Czech Republic	3.6	$6.89	38%	5.8	2.2	$15.2
Chile	5.4	$4.46	63%	14.4	9.0	$40.2
Malaysia	4.3	$5.37	38%	6.9	2.6	$14.2
Phillipines	4.7	$4.06	38%	7.6	2.9	$11.7
	2,292.5			**3,690.7**	**1,398.2**	**$4,068.15**
				Average Piracy Rate 38%		

[a] Countries with Piracy Rates > 50% divided into <75% and >75% sub-groups.
[b] Equals Legitimate Units Sold divided by (1 - piracy rate).
[c] IFPI reports that in 2005, 1.2 million pirate CDs, or 37% of all CDs were purchased.

TABLE A-5 IFPI GLOBAL RECORDING INDUSTRY DATA - IMPLIED SUBSTITUTION RATES

Country	Pirate Sales at Trade Value ($ Millions)	Retail Prices	Substitute Units [a]	Original Pirate Units	Implied Substitution Rate [b]
USA	$335.6	$15.64	21.5	39.14	54.8%
Japan	$181.1	$21.96	8.2	12.39	66.5%
UK	$110.2	$18.55	5.9	9.58	62.0%
Germany	$74.7	$16.24	4.6	7.04	65.3%
France	$64.2	$17.49	3.7	5.91	62.2%
Canada	$27.9	$12.63	2.2	2.99	73.8%
Australia	$22.8	$15.95	1.4	2.20	64.9%
Italy	$253.0	$19.57	12.9	20.47	63.2%
Spain	$75.6	$16.04	4.7	7.09	66.5%
Brazil	$162.7	$7.40	22.0	32.67	67.3%
Mexico	$437.8	$6.11	71.7	112.33	63.8%
Netherlands	$49.4	$16.89	2.9	5.16	56.7%
Switzerland	$10.8	$16.30	0.7	0.86	77.0%
Russia	$322.8	$4.02	80.4	160.83	50.0%
Belgium	$8.5	$21.96	0.4	0.79	49.1%
South Africa	$97.3	$10.97	8.9	14.22	62.4%
Sweden	$7.8	$14.93	0.5	0.85	61.6%
Austria	$7.3	$25.44	0.3	0.59	48.7%
Norway	$7.0	$22.16	0.3	0.60	52.7%
Denmark	$6.0	$18.19	0.3	0.52	62.8%
India	$186.0	$1.51	123.4	172.67	71.4%
Turkey	$175.5	$5.42	32.4	45.33	71.4%
Taiwan	$61.1	$10.91	5.6	6.13	91.4%
Ireland	$4.8	$17.95	0.3	0.44	61.2%
Finland	$16.6	$16.97	1.0	1.60	61.3%
Portugal	$16.6	$13.72	1.2	1.70	71.2%
China	$585.2	$2.07	283.1	424.60	66.7%
New Zealand	$4.1	$16.94	0.2	0.38	63.5%
South Korea	$13.4	$11.38	1.2	2.17	54.4%
Thailand	$47.3	$3.80	12.5	17.16	72.6%
Hong Kong	$13.6	$11.68	1.2	1.39	83.4%
Greece	$39.9	$19.32	2.1	4.54	45.5%
Poland	$39.2	$10.17	3.8	6.01	64.1%
Argentina	$85.8	$7.26	11.8	24.89	47.5%
Indonesia	$368.1	$2.22	166.1	220.73	75.3%
Hungary	$20.5	$10.08	2.0	3.25	62.5%
Singapore	$1.7	$7.98	0.2	0.25	86.4%
Colombia	$45.0	$8.06	5.6	12.00	46.6%
Czech Republic	$15.2	$11.67	1.3	2.21	59.0%
Chile	$40.2	$7.19	5.6	9.00	62.1%
Malaysia	$14.2	$6.60	2.1	2.64	81.3%
Phillipines	$11.7	$5.28	2.2	2.88	77.0%
TOTAL	**$4,068.2**		**918.4**	**1,398.2**	**65.7%**

[a] Substitute Units = Trade Value/Retail Price
[b] Country-specific studies put substitution rate between 45% and 75%.

Appendix B — Sound Recording Industry Multipliers

The estimates in this report are based on an analytical framework known as an *input-output* (I-O) table. For every industry in the economy, an I-O table shows the distribution of the inputs purchased and the outputs sold. Using this framework, the U.S. Bureau of Economic Analysis (BEA) has developed a method for estimating I-O *multipliers*. Using multipliers, it is possible to measure not only the direct effects of piracy (i.e. the lost 1st round of output) but also the indirect effects (i.e. the lost 2nd and subsequent rounds of output) as piracy reduces the need for inputs from factor suppliers in other industries. In addition, the BEA multipliers also consider the "induced" economic effects that arise from the piracy-driven loss in labor income that is borne by workers in the legitimate industries and which results in a consequent decrease in household consumption.

In this analysis, the multipliers used to estimate the full effects of sound recording piracy were derived using BEA's Regional Input-Output Modeling System or (RIMS II). The RIMS II model produces industry-specific "final demand" multipliers for output (in dollars), employment (in numbers of employees) and earnings of those employees (in dollars). The RIMS II model also provides industry-specific "direct effects" multipliers for employment and earnings. The actual multipliers that were used in this analysis are shown in Table 4 (U.S. Sound Recording Industries – NAICS 512200) and in Table 5 (U.S. Sound Recording Industries: Retail Trade – NAICS 44-45).

Defining Regions by Industry

The RIMS II model produces industry-specific final demand and direct effects multipliers. However, the RIMS II model is fundamentally a regional model that estimates multipliers within a pre-defined geographic area. Thus, for example, an analyst might be tasked with estimating the economic effects of building a new sports stadium within a given metropolitan region. In this example, the analyst would first pre-specify the relevant metropolitan region for which the RIMS II model should be calibrated. Subsequently the analyst would select the relevant industry multipliers to be derived within that region. The pre-specification of a region directly effects the RIMS II multipliers because, all else equal, the smaller the region, the greater the chance that that necessary inputs will be obtained from outside the region. When inputs are obtained from outside of the pre-specified region in RIMS II, they may no longer "count" as in-region effects of the initial change in final demand. Thus, with a narrowly defined area, the indirect economic effects of a given change in final demand might be too low.

This study differs from the more typical RIMS II analysis in that the economic effects of sound recording piracy are generally not focused on one or a few small geographic areas. For example, according to the U.S. Census Bureau, in 2002, the U.S. Sound Recording Industries (NAICS 5122) employed workers in 43 different states. For this reason, further analyses were conducted of the state-by-state employment patterns in the U.S. Sound Recording Industries.

Multipliers for U.S. Sound Recording Production/Distribution

A review of the sound recording industry's employment levels on a state-by-state basis revealed that in 2002 only five states: California, New York, Tennessee, Florida and Texas employed 74.3% of all U.S. workers in NAICS 5122. Forty-one percent of the workers in this subset were located in California while 39.1% were employed in New York. The remaining three states employed the following shares: Tennessee – 10.0%; Florida – 5.4% and Texas – 4.0%.

In certain instances, sound recording industry centers may specialize in particular music genres. The sound recording industry in Tennessee, for example, has long been associated with country music while sound recording centers in Florida and Texas increasingly emphasize Spanish language music. In this analysis, it is assumed that absent piracy, legitimate sound production would increase in those geographic regions that already specialize in the production of sound recordings. However, if piracy were eliminated, other

regions that already specialize in particular music genres would also see growth in their production of sound recordings in those genres. For these reasons, the final multipliers used to analyze the sound recording production and distribution industries in NAICS 5122 include multipliers for both the major production states of California and New York and for the states of Tennessee, Florida and Texas where the sound recording industries are both smaller and more genre-specific.

Five categories of multiplier were acquired from the Bureau of Economic Analysis in order to analyze the effects of piracy in NAICS 5122. The three Final Demand multipliers related to output, earnings (of workers) and employment. The two Direct Effect multipliers also related to earnings (of workers) and employment. These multipliers were specific to both NAICS 5122 and to the states of California and New York. As noted above, the actual multipliers that were used in the analysis of NAICS 51122 are shown in Table 4.

Multipliers for U.S. Sound Recording Retail Trade

As noted previously, sound recording piracy affects other U.S. industries in addition to the industries that are classified in NAICS 5122. In particular, U.S. retailers of music CDs and of legitimate downloads face reduced sales and lower profits as a result of pirate activities that occur in the United States. However, the inter-industry relationships that affect these industries differ from the inter-industry relationships that exist in the sound recording industry itself. As a result, the multipliers that apply to the retailing of recorded music should also differ from the multipliers that were calculated for NAICS 5122. In this study, the economic affects of piracy on U.S. sound recording retailers are measured using multipliers for U.S. retail trade (NAICS 44-45).

In this study, the five multipliers used to assess the effects of music piracy on U.S. retailers were obtained for eight U.S. states. These states were: California, New York, Texas, Ohio, Pennsylvania, Illinois, Florida and New Jersey. In the US, the industries that sell music CDs directly to consumers are far less geographically concentrated than the industries that produce and distribute sound recordings. Nevertheless, all states are not equal even with regard to CD sales and. In 2002, the U.S. Census Bureau calculated state-by-state figures for the number of U.S. establishments and paid employees in NAICS 45122 – Prerecorded Tape, Compact Disk and Record Stores. For both establishments and employment, eight states were responsible for 49.1% of the U.S. totals within this industry.[17] Those states were the eight states shown in Table 5. In this study, it is assumed that the retail industry multipliers for these eight states appropriately and reasonably capture the economic relationships that exist for the U.S. sound recording retail sector as a whole.

Appendix C — References for Tax Calculations

The principal calculations that support the estimates of lost taxes that are set forth in this report are reported in the text at Tables 8A and 8B. Those calculations reflect the application of estimated tax rates to the employee earnings loss estimates that were derived elsewhere in this report. This Appendix provides the supporting calculations that were used to determine the appropriate tax rates for use in these estimates.

Table C-1 provides the calculations used to determine the average tax rates to be applied to the employee compensation and corporate profits that are lost as a result of sound recording piracy. These calculations rely on U.S. National Accounts data. For personal income taxes, the total amount of personal current taxes reported for the economy is divided by total U.S. Personal Income. These calculations suggest an average personal income tax rate of 10.8%.

In Table C-1, for corporate income taxes, the total amount of U.S. taxes on corporate income is divided by both corporate profits and "U.S. Other Gross Operating Surplus" or "GOS." This calculation is required because national estimates of corporate profits are not, to our knowledge, broken out by specific industries. By contrast, the Bureau of Economic Analysis does provide data on Other GOS figures for individual industries. This derived tax rate is then applied to the Other GOS values reported for NAICS 512, the U.S. Motion Picture and Sound Recording Industries combined. Subsequently, (in Table 8B) these calculations are then adjusted to reflect tax payments solely from sound recording industry firms.

The supporting calculations that reflect the Other GOS values for NAICS 512 are reported in Table C-2.

TABLE C-1 SUPPORTING CALCULATIONS FOR PRODUCTION TAXES

I. Tax Rates on Personal Income:

		2004 ($ Billions)	2004 ($ Billions)
	U.S. Disposable Personal Income		$8,664.2
Plus	**Personal Current Taxes**		**$1,049.1**
Equals	**U.S. Personal Income**		**$9,713.3**
	Compensation of Employees	$6,687.6	
	Proprietors' Income	$889.6	
	Rental Income	$134.2	
	Personal Income Receipts/Assets	$1,396.5	
	Personal Current Transfers	$1,427.5	
Less	Contrib. Govern. Social Insurance	$(822.2)	
Equals	**U.S. Personal Income**	**$9,713.2**	**$9,713.2**
	Pers. Cur. Tax/Pers. Income		**10.8%**

II. Tax Rates on Corporate Income:

	2004 ($ Billions)
U.S. Corporate Profits with Adjustments	$1,161.5
Taxes on Corporate Income	$271.1
Corporate Income Taxes/Corporate Profits	23.3%
U.S. Other GOS (Corporate)	$1,822.9
Taxes on Corporate Income	$271.1
Corporate Income Taxes/U.S. other GOS (Corporate)	**14.9%**

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table C-2 Supporting Calculations for Production Taxes

		U.S. Economy As a Whole ($ Billions)	NAICS 512 [a] Movies and Records ($ Millions)
	Output:	**$21,346.0**	**$94,100.0**
Equals	**Value Added:**	**$11,734.3**	**$47,300.0**
	Employee Compensation	$6,693.4	$23,100.0
	Taxes on Production + Imports less Subsidies	$809.4	$1,100.0
	Gross Operating Surplus	$4,231.5	$23,100.0
Plus	**Intermediate Inputs**	**$9,611.8**	**$46,800.0**
	Tax on Prod./Employee Compensation	**12.1%**	**4.8%**
	Gross Operating Surplus:	**$4,231.5**	**$23,130.0**
	Current Surplus Gov. Enterprises	$(3.0)	—
	Consumption of Fixed Capital	$461.9	—
	Business Current Transfer Payment	$91.1	$149.0
	Other GOS (Corporate) [a]	$1,822.9	$12,028.0
	Other GOS (Non-Corporate)	$1,858.6	$10,953.0
	Sub-Total	$4,231.5	$23,130.0
	Corporate Income Tax ($271.1 B)/Other GOS (Corp.)	**14.9%**	

[a] Other GOS (Corporate) includes corporate profits before tax plus corporate net interest and miscellaneous payments and adjustments.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Endnotes

1. http://nbcumv.com/corporate/Engines_of_Growth.pdf
2. Siwek, Stephen, E., *The True Cost of Motion Picture Piracy to the U.S. Economy*, Institute for Policy Innovation, Policy Report 186, September 2006.
3. In the RIMS II model, the U.S. Bureau of Economic Analysis does not publish multipliers for sound recording industries at the five digit or six digit levels.
4. See Executive Office of the President, Office of Management and Budget, *North American Industry Classification System: United States 2002*, National Technical Information Service and Bernan, a Division of The Klaus Organization Ltd., page 662.
5. U.S. Census Bureau, 2005 Service Annual Survey, Table 3.0.1.
6. U.S. Census Bureau, Statistics of U.S. Businesses: 2004, U.S., Sound recording industries.
7. U.S. Census Bureau, *2005 Service Annual Survey*, Table 3.2.5.
8. U.S. Census Bureau, *2005 Service Annual Survey*, Table 3.2.5.
9. IFPI, *2006 Global Recording Industry in Numbers*, page 26.
10. The piracy rate (or level) is measured as a percentage of total (legitimate and pirate) unit sales.
11. For example in U.K., 45% of counterfeit CD purchasers would "definitely" purchase legitimate titles if counterfeit CDs were unavailable while 69% of counterfeit CD purchasers would "definitely" or "probably have bought" such titles. See: BPI Market Information, No. 274, August 25, 2006, page 4.
12. Table A-1, A-2.
13. See International Intellectual Property Alliance, *2006 Special 301: Methodology*, page 5.
14. IFPI, *2006 Global Industry in Numbers*, "The key figures in 2005," page 9.
15. A number of academic studies have attempted to estimate the impact that file sharing has had on sound recording sales. The specific estimate of 20% is taken from Pietz, M. and Waelbroeck, P., *The Effect of Internet Piracy on Music Sales: Cross Section Evidence*, Review of Economic Research on Copyright Issues, 2004, vol. 1(2), pp 78.
16. Based on confidential survey data, it appears that many consumers of pirated sound recordings also purchase significant quantities of legitimate sound recordings.
17. 3,431 out of 6,987 establishments and 30,742 out of 62,647 employees in NAICS 45122 were located in the eight states listed above.

About the Author

Stephen E. Siwek is Principal at Economists Incorporated, a research and consulting firm with offices in Washington D.C. and in the San Francisco Bay area. Active in research and consulting for over 30 years, Mr. Siwek specializes in the analysis of economic, financial, and accounting issues. He has testified as an expert witness before regulatory bodies and courts on more than 80 occasions.

Mr. Siwek has particular expertise in the economic analysis of the U.S. entertainment industries and of the related U.S. industries that depend on the effective protection of their copyrights. Since 1990, Mr. Siwek has published eleven studies on behalf of the International Intellectual Property Alliance ("IIPA") that analyzed in detail the economic importance of the U.S. "copyright" industries (including the sound recording industry) to the U.S. economy. In these studies, Mr. Siwek quantified the substantial contributions made by the copyright-based industries to U.S. economic growth, employment and foreign trade.

Mr. Siwek has also been instrumental in furthering the efforts of the World Intellectual Property Organization ("WIPO") to encourage other nations to measure the economic contribution of copyright-based industries in their own countries. In this regard, Mr. Siwek has been closely associated with the development of the WIPO "Guide" for the measurement of copyright industry contributions and he has directly assisted a number of foreign governments in the preparation of their own studies.

Mr. Siwek is co-author of *International Trade in Films and Television Programs* (American Enterprise Institute/Ballinger Publishing Company, 1988) and *International Trade in Computer Software* (Quorum Books, 1993).

In 2005, Mr. Siwek authored a widely reported study entitled *Engines of Growth: Economic Contributions of the U.S. Intellectual Property Industries* (Commissioned by NBC Universal, 2005). In that study, Mr. Siwek quantified the substantial contributions made by the IP sector as a whole to real U.S. growth. More recently, Mr. Siwek authored a study on the effects of motion picture piracy on the U.S. economy as a whole. That study was entitled *The True Cost of Motion Picture Piracy to the U.S. Economy*, (Institute for Policy Innovation, Policy Report 186, September 2006).

In February of 2007, Mr. Siwek participated as a panelist in the Motion Picture Association of America's first-of-its-kind industry symposium entitled, *The Business of Show Business*. In May 2007, he also served

as a panelist for the launch of the Copyright Alliance, a non-profit education group whose 29 member organizations represent an estimated 11 million Americans working in the copyright sector.

Mr. Siwek earned his undergraduate degree at Boston College and his M.B.A. at George Washington University.

About the Institute for Policy Innovation (IPI)

The Institute for Policy Innovation (IPI) is a nonprofit, non-partisan educational organization founded in 1987. IPI's purposes are to conduct research, aid development, and widely promote innovative and nonpartisan solutions to today's public policy problems. IPI is a public foundation, and is supported wholly by contributions from individuals, businesses, and other non-profit foundations. IPI neither solicits nor accepts contributions from any government agency.

IPI's focus is on developing new approaches to governing that harness the strengths of individual choice, limited government, and free markets. IPI emphasizes getting its studies into the hands of the press and policy makers so that the ideas they contain can be applied to the challenges facing U.S. today.

About the IPI Center for Technology Freedom

The IPI Center for Technology Freedom is the technology division of the Institute for Policy Innovation. The purpose of the Center is to sort out the policy challenges posed by technological change for both the American people and policy makers.

The IPI Center for Technology Freedom points the way for a society that encourages freedom to develop new technologies, and the freedom to access them.

1660 South Stemmons Frwy.
Suite 475
Lewisville, TX 75067
(972) 874-5139 [voice]
(972) 874-5144 [fax]
Email: ipi@ipi.org
Website: www.ipi.org

Institute For Policy Innovation

IPI CENTER FOR TECHNOLOGY FREEDOM

The True Cost of Motion Picture Piracy to the U.S. Economy

By Stephen E. Siwek

POLICY REPORT 186

SEPTEMBER 2006

Executive Summary

Synopsis: Motion picture piracy costs the film industry billions of dollars in lost revenue, but this is only a fraction of its impact on the total U.S. economy. Combining the latest data on worldwide movie piracy with multipliers from a respected U.S. government model, this study concludes that motion picture piracy costs American workers significant losses in jobs and earnings, and costs governments enormous lost tax revenue.

It is obvious that copyright piracy and counterfeiting harm the intellectual property owner, who loses the revenue that would have been gained had the legitimate product been purchased. But that is only part of the story. Piracy and counterfeiting also cause significant and measurable harm to the overall economy, directly affecting upstream suppliers and downstream purchasers, with a cascading effect that includes lost output, lost earnings, lost jobs, and lost tax revenues.

In order to inform policymakers of the true magnitude of piracy's ripple effect, this paper estimates the impact of piracy in one industry—the motion picture industry—on the overall U.S. economy. Using the RIMS II mathematical model maintained by the U.S. Bureau of Economic Analysis (BEA), this analysis estimates the impact of motion picture piracy on economic output, jobs, personal income, and tax revenues. It is the first of a series of papers that will provide a comprehensive estimate of the overall impact of piracy and counterfeiting.

This study utilizes, as a starting point, the lost revenue figures from a recent and comprehensive worldwide consumer research study conducted by LEK Consulting and released in May 2006 by the Motion Picture Association of America (MPAA). According to the LEK study, MPAA studios lost $6.1 billion to piracy in 2005.

Applying the RIMS II tool to the LEK loss figures reveals that the true cost of movie piracy to the U.S. economy is far more than $6.1 billion. Instead, the comprehensive estimate of losses reveals that:

- Motion picture piracy now results in *total lost output* among all U.S. industries of *$20.5 billion annually*. Output includes revenue and related measures of economic performance.

- Motion picture piracy costs U.S. workers *$5.5 billion annually* in lost earnings. Of this amount, *$1.9 billion* would have been earned by workers in the motion picture industries while *$3.6 billion* would have been earned by workers in other U.S. industries.

- Motion picture piracy *costs jobs*. Absent piracy, *141,030 new jobs* would have been added to the U.S. economy. Of this total, *46,597 jobs* would have been created in the motion picture industries while *94,433 jobs* would have been added in other industries.

- Motion picture piracy costs governments at all levels *$837 million in lost tax revenue*. Absent piracy, an additional *$147 million* in corporate income taxes from motion picture corporations, *$91 million* in other taxes on motion picture production or sales, and *$599 million* in personal income taxes from employees would have been paid annually to federal, state and local governments.

The true cost of motion picture piracy far exceeds its impact on the movie producers themselves, and harms not only the owners of the intellectual property but also all U.S. consumers and taxpayers. As policymakers seek to maintain the health and vitality of the U.S. economy and preserve our global competitiveness, it is imperative that government and industry work together to combat this growing problem.

Table of Contents

Direct inquiries to: **Institute for Policy Innovation**
1660 S. Stemmons Freeway, Suite 475
Lewisville, TX 75067

(972) 874-5139 (Voice)
(972) 874-5144 (FAX)

Email: ipi@ipi.org
Internet Web site: www.ipi.org

The True Cost of Motion Picture Piracy to the U.S. Economy

by Stephen E. Siwek

Introduction

It is well-known that rampant piracy and counterfeiting of desirable products such as movies, recorded music, software, pharmaceuticals, and name-brand and designer consumer goods harm the bottom lines of the companies that produce these products. Because of the innovative and creative nature of our economy, U.S. companies are particularly vulnerable.

Companies work diligently to protect their products, employing civil enforcement, utilizing technology, and forming industry coalitions—as companies have in the U.S. through the United States Chamber of Commerce's Coalition Against Counterfeiting and Piracy (CACP)—to increase understanding of the scope of the problem and drive greater government-wide efforts to address this threat. Ultimately, however, given the global nature of the problem and its criminal character, government must play a crucial role in combating piracy and counterfeiting, and insisting on the enforcement of intellectual property rights as part of agreements with our trading partners.

Unfortunately, there has been little reliable economic information available to U.S. policymakers to assist them in balancing the importance of enforcing intellectual property rights against other priorities. To begin to address that problem, I published last year *Engines of Growth: Economic Contributions of the U.S. Intellectual Property Industries*,[1] which examined the contributions to the U.S. economy of the "IP industries"—industries that rely most heavily on copyright or patent protection to generate revenue, employ and compensate workers, and contribute to growth. The study found, among other things, that these IP industries are the most important growth drivers in the U.S. economy, contributing nearly 40% of the growth achieved by all U.S. private industry and nearly 60% of the growth of U.S. exportable products. It also found that the IP industries are responsible for one-fifth of the total U.S. private industry's contribution to GDP and two-fifths of the contribution of U.S. exportable products and services to GDP.

But if the IP industries are worth protecting because of their contributions to the U.S. economy, policymakers still need sound information on the impact of piracy and counterfeiting on the U.S. economy to enable them to gauge the appropriate level of resources to deploy against the problem. To be sure, many industries cite statistics on piracy or counterfeiting losses specific to them, and some overall estimates of losses due to piracy and counterfeiting periodically surface in the media. But there is noticeably little data that reliably estimates the *total economic impact piracy and counterfeiting have on the U.S. economy*—including the impact on tax revenue, job creation, and economic output.

This study is a first step in this direction. It concentrates solely on movie piracy, taking as its starting point a recent comprehensive analysis that found that the major U.S. movie companies lost $6.1 billion in 2005

to piracy. Using methodology developed and maintained by the U.S. government, this study finds that the movie companies' $6.1 billion loss translates into total lost output among all industries of $20.5 billion annually. It also finds that lost earnings for all U.S. workers amounts to $5.5 billion annually, and 141,030 jobs that would otherwise have been created are lost. In addition, as a result of piracy, governments at the federal, state, and local levels are deprived of $837 million in tax revenues each year.

In the coming months, we will conduct additional analyses on other industries affected by counterfeiting and piracy, using similar methods to estimate the effects of piracy and counterfeiting in those industries on the U.S. economy. When the series of studies is completed, policymakers will have a much clearer picture of the true cost of piracy and counterfeiting to the U.S. economy.

This study, focused solely on the effects of piracy from one industry, suggests that the economic toll taken by copyright piracy and counterfeiting as a whole is enormous, and harms not only the owners of the intellectual property but all U.S. consumers and taxpayers. As policymakers seek to maintain the health and vitality of the U.S. economy and preserve our global competitiveness, the importance of recognizing the real costs of piracy and counterfeiting cannot be overstated.

I. Background: Measuring the Harm Caused by Motion Picture Piracy

Because popular motion pictures are expensive to produce but cost almost nothing to illegally reproduce, they are a favorite target for pirates. Within days of their theatrical release—and in rare cases even before—most movies are available through DVDs sold on the street or by downloading illegally over the Internet.

In order to provide an accurate and detailed assessment of the film industry's worldwide losses due to piracy, in 2004 the Motion Picture Association of America (MPAA) commissioned a study by LEK Consulting, Inc. This study, based on extensive consumer surveys, determined what revenues the movie companies would have earned if pirated products had not been available. The result is the most comprehensive look at film piracy to date, capturing losses due to both Internet and hard goods piracy, the cost of piracy to domestic and worldwide industries, and the profile of the typical pirate in various markets. The findings from the LEK study are found in Appendix C.

The LEK study determined that the losses sustained from piracy to U.S. MPAA member companies in 2005 amounted to approximately $6.076 billion.[2] But that figure reflects only the direct losses to the major motion picture studios themselves, and does not shed light on the overall effect of motion picture piracy on the U.S. economy.

Our Interlocking Economy

In order to understand how piracy in one segment of the economy can affect other industries, we must remember that the economy is an "interlocking" system. Changes in supply or demand in one industry can and do affect supply and demand in other industries.

For example, assume that personal watercraft, like Jet-Skis®, suddenly become very popular and shortages develop. In this situation, the price of personal watercraft will rise and so will the profits of the manufacturers. However, in order to continue to earn these higher profits, the manufacturers will have to make more personal watercraft. In the process, they will buy more waterproof seats from seat manufacturers.

Of course, it doesn't stop there. In order to produce more seats, the seat manufacturers will have to buy more plastic and more padding. And the plastic and padding manufacturers will have to buy more of the particular materials that they need.

The cascade does not end with the suppliers to personal watercraft manufacturers, but continues downstream as well. The retail sellers of personal watercraft who buy from the manufacturers will also

be able to earn more money by raising prices or increasing volume. In their wake, specialty stores that customize personal watercraft or sell parts also stand to benefit.

These kinds of interactions among industries are captured in input-output tables. Input-output tables measure the interrelationships that exist among different industries. With this information, one can then estimate what impact a specific change in one industry will have on other industries.

What is true for personal watercraft is equally true for motion pictures. If the revenue generated by making motion pictures increases (in this case, not by higher demand but by a decrease in piracy), movie companies will make more movies, invest in higher quality, broader distribution or more marketing, or some combination of these activities in order to capture more profits. [See Sidebar "A Decrease In Piracy Expands Production"]

A Decrease in Piracy Expands Production

The LEK study estimated the losses sustained by the U.S. motion picture industry as a result of global piracy. In this study, we estimate the gains to U.S. industries, to U.S. workers and to U.S. national, state and local governments that would occur absent those piracy losses. This analysis can be viewed either as an estimate of the *damages* sustained by the U.S. as a result of piracy in the past year or as an estimate of the *gains* that could be realized in the future if global piracy were substantially curtailed.

One way to characterize the LEK study is that it measures the *increased demand* for legitimate U.S. film products that would be observed throughout the world if piracy did not exist. The increased demand for U.S. motion pictures is quantified on a market-by-market basis in the LEK study and valued at the legitimate prices now in effect for motion pictures in each geographic market. The LEK study provides ample proof that sufficient demand for legitimate U.S. films now exists to justify the expansion in motion picture production and employment that is quantified subsequently in this study.

From the *supply side* perspective, we assume that the market for legitimate motion picture production and distribution would remain intensely competitive as it is today. We see little reason to assume the alternative: that absent piracy, motion picture producers would (or even could) cease to compete with each other.

We also assume that with a larger potential market for legitimate films, profit-seeking film producers could readily expand their production schedules to offer additional films or more expensive films or both. The motion picture industry does not face many of the production bottlenecks that might limit the ability of other industries to satisfy increased demand for their products.[1] More importantly, motion picture producers would likely seek to exploit the expansion of the market for legitimate U.S. films, not only by creating more films but also by increasing the audience appeal of each film through the use of more marketing, for example.

Indeed, as a general matter, we would expect profit-seeking producers to spend more on creative inputs the larger the potential market for the film. Higher quality inputs, in turn should increase the production's share of revenue from the market and increased share is more valuable in a larger market.[2] Because of these considerations, motion picture producers could (and as competitors, clearly would) attempt to meet the increased demand for legitimate U.S. films through a variety of strategies. These strategies might involve the production of more films or , investment in higher quality, broader distribution or more marketing, or some combination of these activities . Precisely because of this flexibility, however, there is little reason to believe that supply side constraints would inhibit the U.S. motion picture industry from satisfying even a significant increase in the demand for its products.

[1] For example, the motion picture industry could expand its production efforts to other locations and could commit to use less well known actors, directors, writers and special effects firms.

[2] Wildman, S., and Siwek, S., *International Trade in Films and Television Programs*, Ballinger Publishing co., 1988. Pages 68-70.

As more movies are made, or more is invested in making, marketing and distributing movies, the people and companies that supply movies will make more money. These include, for example, ad agencies, who sell more copy to newspapers and television promoting the films, and the newspapers and television stations that attract the increased revenue.

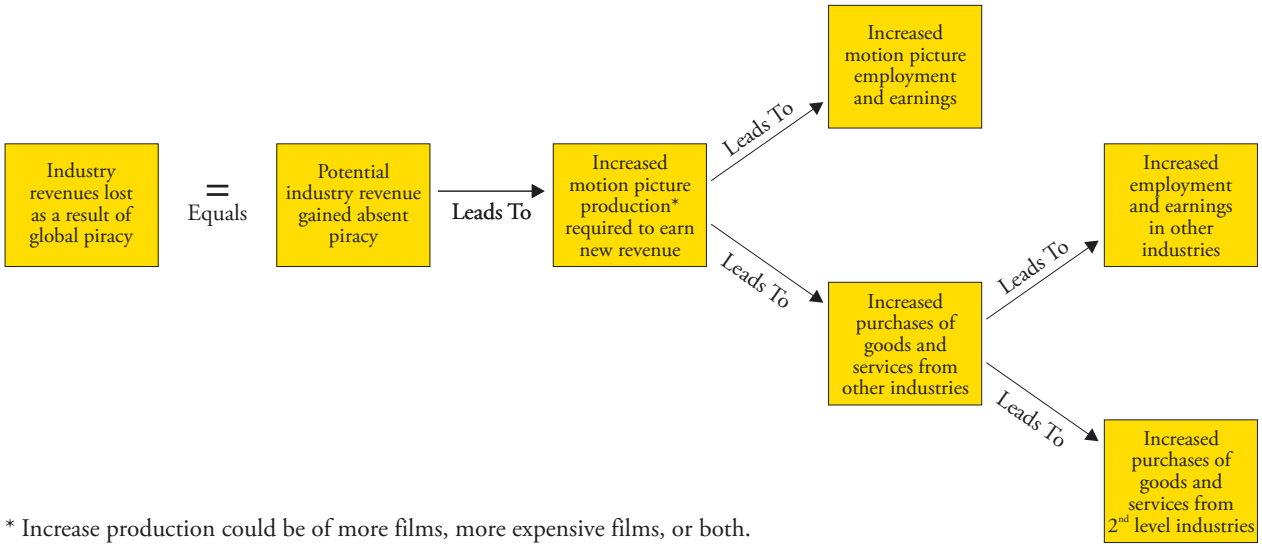
The benefits flow downstream as well. Video retailers, for example, will sell and rent more titles. Movie theaters will sell more tickets and more popcorn. Corn growers earn more profits, and can buy more farm equipment. And so on.

Put in economic terms, as motion picture output increases, so too would the output (sales of products and services) produced by these industries that supply motion pictures. As the output of these suppliers increases, so too would the output of other industries that supply the suppliers.

In sum, motion picture piracy affects not only the movie studios, but all the various businesses that supply the industry or buy from the industry, and the people who work in those businesses. Thus, the impact of movie piracy extends well beyond movie stars, all the way to the teenager selling popcorn and candy at the theater, the company that markets the candy, the farmer that grows the corn, and the workers that pick the farmer's crop.

A visual depiction of the process is contained in Figure 1.

FIGURE 1 **IMPACT OF PIRACY THROUGHOUT THE ECONOMY**



* Increase production could be of more films, more expensive films, or both.

THE RIMS II MODEL

The U.S. government has developed a widely accepted mathematical model, known as the Regional Input-Output Modeling System (or "RIMS II"), that enables analysis of how increased revenue generated by movies would affect all other aspects of the economy.[3] The RIMS II model is maintained by the U.S. Bureau of Economic Analysis, and is designed to measure the impact that a specific change in the output of one industry will have on all other industries. It uses input-output multipliers to enable measuring both the direct and indirect effects of lost revenue, as well as the loss in labor income. [See Section II and Appendix A for a more detailed description of the actual multipliers used in this analysis.]

To obtain a comprehensive estimate of the total impact of film piracy on the U.S. economy, this paper uses the MPAA research together with the relevant RIMS II multipliers for the appropriate localities. Section II provides the detailed methodology employed to obtain the findings announced in Section III. Overall, the paper looks in some depth at U.S. movie theater owners, and mass market retailers who sell or rent home video cassettes and DVDs: the most visible and direct downstream victims of movie piracy who would have enjoyed higher revenue but for piracy. It also considers lost earnings to employees, as well as the loss of jobs that are not created because of piracy losses. Using financial accounts for the U.S. as a whole and industry-specific information, it estimates the tax losses to governments at all levels. Finally, with all these elements taken into account, it estimates the total impact on the U.S. economy.

II. Methodology: Piracy Losses to Motion Picture Production, Distribution, and Exhibition

The study by LEK is the most comprehensive look at film piracy to date, capturing losses due to both Internet and hard goods piracy, the cost of piracy to domestic and worldwide industries, and the profile of the typical pirate in various markets. The findings from the LEK study are presented in this paper in Appendix C.

However, for the reasons explained above, the LEK figure of $6.1 billion in lost revenue does not provide a full picture of the effects of movie piracy. In particular, it does not include losses sustained directly by "downstream" industries like motion picture theatrical exhibitors or the video industry legitimately selling or renting U.S. motion pictures to consumers.[4] In addition, the LEK figures do not include all of the secondary and tertiary losses sustained by the many U.S. industries that would have supplied inputs directly to the motion picture industry, the industry's direct suppliers, or to the suppliers of those direct suppliers.

Production Losses

The first step in the analysis is to quantify the direct losses to the motion picture industry in terms of production, distribution, and exhibition.

As shown in Table 1, the LEK study determined that in 2005, MPAA member companies worldwide lost $6.076 billion in sales as a result of pirate activities. Of this total, U.S. market losses amounted to $1.311 billion while non-U.S. market losses sustained by U.S. companies totaled $4.765 billion.[5]

Table 1 **Motion Picture Industry Direct Losses Due to Piracy, 2005**

U.S. Motion Picture/Video Industries: NAICS 512100 *

Part One: Worldwide Losses of U.S. Production/Distribution Industries Plus U.S. Losses to U.S. Theatrical Exhibition Industries.

			Billions of U.S. Dollars
Global Piracy Losses to U.S. MPAA Production/Distribution:			$6.076
U.S. Piracy Loss to U.S. Exhibition			
	U.S. Consumer Spending Loss (Theatrical)	$0.670	
	Est. U.S. Consumer Loss to MPAA Memco	$0.630	
Less:	U.S. Prod./Dist. Loss (Theatrical)	$0.253	
Equals:	**Net U.S. Exhibition Loss (Theatrical)**	$0.377	$0.377
	Sub-total Piracy Losses (Part One)		**$6.453**

* NAICS 512100 - Motion Picture and Video Industries includes production, distribution, theatrical exhibition and post-production.

Significantly, the losses sustained by MPAA member companies do not reflect sales at the retail (consumer) level. In the motion picture industry, the major producer/distributors typically share gross retail revenues with theatrical exhibitors (theater owners), home video retailers, and others. This is part of the reason that retail losses resulting from pirate activities are much higher than losses to the movie studios alone. In its study, LEK estimated that the worldwide consumer spending loss to the motion picture industry worldwide resulting from all motion picture piracy in 2005 was $18.186 billion. In the U.S. alone, lost consumer spending amounted to $2.724 billion.[6]

Theatrical Exhibition Losses

The LEK study reports that, of the total consumer spending loss reported for the U.S. market ($2.724 billion), approximately $670 million represented theatrical revenues lost to piracy (Table 1). The study also estimates that about $630 million of the $670 million represented theatrical revenues for MPAA member films in the U.S. that were lost to piracy.[7] However, this figure of $630 million represents lost value to both U.S. theatrical exhibitors and to MPAA producer/distributors. Since these losses to the MPAA producer/distributors have already been captured in the global piracy loss estimate of $6.076 billion, it is necessary to extract the remaining lost U.S. theatrical margin from the overall U.S. exhibition loss of $630 million.

As reflected in Table 1, the MPAA study reports that approximately $253 million of the $630 million lost U.S. theatrical revenues to MPAA members has already been counted as part of the global piracy losses to the same companies.[8] As a result, the remaining U.S. piracy loss at the exhibition level can be estimated at $377 million ($630 million less $253 million). As shown in Table 1, this figure, when combined with the global loss figure to U.S. producer/distributors of $6.076 billion, yields total piracy losses to the motion picture and theatrical exhibition industries of $6.453 billion.

Home Video Distribution Losses

As noted, retailers that sell or rent motion pictures and videos directly to consumers also sustain lost profits as a direct consequence of the actions of pirates.

As shown in Table 2,[9] the LEK study estimated that the total U.S. consumer loss sustained by firms that sell or rent MPAA produced cassettes, DVDs, or other home video products was $1.932 billion in 2005. Of this amount, approximately $1.058 billion represented MPAA member company revenue losses that have already been counted within the global MPAA member loss estimate of $6.076 billion. As a result, the net losses to U.S. retailers of MPAA member cassettes, DVDs, and other home video products were $874 million in 2005.

To summarize, based on the best and most recent data available, we have determined that worldwide motion picture piracy causes a loss of $6.453 billion to the U.S. motion picture production, distribution, and exhibition industries, and a loss of $874 million to U.S. retail industries. These numbers comprise some (but not all) of the inputs necessary to determine the total cost of motion picture piracy on the U.S. economy.

The Applicable RIMS II Multipliers

Even the direct losses computed above reveal only a portion of the impact of motion picture piracy on the U.S. economy. Other losses must also be derived and estimated using the multipliers from the RIMS II model.

The RIMS II model contains five types of multipliers for many U.S. industries. For each industry, there are three "Final Demand" multipliers for output, earnings, and employment and two "Direct-Effect" multipliers for "direct" earnings and employment. The Final Demand multipliers tell us the total effects of movie piracy on the output, earnings, and employment of all U.S. industries. The Direct Effects multipliers tell us the specific effects on the motion picture industry. Our analysis uses all five types of multipliers.

Table 2 Movie Retail Trade Losses Due to Piracy, 2005

U.S. Motion Picture/Video Industries, Retail Trade: NAICS 44-45 *

Part Two: U.S. Losses of U.S. Retail Industries that Sell or Rent Motion Pictures/Video Products.

U.S. Piracy Losses to U.S. Retail industries	U.S. MPAA Consumer Loss	*Less*	U.S. MPAA Memco Loss	*Equals*	Net U.S. MPAA Retail Loss	Billions of U.S. Dollars
Rental	$0.522		$0.172		$0.350	
Sell-Through	$1.116		$0.724		$0.392	
PPV/VOD	$0.294		$0.162		$0.132	
Total	**$1.932**		**$1.058**		**$0.874**	**$0.874**
			Sub-Total Piracy Losses (Part Two)			**$0.874**

* NAICS 44-45 includes all industries engaged in retailing merchandise, generally without transformation, and rendering services to the sale of merchandise.

The RIMS II model defines industries based on the North American Industry Classification System (NAICS), a classification system maintained by the U.S. Government that contains increasing level of specialty within each classification. The U.S. Motion Picture and Video Industries are classified in NAICS 5121, and include the production and exhibition of motion pictures.

A total of five multipliers were acquired from the Bureau of Economic Analysis for NAICS 5121. These were the three Final Demand multipliers related to output, earnings (of workers), and employment and the two Direct Effect multipliers also related to earnings (of workers) and employment. Because the majority of people directly employed in motion picture production are employed in California and New York, all five multipliers are reported for the states of California and New York. A detailed discussion of the reasons for this determination is found in Appendix A.[10]

Different multipliers were chosen to apply to the retailing of motion picture cassettes and DVDs. That is because in the U.S., the industries that distribute cassettes and DVDs to consumers are far less geographically concentrated than the industries that produce motion pictures. In order to obtain a representative data sample for retail movie distribution, we used multipliers for eight states: California, New York, Texas, Ohio, Pennsylvania, Illinois, Florida, and New Jersey.[11] In this study, it is assumed that the retail industry multipliers for these eight states appropriately and reasonably capture the economic relationships that exist for the U.S. motion picture retailing sector as a whole.

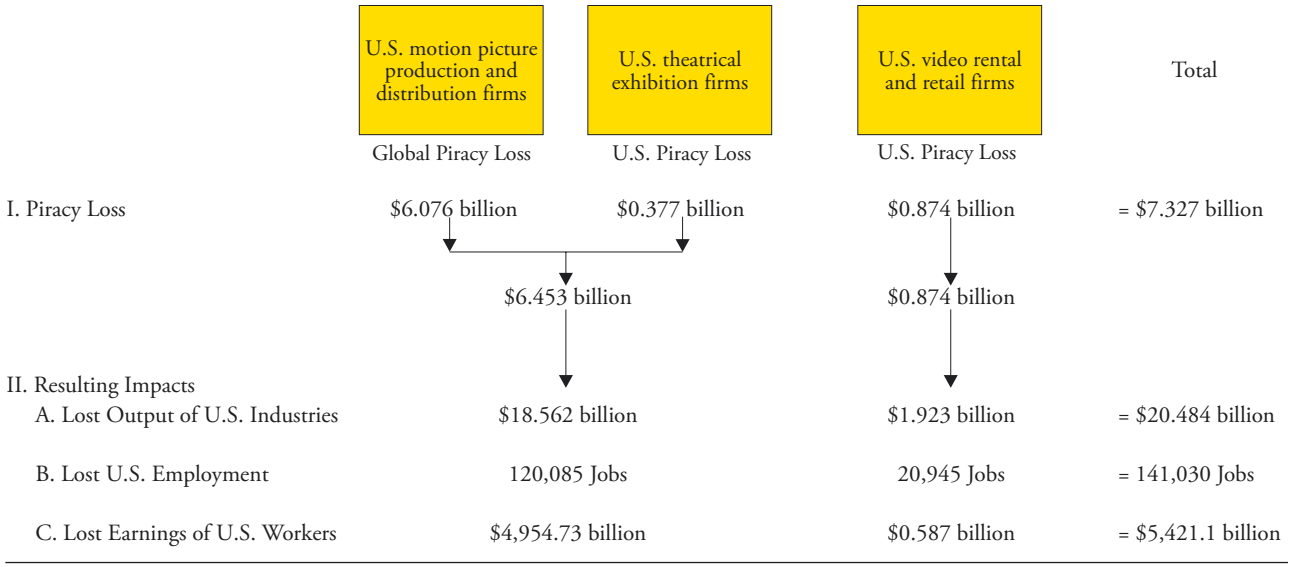
More detailed information on the RIMS II multipliers used in this analysis may be found in Appendix A.

III. Findings: The Impact of Motion Picture Piracy on the Overall Economy

As detailed below, using the LEK results and the appropriate RIMS II multipliers, we have determined that motion picture and video piracy exact a heavy toll not only on the U.S. motion picture industry, but the overall U.S. economy as well. Movie piracy causes $20.5 billion annually in total lost output among all industries, $5.5 billion annually in lost earnings for all U.S. workers and 141,030 jobs that would otherwise have been created. In addition, as a result of piracy, governments at the federal, state, and local levels are deprived of $837 million in tax revenues each year.

Figure 2, entitled Motion Picture Piracy Impacts by Sector, summarizes the findings described in detail below.

Figure 2 Motion Picture Piracy Impacts by Sector



Total Lost Output, Employment, and Earnings from Movie Piracy

To produce industry-specific estimates of the impacts of piracy on the U.S. economy, the motion picture industry's estimated losses from piracy are combined with the appropriate multipliers. The three "Final Demand" estimates of the overall impact of piracy on U.S. industries are reported in Table 3.

As shown in Table 3, as a result of piracy, the motion picture and theatrical exhibition industries have lost direct output (sales) of $6.452 billion in 2005. Using the relevant industry multipliers, this "direct" loss is converted into an estimate of the total loss in U.S. output. This total loss figure was $18.56 billion.[12] In addition, the "direct" loss sustained by U.S. motion picture retailers ($874 million) would add an additional $1.923 billion to the total loss in U.S. output. As a result, the full impact of motion picture piracy on U.S. output in 2005 was an overall loss of **$20.5 billion**.

With regard to lost earnings for U.S. workers, the comparable loss figures are $4.954 billion that stem from the losses sustained by the motion picture production and theatrical distribution industries and $587 million from the losses of retail distributors of cassettes and DVDs. Thus, the total loss in earnings to workers in 2005 was **$5.5 billion**.

Finally, in terms of losses in employment that would have been created, the effects of piracy on the motion picture industries in NAICS 5121 cost the United States 120,085 jobs and the effects on U.S. retail

distribution cost 20,945 additional job losses. Thus, that total loss in U.S. employment that has resulted from piracy of U.S. motion pictures in 2005 was **141,030 jobs**. (See Table 3).

Direct Lost Employment and Earnings

Through the methodology explained below, we have determined that the **direct loss in employee earnings** to the motion picture and retail distribution industries was **$1.903 billion**. The direct loss in **employment** resulting from piracy in the motion picture production and retail distribution industries was **46,597 workers** in 2005.

Table 3 **Cost of Movie Piracy in Output, Earnings and Employment**

Part One: Absent Piracy, Final Demand in U.S. Production/Distribution Industries and in U.S. Theatrical Exhibition Industries Would Increase.

State	Allocation Factor	Final Demand ($ Millions)	Output ($ Millions)	Earnings ($ Millions)	Employment (Number)
		$6,452.91			
California	0.8131		$15,424.72	$4,219.52	102,838
Texas	0.1869		$3,135.97	$735.21	17,246
		Sub-total	$18,560.69	$4,954.73	120,085

Part Two: Absent piracy, Final Demand in U.S. Motion Picture and Video Retail Would Also Increase.

State	Allocation Factor	Final Demand ($ Millions)	Output ($ Millions)	Earnings ($ Millions)	Employment (Number)
		$874.03			
California	0.2967		$596.34	$187.86	6,328
New York	0.1607		$285.03	$81.75	2,795
Texas	0.1471		$285.97	$87.54	3,227
Ohio	0.0919		$175.55	$53.75	2,113
Pennsylvania	0.0847		$161.93	$48.58	1,851
Illinois	0.0837		$170.35	$51.77	1,851
Florida	0.0798		$143.68	$45.68	1,765
New Jersey	0.0554		$104.43	$30.41	1,017
		Sub-total	$1,923.27	$587.34	20,945

Economic Impacts of Increased Final Demand for Motion Pictures and Videos

Output ($ Millions)	Earnings ($ Millions)	Employment (Number)
$20,483.96	**$5,542.07**	**141,030**

The RIMS II model also generates Direct Effects multipliers that can be used to derive the lost earnings and employment effects in those industries that are directly affected by the assumed change in Final Demand, in this case, the U.S. motion picture and retail distribution industries.

As shown in Table 4, **the total loss in employee earnings for the motion picture and retail distribution industries** was **$1.903 billion**. This value is only 34.3 percent of the total losses in employee earnings ($5.5 billion) reported previously. Thus, about *two-thirds of the total lost earnings to U.S. workers that result from motion picture piracy can be attributed to workers in industries other than the motion picture production and retail industries*.

Table 4 Movie Industry Direct Losses to Employment and Earnings, 2005

Part One: Absent Piracy, the Direct Effects of Increased Final Demand on U.S. Production/Distribution Industries and on U.S. Theatrical Exhibition Industries Would Increase.

State	Total Employment (Number)	Direct Employment (Number)	Total Earnings ($ Millions)	Direct Earnings ($ Millions)
California	102,838	28,587	$4,219.52	$1,352.85
Texas	17,246	5,549	$735.21	$262.35
	Sub-total	34,136	$4,954.73	$1,615.19

Part Two: Absent Piracy, the Direct Effects of Increased Final Demand on the U.S. Motion Picture and Video Retail Industries Would Also Increase.

State	Total Employment (Number)	Direct Employment (Number)	Total Earnings ($ Millions)	Direct Earnings ($ Millions)
California	6,328	3,612	$187.86	$87.59
New York	2,795	1,816	$81.75	$43.91
Texas	3,227	1,874	$87.54	$43.33
Ohio	2,113	1,259	$53.75	$26.46
Pennsylvania	1,851	1,129	$48.58	$24.00
Illinois	1,851	1,094	$51.77	$23.99
Florida	1,765	1,057	$45.68	$23.54
New Jersey	1,017	619	$30.41	$15.03
	Sub-total	12,461		$287.86

Direct Effects of Increased Final Demand for Motion Pictures and Videos

Total Direct Employment (Number)	Total Direct Earnings ($ Millions)
46,597	**$1,903.05**

Also, as reported in Table 4, the direct loss in employment resulting from piracy in the motion picture production and retail distribution industries was *46,597 workers* in 2005. This total is only 33 percent of the total lost employment from piracy (141,030) reported above. As with earnings, *approximately two-thirds of the U.S. employment that is lost as a consequence of motion picture piracy occurs in industries other than the motion picture production and retail industries*.

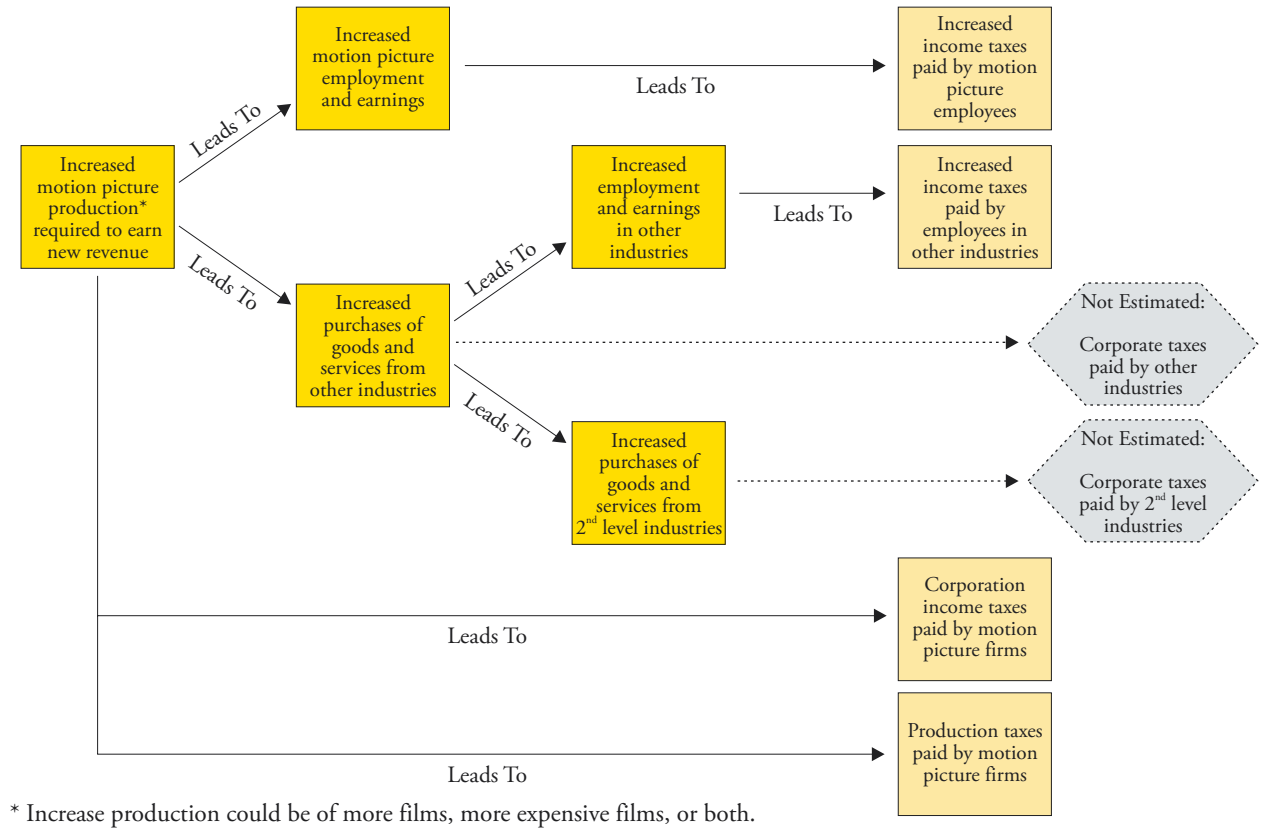
Motion Picture Piracy: Lost Tax Revenues

In total, motion picture piracy costs governments at all levels, conservatively, $837 million in lost tax revenue annually.

The RIMS II model cannot be used to generate multipliers for the tax payments that would have been made by employees and corporations if motion picture piracy had been reduced. For this reason, the analysis of the tax effects of piracy losses in this study makes use of financial accounts for the U.S. as a whole and of industry-specific information on components of the value added by the motion picture industry. The techniques for analyzing tax losses are described in Appendix B.

In the motion picture industry, the economic consequences of piracy are not limited to companies and workers. Piracy also reduces the taxes that would otherwise be paid by U.S. corporations and U.S. citizens. The tax effects of piracy result from changes in corporate output, corporate income and in the taxable income of U.S. workers. See Figure 3.

Figure 3 **Motion Picture Piracy Tax Effects**



* Increase production could be of more films, more expensive films, or both.

In this analysis, it is generally assumed that the U.S. average tax rates calculated by reference to the national accounts can also apply to the industry-by-industry data that are shown in Table 5.

TABLE 5 DIRECT TAX LOSSES: U.S. MOTION PICTURE INDUSTRY, 2005

U.S. Motion Picture and Video Industries: NAICS 5121

Personal Income Tax Losses

I. Personal Income Taxes on Lost Employee Earnings: NAICS 5121 Only

	($ Billions)	Assumed Tax Rate*	NAICS 5121 Personal Taxes ($ Billions)
Direct Employee Earnings Loss NAICS 5121	$1.903	10.8%	**$0.206**

IA. Personal Income Taxes on Lost Employee Earnings: NAICS 5121 Plus All Input Industries

	($ Billions)	Assumed Tax Rate*	NAICS 5121 Plus All Input Industries Personal Taxes ($ Billions)
Total Employee Earnings Loss: All Affected Industries	$5.542	10.8%	**$0.599**

*See Tax 1.0 Worksheet

Corporate Income and Production Tax Losses

II. Corporate Income Taxes Lost: NAICS 5121 Only

	($ Billions)	Apply to Direct Earnings NAICS 5121 ($ Billions)	Estimate of Other GOS NAICS 5121 ($ Billions)
Other GOS (Corporate) NAICS 512	$12.028		$0.991
Employee Compensation NAICS 512	$23.100	$1.903	
Ratio of Other GOS to Employ Comp.	52.1%		
		Assumed Tax Rate*	14.8%
Equals Estimated Corporate Income Tax Loss in NAICS 5121			**$0.147**

III. Taxes on Production Lost: NAICS 5121 Only

	($ Billions)	Apply to Direct Earnings NAICS 5121 ($ Billions)	Estimate of Other GOS NAICS 5121 ($ Billions)
Taxes on Production NAICS 512**	$1.100		$0.091
Employee Compensation NAICS 512**	$23.100	$1.903	
Ratio of Taxes on Prod. to Employ Comp.	4.8%		
Equals Estimated Production Tax Loss in NAICS 5121			**$0.091**

*See Tax 1.0 Worksheet
** See Direct Tax Losses: NAIC 512 Worksheet

In Table 5, the various national and industry specific tax rates described in Appendix B are applied to the Motion Picture industry. The direct loss in Motion Picture and Video employee earnings reported in Table 5 is $1.903 billion. But taking into account all input industries to the motion picture industry, the value for *total* employee earnings in *all U.S. industries* that are lost as result of motion picture piracy was $5.542 billion.

As shown in Table 5, the total direct tax losses attributable to motion picture industry piracy in 2005 were $206 million in personal income taxes, $147 million in corporate income taxes and $91 million in taxes on production. However, as also shown in Table 3, the personal income tax losses that result from piracy for employees *in the movie industry and in all movie input industries combined is* **$600 million per year**. In total, motion picture piracy costs governments at all levels, conservatively, $837 million in lost tax revenue annually.

Conclusion

Motion picture and video piracy exact a heavy toll not only on the U.S. motion picture industry, but the overall U.S. economy as well: $20.5 billion annually in total lost output among all industries, $5.5 billion annually in lost earnings for all U.S. workers and 141,030 jobs that would otherwise have been created are lost. In addition, as a result of piracy, governments at the federal, state, and local levels are deprived of $837 million in tax revenues each year.

These figures suggest that the true costs of copyright piracy are enormous, and harm not only the owners of the intellectual property but all U.S. consumers and taxpayers. As policymakers seek to maintain the health and vitality of the U.S. economy and preserve our global competitiveness, it is imperative that government and industry work together to help combat this growing problem. It is no longer acceptable to consider counterfeiting and piracy just another cost of doing business.

Appendix A—Motion Picture Industry Multipliers

The estimates in this report are based on an analytical framework known as an *input-output* ("I-O") table. For every industry in the economy, an I-O table shows the distribution of the inputs purchased and the outputs sold. Using this framework, the U.S. Bureau of Economic Analysis (BEA) has developed a method for estimating I-O *multipliers*. Using multipliers, it is possible to measure not only the direct effects of piracy (i.e., the lost 1st round of output) but also the indirect effects (i.e., the lost 2nd and subsequent rounds of output) as piracy reduces the need for inputs from factor suppliers in other industries. In addition, the BEA's multipliers also consider the "induced" economic effects that arise from the piracy-driven loss in labor income that is borne by workers in the legitimate industries and which results in a consequent decrease in household consumption.

In this analysis, the multipliers used to estimate the full effects of motion picture piracy were derived using the BEA's Regional Input-Output Modeling System or ("RIMS II"). The RIMS II model produces industry-specific "final demand" multipliers for output (in dollars), employment (in numbers of employees) and earnings of those employees (in dollars). The RIMS II model also provides industry-specific "direct effects" multipliers for employment and earnings.

Defining Regions by Industry

The RIMS II model produces industry-specific final demand and direct effects multipliers. However, the RIMS II model is fundamentally a regional model that estimates multipliers within a pre-defined geographic area. Thus, for example, an analyst might be given the task of estimating the economic effects of building a new sports stadium within a given metropolitan region. In this example, the analyst would first pre-specify the relevant metropolitan region for which the RIMS II model should be calibrated. Subsequently the analyst would select the relevant industry multipliers to be derived *within that region*. The pre-specification of a region directly affects the RIMS II multipliers because, all else equal, the smaller the region, the greater the chance that that necessary inputs will be obtained from outside the region. When inputs are obtained from outside the pre-specified region in RIMS II, they may no longer "count" as in-region effects of the initial change in final demand. Thus, with a narrowly defined area, the indirect economic effects of a given change in final demand might be too low.

This study differs from the more typical RIMS II analysis in that the economic effects of motion picture piracy are clearly not focused on one or a few small geographic areas. According to the latest Economic Census., in 2002 the U.S. Motion Picture and Video Industries (NAICS 5121) employed workers in 44 different states. While the California motion picture industry did employ the largest share of these workers, the state's industry still employed less than half (40.9 percent) of all employees in NAICS 5121. Moreover, the California movie industry is not even fully centered in the Los Angeles metropolitan area. The same economic census reported that in 2002, there were 10,191 workers employed in NAICS 5121 in the San Jose-San Francisco-Oakland, Calif., Combined Statistical Area. The annual payroll for these workers in 2002 was $659 million. If this study had only attempted to measure the economic effects of movie piracy in the Los-Angeles Metropolitan Region, it would have ignored 59 percent of the industry's employees who do not work in California and well over 10,000 industry employees who do not work in Los Angeles.

Multipliers for the NAICS 5121 Industries

In view of these considerations, a decision was made to acquire statewide RIMS II multipliers for estimating the total costs of motion picture piracy for the U.S. economy. However, in view of the particular significance of the state of California for the U.S. Motion Picture and Video Industries, a further analysis was conducted to determine the appropriate state or states for which these multipliers should be applied. A review of the motion picture industry's employment levels on a state-by-state basis revealed that in 2002 only two states—California and New York—employed 50.3 percent of all U.S. workers in NAICS 5121. In addition, for the

six-digit NAICS 512111, the Motion Picture and Video production industries, the states of California and New York employed 73.4 percent of all employees. For these reasons, the final multipliers used to analyze the motion picture and video industries in NAICS 5121 were multipliers for California and New York. (See Multiplier 1.0 Movies).

TABLE A Multiplier 1.0 Movies

U.S. Motion Picture/Video Industries: NAICS 512100		
*Final Demand Multipliers for Primary States**		
Output:		
	California	2.9398
	New York	2.6002
Earnings:		
	California	0.8042
	New York	0.6096
Employment:		
	California	19.6
	New York	14.3
*Direct Effect Multipliers for Primary States**		
Earnings:		
	California	3.1190
	New York	2.8024
Employment:		
	California	3.5974
	New York	3.1080

* In the 2002 Census, California and New York collectively employed 50.3% of all employees in NAICS 512100. California employed 81.31% of this subtotal while New York employed 18.69%. California and New York also employed 73.4% of all employees in NAICS 512111, which is Motion Picture and Video Production.

As shown in Multiplier 1.0 Movies, a total of five multipliers were acquired from the Bureau of Economic Analysis for NAICS 5121. The three Final Demand multipliers related to output, earnings (of workers) and employment. The two Direct Effect multipliers also related to earnings (of workers) and employment. In Multiplier 1.0 Movies, the five multipliers are reported for the states of California and New York.

MULTIPLIERS FOR U.S. RETAILERS OF HOME VIDEO PRODUCTS

As noted previously, motion picture piracy affects other U.S. industries in addition to the industries that are classified in NAICS 5121. In particular, U.S. retailers of video cassettes and DVDs face reduced sales and lower profits as a result of pirate activities that occur in the United States. However, the inter-industry relationships that affect these industries differ from the inter-industry relationships that exist in the motion picture industry. As a result, the multipliers that apply to the retailing of motion picture cassettes and DVDs

should also differ from the multipliers that were calculated for NAICS 5121. In this study, the economic effects of piracy on U.S. motion picture retailers are measured Using multipliers for U.S. retail trade (NAICS 44-45). These multipliers are provided in Multiplier 1.1 Movies.

TABLE B Multiplier 1.1 Movies

U.S. Motion Picture/Video Industries: Retail Trade NAICS 44-45

*Final Demand Multipliers for Primary States**

States	Output	Earnings	Employment
California	2.2996	0.7244	24.4
New York	2.0293	0.5820	19.9
Texas	2.2242	0.6809	25.1
Ohio	2.1855	0.6692	26.3
Pennsylvania	2.1873	0.6562	25.0
Illinois	2.3286	0.7077	25.3
Florida	2.0600	0.6549	25.3
New Jersey	2.1566	0.6280	21.0

*Direct Effect Multipliers for Primary States**

States	Earnings	Employment
California	2.1477	1.7520
New York	1.8618	1.5392
Texas	2.0205	1.7222
Ohio	2.0312	1.6773
Pennsylvania	2.0238	1.6387
Illinois	2.1579	1.6914
Florida	1.9406	1.6689
New Jersey	2.0227	1.6420

* In the 2002 Census, the top eight states for establishments and employment in NAICS 45122—Prerecorded Tape, Compact Disk and Record Stores, were responsible for 50% of the total establishments and employment in NAICS 45122 for the U.S. as a whole.

The five multipliers reported in Multiplier 1.1 Movies are each shown for eight states: California, New York, Texas, Ohio, Pennsylvania, Illinois, Florida and New Jersey. In the U.S., the industries that distribute cassettes and DVDs to consumers are far less geographically concentrated than the industries that produce motion pictures. For example, Blockbuster, Inc. operated 5,696 stores in the United States in 2005. These stores were located in all 50 states, the District of Columbia and the U.S. territories of Guam, Puerto Rico and the Virgin Islands.

Nevertheless, all states are not equal even with regard to home video sales and rental services. In 2002 the U.S. Census Bureau calculated state-by-state figures for the number of U.S. establishments and paid employees in NAICS 45122 – Prerecorded Tape, Compact Disk and Record Stores. For both establishments and employment, eight states were responsible for 49.1 percent of the U.S. totals within this industry. Those states were the eight states shown in Multiplier 1.1 Movies. In this study, it is assumed that the retail industry multipliers for these eight states appropriately and reasonably capture the economic relationships that exist for the U.S. motion picture retailing sector as a whole.

Appendix B—Determining Tax Losses

Within the financial accounts of the United States, one can readily identify the taxes paid in aggregate by U.S. resident individuals and U.S. corporations as a whole. For example, in 2004 personal ("current") taxes paid by U.S. residents totaled $1,049.1 billion. As shown in the table labeled Tax 1.0 Income, these taxes amounted to 10.8 percent of total Disposable Personal Income for the same year. While the Disposable Income of U.S. residents was derived from many sources, it is assumed in this analysis that all forms of personal income were in effect taxed at the same average rate. Under this assumption, the U.S. average personal tax rate in 2004 was 10.8 percent.

The data in the Tax 1.0 Income table also show two separate calculations of the corporate income tax rate paid by U.S. corporations to federal, state and local tax authorities in 2004. In 2004 total corporate income taxes were $271.1 billion. Dividing this figure by total corporate profits, as adjusted, of $1,161.5 billion yields an average corporate tax rate of 23.3 percent.

Unfortunately, in the U.S. accounts, corporate profits by industry are not to our knowledge reported by any of the U.S. statistical agencies in the same format shown here. The Bureau of Economic Analysis does report industry data on Gross Operating Surplus (GOS) by industry in its calculations of value added by industry. Within these data, GOS by industry can in turn be divided into five underlying categories. The categories include "Other GOS," which can be defined as corporate profits before tax plus net interest and miscellaneous payments and adjustments. While this measure is broader than U.S. corporate profits, it does provide an approximate measure of corporate profits that is recorded on an industry-by-industry basis.

Table C **Tax 1.0 Income**

Tax Rates on Personal Income:

		2004 ($ Billions)	2004 ($ Billions)
	US Disposable Personal Income		$8,664.2
Add Back:	Personal Current Taxes		$1,049.1
Equals	US Personal Income		$9,713.3
	Compensation of Employees	$6,687.6	
	Proprietors' Income	$889.6	
	Rental Income	$134.2	
	Personal Income Receipts/Assets	$1,396.5	
	Personal Current Transfers	$1,427.5	
Less	Contrib. Govern. Social Insurance	($822.2)	
Equals:	US Personal Income	$9,713.2	$9,713.2
	Pers. Cur. Tax/Pers. Income		10.8%

Tax Rates on Corporate Income:

	2004 ($ Billions)
US Corporate Profits w Adjusts.	$1,161.5
Taxes on Corporate Income	$271.1
Corp. Inc. Taxes/Corp. Profits	23.3%
US Other GOS (Corporate)	$1,822.9
Taxes on Corporate Income	$271.1
Corp. Inc. Taxes/US Other GOS (Corp.)	14.9%

Taxes on Production:

	2004 ($ Billions)
Taxes on U.S. Production and Imports less Subsidies.	$809.4

In addition to corporate income tax, U.S. businesses pay a variety of other taxes on their production or sales. In the U.S. accounts, these taxes are recorded as taxes on U.S. Production and Imports less Subsidies. In 2004 U.S. firms paid $809.4 billion in such taxes.

TABLE D TAX 2.0

U.S. Motion Picture and Video Industries: NAICS 5121

Personal Income Tax Losses

I. Personal Income Taxes on Lost Employee Earnings: NAICS 5121 Only

	($ Billions)	Assumed Tax Rate*	NAICS 5121 Personal Taxes ($ Billions)
Direct Employee Earnings Loss NAICS 5121	$1.903	10.8%	**$0.206**

IA. Personal Income Taxes on Lost Employee Earnings: NAICS 5121 Plus All Input Industries

	($ Billions)	Assumed Tax Rate*	NAICS 5121 Plus All Input Industries Personal Taxes ($ Billions)
Total Employee Earnings Loss: All Affected Industries	$5.542	10.8%	**$0.599**

*See Tax 1.0 Worksheet

Corporate Income and Production Tax Losses

II. Corporate Income Taxes Lost: NAICS 5121 Only

	($ Billions)	Apply to Direct Earnings NAICS 5121 ($ Billions)	Estimate of Other GOS NAICS 5121 ($ Billions)
Other GOS (Corporate) NAICS 512	$12.028		$0.991
Employee Compensation NAICS 512	$23.100	$1.903	
Ratio of Other GOS to Employ Comp.	52.1%		
		Assumed Tax Rate*	14.8%
Equals Estimated Corporate Income Tax Loss in NAICS 5121			**$0.147**

III. Taxes on Production Lost: NAICS 5121 Only

	($ Billions)	Apply to Direct Earnings NAICS 5121 ($ Billions)	Estimate of Other GOS NAICS 5121 ($ Billions)
Taxes on Production NAICS 512**	$1.100		$0.091
Employee Compensation NAICS 512**	$23.100	$1.903	
Ratio of Taxes on Prod. to Employ Comp.	4.8%		
Equals Estimated Production Tax Loss in NAICS 5121			**$0.091**

*See Tax 1.0 Worksheet
** See Direct Tax Losses: NAIC 512 Worksheet

In Tax 2.0, we first show the methodology used to estimate the personal income taxes that would have been paid by U.S. employees on their increased earnings if there had been no motion picture piracy. The table shows the estimation of tax losses on both the direct earnings of motion picture employees and on the total earnings of all affected employees. In both cases, the assumed average personal tax rate of 10.8% is applied to the industry earnings derived from the RIMS II model. As shown in Table 2, lost personal income taxes for motion picture industry employees alone were $0.205 billion. For all industry employees, lost personal income taxes were $0.599 billion.

In Tax 2.0, we also provide the methodologies used to measure the corporate income taxes and taxes on production that would have been paid by the U.S. motion picture industry absent piracy. In the corporate tax calculations, we first calculate the ratio of "Other" Gross Operating Surplus ("OGOS") to Employee Compensation for NAICS 512, a broader industry measure than that of the U.S. motion picture industry (NAICS 5121). In 2004, this ratio was 52.1%. Applying this ratio to the lost motion picture earnings estimate of $0.991 billion yields lost corporate income taxes in the amount of $0.147 billion.

Similarly, with regard to taxes on production, we first derive the ratio of production taxes to employee compensation in the broader industry category of NAICS 512. Using this ratio, we then estimate these taxes as $0.091 billion.

Appendix C—Conclusions of the LEK Study

Major Findings

- The major U.S motion picture studios lost $6.1 billion in 2005 to piracy worldwide.
- 80 percent of those losses resulted from piracy overseas, 20 percent from piracy in the U.S.
- 62 percent of the $6.1 billion loss result from piracy of hard goods such as DVDs, 38 percent from internet piracy.
- Piracy rates* are highest in China (90 percent), Russia (79 percent) and Thailand (79 percent).
- The worldwide motion picture industry, including foreign and domestic producers, distributors, theaters, video stores and pay-per-view operators, lost $18.2 billion in 2005 as a result of piracy.
- The typical pirate is age 16-24 and male. 44 percent of MPAA company losses in the U.S. are attributable to college students.

* See page 6 for definition of piracy rates.

Losses to MPAA Member Companies

The major U.S. motion picture studios lost **$6.1 billion** to piracy in 2005. **$4.8 billion, or 80 percent,** resulted from piracy in other countries and **$1.3 billion, or 20 percent**, resulted from losses in the U.S.

$3.8 billion was lost to hard goods piracy, defined as obtaining movies by either purchasing or acquiring an illegally produced VHS/DVD/VCD through a commercial source, or making illegal copies for oneself or receiving from a personal source (friend or family) an illegal copy of a legitimate VHS/DVD/VCD.

$2.3 billion was lost to internet piracy, defined as obtaining movies by either downloading them from the Internet without paying or acquiring hard copies of illegally downloaded movies from friends or family.

MPAA Member Company Revenue Loss by Source of Piracy*

*All figures throughout shown in $U.S. Millions

Where is the piracy rate highest?

China, Russia and Thailand have the highest piracy rates*. By comparison, the piracy rate in the U.S. is 7 percent.

Piracy rates are derived from MPAA member company legitimate revenue plus estimated revenue lost to piracy in each market. They are a static snapshot of the percentage of the potential market that is lost due to piracy. The piracy rate is based on existing market data and does not incorporate growth if piracy did not exist.

& L.E.K. The Cost of Movie Piracy

6

Dollars lost in international markets

The markets where the dollars lost are highest are Mexico, UK and France. These mature markets return greater income to the U.S. motion picture industry than still developing markets such as China and Russia. Restricted access to the China market in particular limits potential legitimate revenues as well.

& L.E.K. The Cost of Movie Piracy

7

Piracy in China and Russia

- China and Russia have the highest piracy rates of all countries surveyed – 90 percent and 79 percent, respectively.
- The study indicates that the U.S. motion picture dollar losses in those markets are smaller than losses in Mexico and the UK. Why?
  - The U.S. motion picture industry's access to China is severely limited. China limits the number of foreign films allowed in theaters each year to 20, and imposes a number of restrictions on the distribution of home video products. By contrast, pirates operate unfettered and outside the law.
  - Mexico and the UK are free markets resulting in higher revenue for the U.S. motion picture industry.

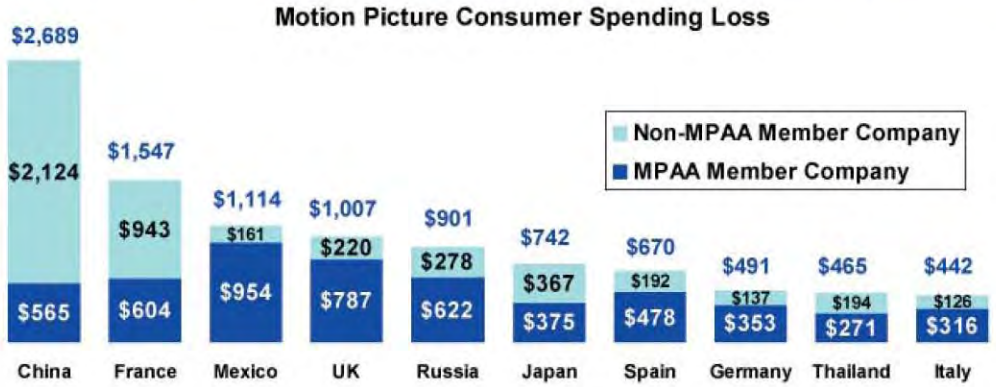
Piracy's cost beyond the U.S. film industry

Piracy cost the worldwide motion picture industry an estimated **$18.2 billion** in 2005. This includes producers, distributors, theaters, video stores and pay-per-view providers in the U.S. and around the world.

Dollar Losses – MPAA and International

Piracy is not just detrimental to major U.S. studios. Local and non-MPAA member companies* in other countries (including producers, distributors, theaters, video stores and pay-per-view providers) suffer from piracy as well. Losses to other film industries were highest due to piracy in China, France and Japan.

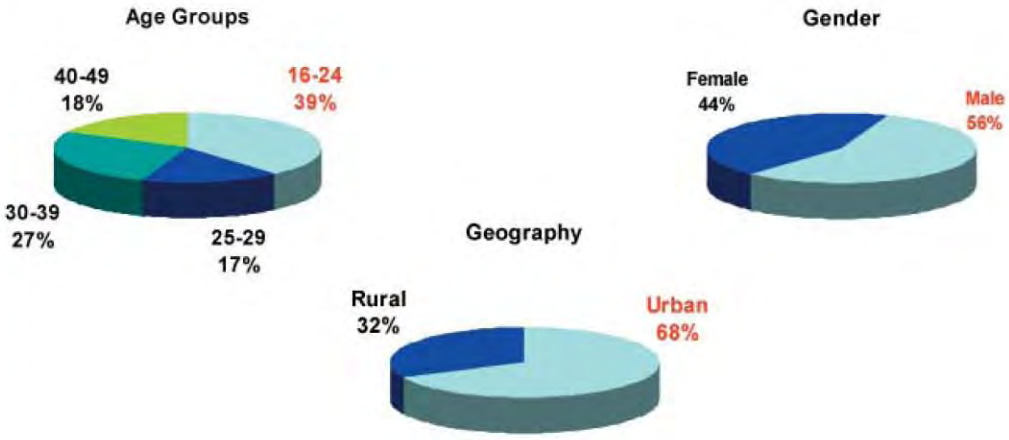
Combined worldwide industry losses due to piracy are highest in China, France and Mexico.



** Non-MPAA member companies include local filmmakers in a given country. For example, the $2.1 billion loss estimate in China for non-MPAA member companies includes losses to Chinese filmmakers in China as well as losses to French filmmakers in China.*

Pirate Profile

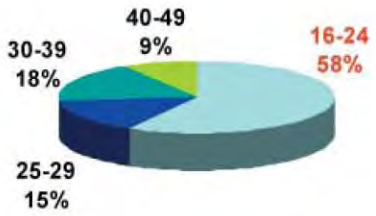
The typical worldwide pirate is 16-24 years old, male and lives in an urban area.



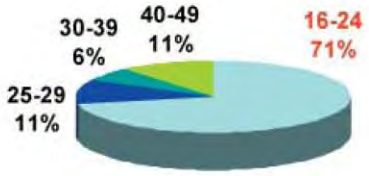
Downloader Pirate Profile

The 16-24 age group is particularly high in the category of internet piracy, representing 58 percent of illegal downloaders across the 22 directly researched countries*. It is even higher in the US, where the same age range represents 71 percent of downloaders. 44 percent of MPAA company losses in the U.S. are attributable to college students.

Age Groups of Active Downloaders - Worldwide



Age Groups of Active Downloaders - U.S.



** See page 13 for explanation of directly researched countries.*

Methodology

- LEK is an international strategy consulting firm.
- The study was conducted over 18 months. LEK surveyed 20,600 movie consumers in 22 countries using focus groups and telephone, internet and in-person interviews.
- Those surveyed were movie watchers. Those who have dropped out of the market for movies were not included in the study.
- Data from the 22 directly research countries was extrapolated to 42 additional countries using a regression model developed in conjunction with UCLA and based on country-specific characteristics to complete the worldwide piracy picture.
- The study's piracy loss calculation is based on the number of legitimate movies - movie tickets, legitimate DVDs - consumers would have purchased if pirated versions were not available.

Methodology – 22 Directly Surveyed Countries

- Australia
- Brazil
- Canada
- China
- France
- Germany
- Hong Kong
- Hungary
- India
- Italy
- Japan
- Korea
- Mexico
- Netherlands
- Poland
- Russia
- Spain
- Sweden
- Taiwan
- Thailand
- UK
- United States

The Cost of Movie Piracy

Endnotes

1. http://nbcumv.com/corporate/Engines_of_Growth.pdf
2. See LEK Final Loss Estimates.
3. http://bea.gov/bea/regional/rims/
4. Blockbuster, Inc., for instance, operated 5,696 U.S. stores providing in-home rental and retail movie entertainment to U.S. consumers in 2005. Blockbuster Inc., U.S. SEC Form 10-K, for the year ending 12/31/05, page 1. Absent piracy, the additional profits on motion picture sales and rental revenues that would have been earned by Blockbuster and by other U.S. retailers constitute additional losses to the U.S. economy. Note, however, that this additional loss is limited to the lost margin that the retail outlet would have been earned on the sale. The "cost" of the sale has already been counted among the sales lost by the motion picture producers.
5. See LEK Final Loss Estimates.
6. See LEK Final Loss Estimates.
7. The remaining $40 million in U.S. theatrical losses were sustained by non-MPAA and foreign film producers and by their U.S. exhibitors.
8. The MPAA study reports that in the U.S., MPA member companies lost a total of $1.311 billion in 2005. Of this total, $253 million reflected theatrical losses while nearly $900 million were lost home video sales and rentals.
9. This study focuses only on the piracy losses of U.S. firms. As a result, it does not measure losses of non-U.S. film producer/distributors, non-U.S. theatrical exhibitors or non-U.S. retailers of home video products.
10. Note that, while the BEA does publish industry multipliers for the U.S. as a whole, this analysis conservatively makes no use of these U.S. multipliers. Had they been used, the output and employment effects shown in this study would have been even higher than what we report.
11. 3,431 out of 6,987 establishments and 30,742 out of 62,647 employees in NAICS 45122 were located in the eight states listed above.
12. Note the total loss in final demand is allocated among the listed states on the basis of each state's industry employment.
13. U.S. Department of Commerce, U.S. Census Bureau, 2002 Economic Census: Information-San Jose-San Francisco-Oakland, CA, Combined Statistical Area. Information Sector, NAICS 5121.
14. U.S. SEC, Form 10-K, for the fiscal year ended December 31, 2005, Blockbuster, Inc., pages 10-11.
15. 3,431 out of 6,987 establishments and 30,742 out of 62,647 employees in NAICS 45122 were located in the eight states listed above.
16. In these figures, corporate profits have been adjusted to reflect changes in inventory valuation and capital consumption.

About the Author

Stephen E. Siwek is a principal with Economists, Inc., and is a specialist in financial and cost analysis. Mr. Siwek has particular expertise in the economic analysis of regulated utilities including telecommunications, electric, gas and postal service providers. He has testified as an expert witness in more than forty proceedings before federal and state regulatory authorities. Mr. Siwek's consulting specialties also include analysis of economic damages in commercial litigation and antitrust. He has evaluated damage claims in litigation involving telecommunications companies, media firms, airlines, consumer products providers and industrial corporations. Mr. Siwek also has substantial consulting and research experience in international trade. In the international area, Mr. Siwek has focused particularly on the media and software industries. He is co-author (with Steven S. Wildman) of *International Trade in Films and Television Programs*, American Enterprise Institute/Ballinger Publishing Company and *International Trade in Computer Software*, Quorum Books (with Harold Furchtgott-Roth). Mr. Siwek has also published annual studies of the "Copyright Industries" in the U.S. economy on behalf of the International Intellectual Property Alliances.

About the Institute for Policy Innovation (IPI)

The Institute for Policy Innovation (IPI) is a nonprofit, non-partisan educational organization founded in 1987. IPI's purposes are to conduct research, aid development, and widely promote innovative and nonpartisan solutions to today's public policy problems. IPI is a public foundation, and is supported wholly by contributions from individuals, businesses, and other non-profit foundations. IPI neither solicits nor accepts contributions from any government agency.

IPI's focus is on developing new approaches to governing that harness the strengths of individual choice, limited government, and free markets. IPI emphasizes getting its studies into the hands of the press and policy makers so that the ideas they contain can be applied to the challenges facing U.S. today.

1660 South Stemmons Frwy.
Suite 475
Lewisville, TX 75067
(972) 874-5139 [voice]
(972) 874-5144 [fax]
Email: ipi@ipi.org
Website: www.ipi.org

Executive Summary

Synopsis: Using a well-established U.S. government model and the latest copyright piracy figures, this study concludes that, each year, copyright piracy from motion pictures, sound recordings, business and entertainment software and video games costs the U.S. economy $58.0 billion in total output, costs American workers 373,375 jobs and $16.3 billion in earnings, and costs federal, state, and local governments $2.6 billion in tax revenue.

It is well established that U.S. copyright-protected works are pirated in vast numbers in the U.S. and in international markets throughout the world. This wide-spread theft clearly harms intellectual property (IP) owners, who are denied the revenues they would have earned had their legitimate products been purchased. Such direct losses from copyright piracy damage not only large companies, but small firms too: for example, in 2004, approximately 84% of all firms in the motion picture and video industries and 60% of all software publishing firms employed fewer than ten workers.[1]

However, these direct losses to copyright owners represent only part of the story. Piracy also causes significant and measurable harm to both the upstream suppliers and downstream distributors who would also have benefited from the sale of legitimate copyright products. Indeed, the harms that flow from piracy produce a cascading effect throughout the economy as a whole.

In order to determine the magnitude of these ripple effects, this paper assesses the harmful impact of the piracy of U.S. produced copyright products on the overall U.S. economy. To accomplish this, data were gathered that reflected the piracy losses incurred in 2005 by four of the major U.S. copyright industries: motion pictures, sound recordings, business software and entertainment software/video games. In 2005, piracy conservatively cost these U.S. industries collectively at least $25.6 billion in lost revenue.

Beyond the cost to the copyright industries, this lost revenue translates into lost production of legitimate copyright products, which in turn means lost wages and lost purchases of upstream products and services throughout the U.S. economy. Using the RIMS II mathematical model maintained by the U.S. Bureau of Economic Analysis (BEA), this study measures the lost economic output, jobs and employee earnings that are the economic consequences of copyright piracy.

Applying the model to the combined copyright industry loss figures reveals the true magnitude of the impact of copyright piracy on the U.S. economy. Because of that piracy:

- The U.S. economy loses $58.0 billion in total output annually. Output includes revenue and related measures of gross economic performance.
- The U.S. economy loses 373,375 jobs. Of this amount, 123,814 jobs would have been added in the copyright industries or in downstream retail industries, while 249,561 jobs would have been added in other U.S. industries in support of the copyright industries.[2]
- American workers lose $16.3 billion in earnings annually. Of this total, $7.2 billion would have been earned by workers in the copyright industries or in their downstream retail industries while $9.1 billion would have been earned by workers in other U.S. industries.
- Federal, state and local governments lose at least $2.6 billion in tax revenues annually. Of this amount, $1.8 billion represents lost personal income taxes while $0.8 billion is lost corporate income and production taxes.

As these numbers show, the true cost of copyright piracy cannot properly be measured by its impact on the U.S. producers of copyright-protected works alone. Piracy harms not only the owners of intellectual property but also U.S. consumers, workers, and taxpayers. As policymakers turn their attention to the competitiveness of the U.S. economy in the global marketplace, it is clear that the problem of copyright piracy should be afforded a prominent place on the policy agenda.

Table of Contents

Direct inquiries to: **Institute for Policy Innovation**
1660 S. Stemmons Freeway, Suite 475
Lewisville, TX 75067

(972) 874-5139 (Voice)
(972) 874-5144 (FAX)

Email: ipi@ipi.org
Internet Web site:

The True Cost of Copyright Piracy to the U.S. Economy

by Stephen E. Siwek

Introduction

Widespread piracy of motion pictures, recorded music, software, and electronic games harms the companies that design, create and sell these products. Since many of these are American companies, the harm of global copyright piracy falls disproportionately on U.S. industry, its stockholders and employees, and on federal, state and local governments that lose tax revenue due to piracy.

The U.S. companies most directly affected by piracy have long sought to increase understanding of the scope of this problem, and to encourage government-wide efforts to address this threat. However, until recently, there has been little reliable economic information available to U.S. policymakers to assist them in balancing the importance of enforcing intellectual property rights as against other priorities. In order to address this issue, in 2005, a study entitled *Engines of Growth: Economic Contributions of the U.S. Intellectual Property Industries* was published.[3] That study analyzed the contributions to the U.S. economy of the U.S. "IP industries" – industries that rely most heavily on copyright or patent protection to generate revenue, employ and compensate workers and contribute to real growth. The study found, among other things, that these IP industries are the most important growth drivers in the U.S. economy, contributing nearly 40% of the growth achieved by all U.S. private industry and nearly 60% of the growth of U.S. exportable products. It also found that the IP industries were responsible for one-fifth of the total U.S. private industry's contribution to GDP and two-fifths of the contribution of U.S. exportable products and services to GDP.

To build on these data, in September 2006, the Institute for Policy Innovation (IPI) published *The True Cost of Motion Picture Piracy to the U.S. Economy* (the *Motion Picture Piracy* study).[4] Subsequently, in August 2007, IPI published *The True Cost of Sound Recording Piracy to the U.S. Economy* (the *Sound Recording Piracy* study). Both of those studies measured the economic impact of pirate activities in a single industry on the U.S. economy as a whole.

Expanding on the analyses used in the *Motion Picture Piracy* study and the *Sound Recording Piracy* study, this study measures the *combined* effects of pirate activities on a group of U.S. industries that, like the motion picture and sound recording industries, rely heavily on the effective enforcement of copyright.

I. The Copyright Industries

This study measures the costs of piracy for four of the "core" copyright products: motion pictures, sound recordings, packaged software, and video games. The study measures these costs at both the production and at the downstream, retailer level. In addition, through the use of industry-specific "multipliers," the study

quantifies the additional costs of piracy on the upstream industries that supply the copyright producers and on the suppliers to those suppliers through the U.S. economy as a whole.

Because this study focuses only on four copyright industries, it provides an incomplete picture of the overall costs of copyright piracy to the U.S. economy. The copyright industries in the United States that are affected by piracy represent a much larger number of companies and employees, including photographers, songwriters, magazine and book publishers, and other creators. A fuller description of the copyright industries can be found through the website of the Copyright Alliance, www.copyrightalliance.org.

U.S. Motion Picture and Video Industry

The U.S. motion picture and video industry, classified as NAICS 5121in U.S. government statistical reports called the North American Industry Classification System (NAICS),[5] includes motion picture and video production, motion picture and video exhibition, postproduction services and "other" motion picture and video industries. In 2005, the industry had estimated revenue of $73.4 billion.[6]

U.S. Sound Recording Industry

The U.S. sound recording industry (NAICS 5122) includes establishments primarily engaged in producing and distributing musical recordings, publishing music, providing sound recording services and "other" sound recording industries. According to the U.S. Census Bureau, the employer firms in the U.S. sound recording industry generated revenue of $18.7 billion in 2005.[7]

U.S. Software Publishing Industry

The U.S. software publishing industry (NAICS 5112) comprises establishments engaged in computer software publishing or in both software publishing and reproduction. These companies "carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers."[8] In 2005, employer firms in the U.S. software publishing industry had revenues of $119.6 billion.[9]

U.S. Entertainment Software and Video Game Industry

The NAICS codes do not show the U.S. entertainment software and video game industry under a separate classification. Within the NAICS framework, the entertainment software industry remains part of the U.S. software publishing industry described above. Industry sources report that in 2005, U.S. retail sales of video game software was $7.0 billion, rising to $7.4 billion in 2006.[10]

Foreign Sales of the U.S. Copyright Industries

The copyright industries rely significantly on sales in both the U.S. and foreign markets. In 2005, the recorded music, motion picture, packaged software and book and periodicals industries achieved combined foreign sales of $110 billion.[11] Just as in the U.S., sales of pirated products in foreign markets reduce the legitimate sales that would have occurred in those markets. Moreover, copyright piracy in foreign markets directly harms American-based production of these products.

The products that are created and sold by the U.S. copyright industries consist largely, but not entirely, of what economists call a "public good."[12] A "pure" public good "is one whose cost of production is independent of the number of people who consume it; more precisely, one person's consumption of such a good does not reduce the quantity available to other people."[13] Since production costs are fixed with respect to the number of people who consume the product, cost per user or per viewer declines as market or audience size increases. As firms in the copyright industries compete, they are inevitably driven to expand

the size of their markets and thereby reduce their costs per user. For this reason, all of the U.S. copyright industries have long sought and achieved significant expansion into foreign markets.

Since revenues for the U.S. copyright industries are now generated from both U.S. and foreign markets, the copyright industries reasonably expect that such revenues will continue to flow in the future. Thus, the budgeting process for copyright products tends to approve new product budgets that maximize profits *across all markets*. For this reason, copyright piracy *in any market* will affect the total sales and profits earned by the U.S.-based producers of these products. In this study, the worldwide piracy losses of U.S. producers and distributors of copyright products are used to assess the impact of piracy on U.S. production of copyright products. (See Sidebar "A Decrease in Piracy Expands Production").

U.S. Retail Industry

Copyright piracy affects more than the companies that produce and distribute copyrighted products. Legitimate retailers, such as Blockbuster, Best Buy, Wal-Mart, and Circuit City, sell DVDs, CDs, packaged software and video games under licenses with the manufacturers of these products. When consumers obtain pirated versions of these products, profits also decline for the legitimate retailers who would, absent piracy, have made these sales. Unlike U.S. producers of copyright products, U.S.-based retailers are not generally affected by foreign piracy. They are, however, affected by U.S.-based copyright piracy. This study measures the costs of U.S.-based copyright piracy to the U.S. retail industry and to its upstream supplier industries.

II. The Interdependent Economy

The economic impact of copyright piracy is not limited to the companies that design, create and sell copyright protected works. The impact of piracy flows throughout the U.S. economy. Piracy in one segment of the economy can affect other industries because the economy is an interdependent system. Changes in supply or demand in one industry can and do affect supply and demand in other industries.

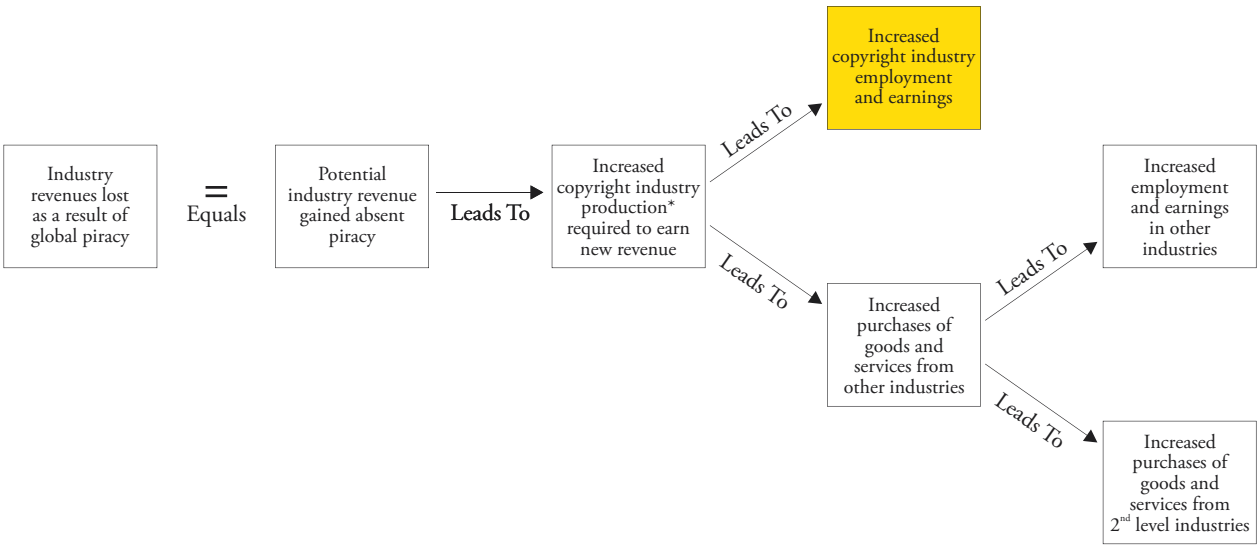
For example, assume that hybrid vehicles suddenly became very popular and shortages develop. In this situation, the price of hybrid vehicles will rise and so will the profits of the manufacturers. However, in order to continue to earn these higher profits, the manufacturers will have to make more hybrid vehicles. In the process, they will buy, among other things, more parts from parts manufacturers.

Of course, the process doesn't stop there. In order to produce more parts, the parts manufacturers will have to buy more materials from their suppliers. And those suppliers will have to buy more of the particular materials that they need.

Moreover, the cascade does not end with the hybrid vehicle manufacturers. It continues downstream as well. The retail sellers of hybrid vehicles who buy from the manufacturers will also be able to earn more money by raising prices or by increasing volume.

What is true for hybrid vehicles is equally true for the copyright products discussed here. If the revenue generated by making and selling these products increases (in this case, not by higher demand but by a decrease in piracy), the companies that create and distribute these products will create more of them. They may also invest in higher quality products, broader distribution or marketing, or some combination of all of these activities in order to maximize their profits (See Sidebar "A Decrease in Piracy Expands Production").

As more copyright products are created, and more funds are invested in developing, testing, marketing and distributing such products, the people and the companies that serve as suppliers to the copyright industries will also benefit. The "output" of these companies will also increase. Moreover, as the output of these suppliers increases, so too, in turn, will the output produced by the other industries that supply the suppliers.



* Increased production of copyright products could include the creation of more products, more expensive products, or both.

III. Piracy Loss Estimates for the Copyright Industries: Data and Methodology

This Section discusses how this study derived piracy loss estimates for each of the four industries examined: motion pictures, sound recording, software, and videogames.

The Motion Picture Industry

For the motion picture industry, loss figures produced by a major consumer research study conducted by the firm of LEK Consulting were utilized. The LEK research revealed that the member studios of the Motion Picture Association of America (MPAA) lost $6.1 billion to movie piracy in 2005.[14] These figures were also used in the *Motion Picture Piracy* study, and the loss estimates from that report remain sufficiently timely and detailed to be included again here.

The Sound Recording, Software Publishing and Video Game Industries

Other copyright industries analyzed in this report did not have an exact analogy to the LEK study. Accordingly, additional data were collected and evaluated from and about each of these industries.

The principal sources used to estimate piracy losses for this report included the following:

1. Internal estimates of piracy losses compiled by each of the copyright industries.
2. Confidential estimates of piracy losses developed by others on behalf of individual copyright industries.
3. Piracy loss estimates from "Special 301" filings with the USTR.
4. Sales data by country and physical piracy rates for recorded music from the Recording Industry Association of America (RIAA) and the International Federation of the Phonographic Industry (IFPI).
5. Piracy rates and piracy losses by country for packaged software from the Business Software Alliance (BSA) and International Data Group (IDC).
6. National and trade press articles and press releases.
7. Academic journals.

Each of the copyright industries that were studied in this report was able to provide certain internal statistics on piracy losses. Some of these statistics were confidential estimates that cannot be reported directly in this study. Other piracy loss statistics are developed and published by industry trade associations and are widely distributed.

A major source of relevant information was the annual piracy loss estimates that are filed with the office of the United States Trade Representative (USTR). These estimates are compiled for all the major copyright industries and placed into the public record each year in support of the industries' Special 301 filings. The Special 301 piracy loss estimates for 2005 are shown, by region, in Table 1. As reported in Table 1, the combined losses estimated by all four copyright industries for all regions were nearly $17 billion.

The Section 301 loss figures, however, understate the true extent of piracy losses, because they do not include piracy estimates for such major markets as the United States, the United Kingdom, France, Germany, and Australia. Thus, a more accurate accounting of piracy losses sustained by the U.S. copyright industries that includes those countries omitted by the Section 301 figures is reflected in a number of industry-specific studies that are publicly available. For example, in the recorded music industry, the International Federation of Phonographic Industry (IFPI) found that in 2005, an estimated 1.2 billion

Table 1 **USTR "Special 301" Piracy Loss Estimates for Copyright Industries - 2005** [a]

Loss Estimates for Selected Countries Only [b]

U.S. Industry	Piracy Loss Asia/Pacific ($ Millions)	Piracy Loss Europe/The CIS ($ Millions)	Piracy Loss The Americas ($ Millions)	Piracy Loss Middle East/Africa ($ Millions)
Motion Pictures	$593.0	$1,014.0	$1,120.0	$186.0
Recorded Music	$710.8	$773.9	$1,133.3	$86.7
Business Software	$3,476.0	$3,086.4	$1,493.0	$583.0
Entertainment Software	$1,357.6	$1,021.1	$258.5	$15.6
Sub-Total	**$6,137.4**	**$5,895.4**	**$4,004.8**	**$871.3**
Total Losses All Regions			**$16,908.9**	

[a] Source: *International Intellectual Property Alliance*, USTR 2007 "Special 310" Decisions, May 1, 2007.
[b] These estimates do not include losses incurred in the United States, United Kingdom, France, Germany, Australia and a number of other countries.

pirate CDs were purchased and that, even at reduced pirate prices, the worldwide pirated CD market could be valued at $4.5 billion.[15] IFPI also reports piracy rates for the physical[16] piracy of recorded music in individual countries. These piracy rates reflect the number of pirate units sold divided by the total (pirate and legitimate) units sold.

Piracy rates by country are similarly available for the packaged software industry in the annual piracy reports that are published jointly by the Business Software Alliance (BSA) and the International Data Group (IDC). Piracy rates by country for the recorded music and packaged software industries are provided in Table 2. While these data show variations across countries as between the two products, the weighted-average global piracy rate for both industries remained in a range of 35-37%.

Conservative Adjustments to Industry Estimates

While the copyright industries that were examined individually develop and publish estimates of the losses they sustain from pirate activities, the methodologies they use and assumptions they rest on are different. This study does not attempt to impose a judgment as to which methodologies and assumptions produce the most accurate count of piracy loss. As with any economic study, each methodology and set of underlying assumptions provides some insight into the scope of the problem; each has its strengths and weaknesses, its proponents and detractors.

At the same time, a decision to simply combine the results of four disparate sets of industry loss figures with no effort to identify and adjust even the most glaring inconsistencies among those figures would be unlikely to yield an accurate result. Such a procedure would have applied diverse and admittedly inconsistent piracy loss estimates to a consistent set of industry multipliers. Accordingly, in this study a series of *conservative* adjustments were made in order to increase the internal consistency of the loss estimates that were used for each of the copyright industries that were analyzed. These adjustments were conservative in that they tended to reduce the final piracy loss estimates (and thus the economic cost estimates) that were generated in the analysis. These adjustments are discussed below.

TABLE 2 **PIRACY RATES FOR RECORDED MUSIC AND PACKAGED SOFTWARE BY COUNTRY AND WORLDWIDE - 2005**

Country	Mid-Point Piracy Rates Recorded Music [a] (Physical Piracy Only)	Piracy Rates Packaged Software [b]
United States	5%	21%
China	88%	86%
France	5%	47%
Germany	5%	27%
United Kingdom	5%	27%
Russia	63%	83%
Japan	5%	28%
Italy	38%	53%
Canada	5%	33%
Brazil	38%	64%
Spain	17%	46%
Netherlands	17%	30%
Mexico	63%	65%
S. Korea	17%	46%
Worldwide	**37%**	**35%**

[a] IFPI, 2006 *Global Recording Industry in Numbers*, rates taken from individual country pages.
[b] BSA and IDC, *Third Annual BSA and IDC Global Software Piracy Study*, May 2006, pages 12-13.

The principal differences between the ways different copyright industries approach the daunting problem of measuring piracy losses include:

1. *Omission of Geographic Markets*. Some industries have not measured piracy losses in every geographic market in which they operate. For these industries to have loss estimates that are consistent with those of other industries, the missing geographic markets should be identified and, where possible, analyzed to measure the piracy losses that were not previously counted. However, the adjusted loss estimates developed in this report conservatively do not include piracy loss figures for *all* foreign markets for *all* of the copyright industries that were studied. The inclusion of piracy losses experienced in these additional markets would have increased the piracy cost estimates that were ultimately produced in this study.

2. *Inconsistent Estimates of Units Sold Absent Piracy.* The industries' estimates differ as to how they measure the quantity of *legitimate* unit sales that would have been made absent piracy. Some industries assume that, absent piracy, consumers of pirated products would substitute legitimate purchases for all or nearly all of the pirate purchases that they now make. By contrast, other industries assume that, absent piracy, consumers would purchase fewer products than they now consume, because they would not substitute legitimate products for all the pirated products. While the number of substitute units need not be identical in each copyright industry, an effort has been made in this study to impose a consistent set of assumptions regarding product substitution across the four industries that are analyzed in this report. Again, this report has taken a conservative approach, and not assumed that each pirated product served to deprive the industry of a legitimate sale. Had

this "one-to-one" ratio been maintained in any of the copyright industries, the resulting piracy cost estimates would have been higher than the figures reported here.

3. *Inconsistent Estimates of Price.* Some industries measure the quantity of pirated units in a market and value that quantity at the *pirated price*: that is, the price at which the pirated goods were actually sold.[17] Other industries value the quantity of pirated units at the *legitimate price*: the price at which authorized products are sold in the market. For this study, since a one-to-one ratio between pirated goods and legitimate goods was not assumed, it is acceptable to multiply the quantity of legitimate products that would have been sold absent piracy by the legitimate price that prevailed in that market in 2005. The product of this calculation represents the sales that were lost as a result of copyright piracy.

4. *Inconsistent Estimates of U.S. Share of Losses from Piracy.* The market share of legitimate U.S. copyright products in any given country can and often does vary significantly. As a very general rule, the market share of U.S. copyright products is very high in the United States, somewhat lower in Western Europe and considerably lower in many (but not all) Asian countries. Moreover, the share of all *pirated* products that are pirate versions of U.S. products can also differ from the U.S. share of legitimate products. In each of their piracy loss studies, the copyright industries address the issue of U.S. share in ways that differ from one industry to the next.

This report attempts to impose some standardization on this issue by comparing each industry's assumptions and/or calculations of the U.S. industry's share of *pirated* product to the assumptions and/or calculations made in the other copyright industry reports *for the same foreign market*. For example, in the LEK study of motion picture piracy, the MPAA member-companies' losses from piracy in Mexico was estimated at $954 million.[18] This value was approximately 85.6% of the total consumer spending loss from all movie piracy in Mexico (that is, including piracy of films made by non-MPAA members). Thus, at least for pirated movies in Mexico, the U.S. industry's share of total losses is very high. Based on the LEK results, one would expect, *all else equal,* that another copyright industry's share of total piracy losses in Mexico would also be substantial. For example, another copyright industry could have detailed piracy loss estimates for their product in Mexico in which the U.S. share of losses (in that product) was very low, and such discrepancies in the same market would have triggered further analysis and review. In the course of preparing this report, such inconsistencies were considered and where appropriate, adjustments to the figures were made.

Piracy Loss Estimates for U.S. Copyright Industries

After gathering data and making appropriate adjustments so that the loss estimates would be roughly comparable in their methods and assumptions, the estimated piracy losses for the four copyright industries and for the U.S. retail sector were combined. The combined losses used in this study are reported in Table 3.

As shown in Table 3, the piracy losses sustained by the four U.S. copyright industries that design, produce and distribute copyright products were estimated at $23.074 billion in 2005. The losses from copyright piracy that are borne by the U.S. retail industry were estimated at $2.549 billion. Thus, the total losses to U.S. producers and retailers from copyright piracy were $25.623 billion.

This study does not break down the combined industry loss figures into its component parts. One reason for that determination was that the underlying loss estimates for each industry were based, at least in part, on confidential information. These data would likely have been revealed if the loss estimates for each industry were reported separately. Nevertheless, based even on the publicly available data, it can readily be seen that the estimate of piracy loss affecting the U.S. economy is extremely conservative. As shown in Table 1, the copyright industries' piracy losses, as reported to the USTR, were nearly $17 billion -- even though those estimates omitted losses in numerous major markets including the United States, the United Kingdom, France, Germany and Australia.

TABLE 3 **PIRACY LOSS ESTIMATES FOR U.S. COPYRIGHT INDUSTRIES** [a]

	($ Billions)
1. Piracy Losses	
that harm **U.S. industries that design produce or distribute products** that rely fundamentally on global copyright protection and indirectly by other U.S. input industries.	$23.074
plus	
2. Piracy Losses	
that harm **U.S. retail industries that sell or rent products** that rely fundamentally on U.S. copyright protection and indirectly by other U.S. input industries.	$2.549
equals	
3. Total Piracy Losses	$25.623

[a] The U.S. copyright industries analyzed in this study include the motion picture and video industries, the sound recording industries, the software publishing industries and the entertainment software and video game industries.

Moreover, reporting the loss estimates as a lump sum avoided having to arbitrarily choose to which industry category certain products belong. For example, PC games can be considered both software and videogames. Reporting software and videogames separately would have required putting them into one category or another in order not to double count. By reporting only the combined loss results for all copyright industries, potential inaccuracies like this can be avoided.

IV. INDUSTRY MULTIPLIERS

INPUT-OUTPUT TABLES AND MULTIPLIERS

As noted above, assessing the total cost of copyright piracy for the U.S. economy involves looking at how piracy-induced changes in one industry affect other industries throughout the U.S. economy. This study relies on an analytical framework known as an *input-output* (I-O) table for this purpose. For every industry in the economy, an I-O table shows the distribution of the inputs purchased and the outputs sold. Using this framework, the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) has developed a method for estimating I-O *multipliers*. Using multipliers, it is possible to measure not only the direct effects of piracy (that is, the lost 1st round of output) but also the indirect effects (that is, the lost 2nd and subsequent rounds of output) as piracy reduces the need for the legitimate industry to purchase inputs from factor suppliers in other industries. In addition, the BEA's multipliers also take into consideration the "induced" economic effects that arise from the piracy-driven loss in labor income that is borne by workers in the legitimate industries and which results in a consequent decrease in household consumption.

In this analysis, the multipliers used to estimate the full effects of copyright piracy were derived using the BEA's Regional Input-Output Modeling System or "RIMS II." The RIMS II model produces industry-specific "final demand" multipliers for output (in dollars), employment (in numbers of employees) and earnings of those employees (in dollars). The RIMS II model also provides industry-specific "direct effects" multipliers for employment and earnings.

Combined Average Multipliers

In this analysis, separate RIMS II multipliers were used for each of the four sectors to estimate the effects of piracy. In addition, each industry-specific multiplier was constructed as a weighted average of multipliers across states where industry production was most concentrated. All of these multipliers are reported in Appendix A. However, by mathematical process, we were able to represent the combined effects of all these calculations as one value. The "combined" average multipliers that are used in this study to measure the costs of copyright piracy to the U.S. economy are reported in Table 4.

Table 4 **Weighted Average Multipliers Used to Measure Output, Employment and Earnings Lost Due to Copyright Piracy** [a]

1. Lost Output Multiplier The weighted average multiplier used to measure the loss in total U.S. output that results from the global piracy of U.S. copyright protected works.	2.2713
2. Lost Employment Multiplier The weighted average multiplier used to measure the loss in total U.S. employment that results from the global piracy of U.S. copyright protected works.	14.572
3. Lost Earnings Multiplier The weighted average multiplier used to measure the loss in total U.S. employee earnings that results from the global piracy of U.S. copyright protected works.	0.6354

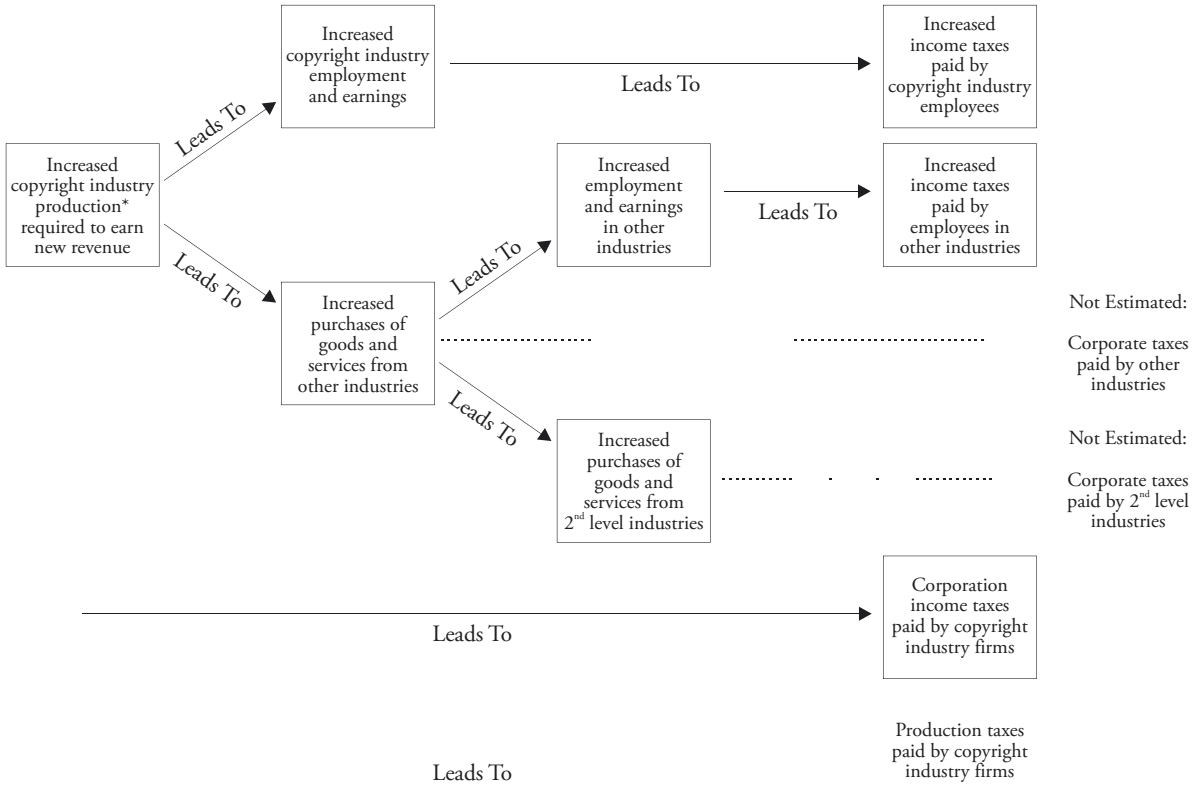
[a] Each multiplier is the weighted average of the production and retail industry multipliers used for each of the copyright industries studied. Each industry multiplier in turn reflects the weighted average of the state multipliers used to derive the national multiplier.

As shown in Table 4, the combined weighted average *output* multiplier calculated by this study was 2.2713. This means that every dollar lost to copyright piracy by the U.S. copyright industries results in a total loss of output of $2.27. Similarly, the combined weighted average *employment* multiplier used in this report was 14.572. This means that for every $1,000,000 lost to copyright piracy, the U.S. economy loses 14.572 jobs. Finally, as reported in Table 4, the combined weighted average *earnings* multiplier was 0.6354. This multiplier reflects that every dollar lost to copyright piracy by the U.S. copyright industries results in a loss of $0.6353 in the earnings of U.S. workers.

V. Tax Losses

The RIMS II modeling system does not yield a loss of tax revenues. Yet the loss of tax receipts that results from copyright piracy represents another significant cost of piracy to the U.S. economy. For the tax loss estimates presented in this study, the methodology previously used in the *Motion Picture Piracy* and *Sound Recording Piracy* studies was applied to each of the copyright industries considered here. As in the previous studies, the tax loss estimates are developed for *three categories of taxes*. These are: (i) lost personal income taxes that would have been paid by copyright industry employees, (ii) lost corporate income taxes of copyright industry companies and (iii) lost production and other business taxes. The details that underlie each of these tax calculations are provided in Appendix B.

The tax loss estimates presented in this study do *not* encompass a full accounting of all tax losses attributable to piracy (See Figure 2). The estimates for both corporate income tax losses and production tax losses reflect only the *direct* losses sustained by the copyright industries themselves. The estimates do not include additional tax losses that would result from decreased income and lower sales in those U.S. industries that supply inputs to the U.S. copyright industries, because that data cannot be derived from the RIMS II model.[19] Accordingly, the corporate income tax and production tax estimates presented in this report conservatively exclude tax losses sustained at U.S. industries that are *indirectly* affected by piracy.



* Increased production of copyright products could include the creation of more products, more expensive products, or both.

VI. Findings

Lost U.S. Output

As noted above, this report estimates that, in 2005, the U.S. motion picture, sound recording, packaged software and entertainment software industries sustained combined piracy losses of at least $23.549 billion (See Table 3). In addition, the U.S. retail industry lost another $2.459 billion. Applying the appropriate multipliers as set out above, the report concludes that as a consequence of global and U.S.-based piracy of copyright products, the U.S. economy loses ***$58.0 billion in total output*** each year. Of this total, $52.4 billion is output lost at the U.S. production level while $5.6 billion reflects output lost at the U.S. retail level (See Table 5).

Lost U.S. Jobs

The losses sustained by the U.S. copyright industries also translate into lost American jobs. Using other industry-specific "multipliers" from the U.S. Bureau of Economic Analysis, it is estimated that in 2005, the U.S. economy lost approximately ***373,375 jobs*** in total as a result of copyright piracy both in the U.S. and

TABLE 5 **U.S. COPYRIGHT INDUSTRIES: U.S. OUTPUT LOST AS A RESULT OF COPYRIGHT PIRACY**

1. Output that is Lost

($ Billions)

directly by U.S. industries that **design produce or distribute** products that rely fundamentally on global copyright protection and indirectly by other U.S. input industries.

$52.407

plus

2. Output that is Lost

directly by U.S. **retail** industries that sell or rent products that rely fundamentally on U.S. copyright protection and indirectly by other U.S. input industries.

$5.611

equals

3. Total Lost Output [a]

$58.018

[a] Estimates reflect losses at industries that directly or indirectly produce or sell copyright protected products.

abroad. Of these lost jobs, approximately 312,052 jobs were lost at the U.S. production level in the creation, manufacture and distribution of copyright-protected works while 61,323 jobs were lost at the U.S. retail sales level (See Table 6).

TABLE 6 **U.S. COPYRIGHT INDUSTRIES: U.S. EMPLOYMENT LOST AS A RESULT OF COPYRIGHT PIRACY**

1. Employment that is Lost

(Jobs)

directly at U.S. industries that **design produce or distribute** products that rely fundamentally on global copyright protection and indirectly at other U.S. input industries.

312,052

plus

2. Employment that is Lost

directly at U.S. **retail** industries that sell or rent products that rely fundamentally on U.S. copyright protection and indirectly at other U.S. input industries.

61,323

equals

3. Total Lost Employment [a]

373,375

[a] Estimates reflect losses at industries that directly or indirectly produce or sell copyright protected products.

The estimates of lost employment shown in Table 6 include both the *direct* employment losses sustained by producers and retailers of copyright products and the *indirect* employment losses experienced at other U.S. industries that depend on copyright producers and retailers. Of the total job loss of 373,375 reported above, 123,814 jobs were lost at establishments that *directly* produce or sell copyright products. The remaining 249,561 jobs were lost at *other* non-copyright U.S. industries that are *indirectly* harmed by global piracy in copyright products.[20]

Lost Earnings of U.S. Workers

Using additional multipliers from the U.S. BEA, it is estimated that, because of copyright piracy, U.S. employees lose ***$16.3 billion in total earnings*** annually. Of this total, $14.6 billion are earnings lost at the U.S. production level for the creation and manufacture of legitimate copyright products, while $1.7 billion are earnings lost at the U.S. retail level (Table 7).

Table 7 **U.S. Copyright Industries: U.S. Earnings Lost as a Result of Copyright Piracy**

	($ Billions)
1. Employee Earnings that are Lost directly at U.S. industries that **design, produce or distribute** products that rely fundamentally on global copyright protection and indirectly by other U.S. input industries.	$14.565
plus	
2. Employee Earnings that are Lost directly at U.S. **retail** industries that sell or rent products that rely fundamentally on U.S. copyright protection and indirectly by other U.S. input industries.	$1.716
equals	
3. Total Lost Employee Earnings [a]	$16.281

[a] Estimates reflect losses at industries that directly or indirectly produce or sell copyright protected products.

As with the employment estimates provided in Table 6, the lost earnings calculations shown in Table 7 include both the *direct* earnings losses sustained by workers at firms that produce and sell copyright products and the *indirect* earnings losses experienced by workers at other U.S. industries that depend on copyright producers and retailers. Of the total earnings loss of $16.281 billion reported above, $7.164 billion were lost by workers at establishments that *directly* produce or sell copyright products. The remaining $9.117 billion in earnings were lost by workers at *other* non-copyright U.S. industries that are *indirectly* harmed by global piracy in copyright products.

Lost Tax Revenues

The harm of copyright piracy extends to governments at the federal, state and local level, which lose significant revenue as a result of copyright piracy in the U.S. and overseas. This study estimates that governments lose a ***minimum of $2.6 billion in tax revenues*** annually. Of this amount, $1.8 billion represents lost personal income taxes while $0.8 billion is lost corporate income and production taxes

(See Table 8). These numbers surely underestimate actual losses because the corporate income tax and production tax loss estimates do not include estimated income and production tax losses at the upstream supplier level of the economy. The tax losses that were estimated in this study are shown in Table 8.

TABLE 8 **U.S. COPYRIGHT INDUSTRIES: TAXES LOST AS A RESULT OF COPYRIGHT PIRACY** [a]

1. Employee Personal Income Taxes Lost

	($ Billions)
Reflects income taxes lost as a result of lost employee earnings in the **direct** copyright industries and in the **indirect** industries that are also harmed by piracy.	$1.759

plus

2. Corporate Income Taxes Lost

Reflects corporate income taxes lost as a result of lost corporate profits in the **direct** copyright industries only.	$0.557

plus

3. Production and Other Taxes Lost

Reflects production and other taxes lost as a result of lower sales in the **direct** copyright industries only.	$0.263

equals

4. Total Taxes Lost

	$2.579

[a] Lost taxes include federal, state and local taxes. Lost corporate income tax and production tax estimates do not include tax losses at industries that are indirectly affected by copyright piracy.

CONCLUSION

Copyright piracy harms a broad segment of the U.S. economy that extends far beyond the U.S. companies that distribute copyright protected works. Because of piracy, American writers, artists, designers, actors, software and video game developers and musicians are denied compensation for the fruits of their creative efforts. And, since the products that embody these efforts are highly valued by consumers the world over, this loss in compensation to the American creative community is increasingly significant, even as measured against the U.S. economy as a whole.

Moreover, the economic damage caused by global copyright piracy also extends to the up-stream industries in the U.S. that *directly and indirectly* supply inputs to the U.S. motion picture, recorded music, packaged software and entertainment software industries. Since the industries in the U.S. economy are interdependent, losses from copyright piracy extend through the U.S. economy as a whole. In this study, the *total costs* to the U.S. economy of copyright piracy are estimated to exceed $58 billion in lost output, 373,375 lost jobs, $16 billion in lost employee earnings and more than $2.6 billion in lost tax revenues. These estimates underscore the true magnitude of the copyright piracy problem to the U.S. economy as a whole.

Appendix A — Multipliers for the Copyright Industries

In the RIMS II model, the U.S. Bureau of Economic Analysis estimates five different industry and region-specific multipliers. These five multipliers are 1) total output, 2) total employee earnings, 3) total number of employees, 4) direct employee earnings and 5) direct number of employees. The first three "Final Demand" multipliers measure the economic impacts that result from an initial change in the output delivered to final users. The fourth and fifth "Direct Effects" multipliers measure the subset of those earnings and employment effects for the industry that was directly affected by the initial change. In the model, each of these five multipliers is calculated for a specific industry (as defined by a NAICS code). In addition, the model must be preset for a region or state. In this study, individual *states* are used as the relevant regions to be analyzed for each copyright industry under study.

In RIMS II, it is important to consider the "region" to be analyzed in the model because the region defines the geographic boundary within which an "input" from another industry will be counted in the computation of each multiplier. Recall that multipliers rely on "input-output" tables that report how individual U.S. industries purchase and supply goods and services to other individual U.S. industries. If a supplying industry is located in the region to be studied, the "inputs" provided by that industry will be counted in the development of the multiplier for that region. If the supplying industry is not located in the region to be studied, the "inputs" provided by that industry will not be counted in the development of the multiplier for that region.

This concept is easiest to see in the case of imports. If a U.S. industry purchases Import X from a non-U.S. supplier, the RIMS II model assumes that the upstream products needed to produce Import X would, like

Table A-1 **Final Demand Multipliers for Motion Picture and Sound Recording Industries**

U.S. Motion Picture Industries NAICS 512100		U.S. Sound Recording Industries NAICS 512200	
Output		**Output**	
California	2.9398	California	2.0156
New York	2.6002	New York	1.8183
		Tennessee	1.9436
		Florida	1.7499
		Texas	1.9659
Earnings		**Earnings**	
California	0.8042	California	0.4250
New York	0.6096	New York	0.3190
		Tennessee	0.3827
		Florida	0.3545
		Texas	0.3999
Employment		**Employment**	
California	19.6	California	9.6
New York	14.3	New York	6.7
		Tennessee	11.0
		Florida	10.3
		Texas	9.7

Table A-2 **Direct Effects Multipliers for Motion Picture and Sound Recording Industries**

U.S. Motion Picture Industries NAICS 512100		U.S. Sound Recording Industries NAICS 512200	
Earnings		**Earnings**	
California	3.1190	California	2.9689
New York	2.8024	New York	2.6418
		Tennessee	2.7321
		Florida	2.5628
		Texas	2.8671
Employment		**Employment**	
California	3.5974	California	4.3948
New York	3.1080	New York	3.6664
		Tennessee	3.0776
		Florida	2.9544
		Texas	4.4529

Import X, also have been manufactured by non-U.S. upstream suppliers. Since the additional inputs needed to manufacture Import X are not made in the United States, the model does not attempt to measure the effects of those additional inputs on the U.S. economy.

This basic concept also applies in the case of total U.S., U.S. county, state and U.S. local area multipliers. All else equal, total U.S. multipliers are higher than U.S. state multipliers and U.S. state multipliers are, in turn, larger than U.S. local area multipliers. In the motion picture industry for example, the output multipliers estimated by BEA for the states of California and New York were 2.9398 and 2.6002 respectively. By contrast, the total U.S. output multiplier for the motion picture industry was 3.5552.

In this study only state multipliers are used. The decision to use only state specified multipliers in this study means that the results are inherently conservative. Had total U.S. multipliers been used, the estimates of piracy effects on the U.S. copyright industries would have been considerably higher than the figures reported here.

Multipliers for the Motion Picture and Sound Recording Industries

The products that are created and produced by the U.S. copyright industries are *sold* throughout the United States. Through their distribution and sales activities, the copyright industries thus produce real economic value in every U.S. state. In terms of *production* activities however, the U.S. copyright industries are more prominent in some states than in others.

In the U.S. motion picture industry, for example, two states – California and New York – employed 50.3% of all U.S. workers in NAICS 5121.[21] In addition, for the six-digit NAICS 512111, the motion picture and video *production* industry, the states of California and New York employed 73.4% of all employees.[22] For these reasons, the final demand multipliers used to analyze the motion picture industries in NAICS 5121 were multipliers for California and New York (See Table A-1).

In terms of production activities, however, the U.S. sound recording industries were similarly focused on only a few states. As shown in Table A-1, the final demand multipliers used to estimate the costs of

sound recording piracy were specific to five states including California and New York. Three other states – Tennessee, Florida and Texas – also supported fairly sizeable employment levels in the sound recording industry. Based on discussions with industry representatives, the employment levels in these states also reflect the traditional importance of these states to specific types of music. The direct effects multipliers that were used in this study for the U.S. motion picture and sound recording industries are shown in Table A-2.

Multipliers for the U.S. Software and Entertainment Software Industries

As for the motion picture and sound recording industries, centers of production were identified for which software industry multipliers would be appropriate. For the software publishing industry, five states – California, Washington, Texas, Massachusetts and New York – collectively employed 56% of all workers in NAICS 5112. Final demand multipliers for these five states are reported in Table A-3.

Table A-3 **Final Demand Multipliers for U.S. Software and Entertainment Software Industries**

U.S. Packaged Software and Entertainment Software/Video Games Industries NAICS 511200		
Output	California	2.1819
	Washington	1.9819
	Texas	2.1760
	Massachusetts	1.9778
	New York	1.8151
Earnings	California	0.7141
	Washington	0.6479
	Texas	0.7003
	Massachusetts	0.6239
	New York	0.5187
Employment	California	13.6
	Washington	12.5
	Texas	14.7
	Massachusetts	11.2
	New York	9.1

As noted in the text of this report, U.S. government statistics for the entertainment software and video games industry are generally not published on a separated basis. As a result, the software publishing industry final demand multipliers reported in Table A-3 above are also appropriate for the entertainment software and video games subset of that industry.

Similarly, direct effects multipliers for the U.S. software publishing industry in the five states of California, Washington, Texas, Massachusetts and New York are provided in Table A-4. The same multipliers were used to measure economic impacts of piracy on the U.S. entertainment software and video games industry as well.

Table A-4 **Direct Effects Multipliers for U.S. Software Publishing and Entertainment Software**

U.S. Packaged Software and Entertainment Software/Video Games Industries NAICS 511200		
Earnings	California	1.9748
	Washington	1.7955
	Texas	1.9511
	Massachusetts	1.8200
	New York	1.7269
Employment	California	3.7470
	Washington	3.4718
	Texas	3.5399
	Massachusetts	3.1535
	New York	2.9421

Appendix B — Determining Tax Losses

The RIMS II model cannot be used to generate multipliers for the tax payments that would have been made by employees and corporations if copyright piracy were reduced. For this reason, the analysis of the tax effects of piracy losses in this study makes use of financial accounts for the U.S. as a whole and of industry specific information on the components of the value added that would increase if copyright piracy were significantly curtailed or eliminated.

Personal and Corporate Income Taxes

Within the financial accounts of the United States, one can readily identify the taxes paid in aggregate by U.S. resident individuals and U.S. corporations as a whole. For example, in 2004, personal (current) taxes paid by U.S. residents totaled $1,049.1 billion. As shown in Table B-1, these taxes amounted to 10.8% of the total U.S. disposable personal income for the same year. While U.S. disposable personal income was derived from many sources, it is assumed in this analysis that all forms of personal income were in effect taxed at the same average rate. Under this assumption, the U.S. average personal tax rate in 2004 was 10.8%.

In this report, the personal income taxes that are lost as a result of copyright piracy are derived by applying the assumed personal tax rate of 10.8% to the total (direct and indirect) lost employee earnings that were estimated using the appropriate RIMS II multipliers. As shown in the text of this report at Table 2, those lost earnings were $16.281 billion. Assuming a 10.8% personal income tax rate, these lost earnings result in lost personal income taxes of $1.759 billion.

The data in Table B-1 also show two separate calculations of the corporate income tax rate paid by U.S. corporations to federal, state and local tax authorities in 2004. In 2004, total corporate income taxes were $271.1 billion. Dividing this figure by total U.S. corporate profits as adjusted of $1,161.5 billion yields an average corporate tax rate of 23.3%.[23]

Unfortunately, in the U.S. accounts, corporate profits *by industry* are not to our knowledge reported by any of the U.S. statistical agencies in the same format as shown above. The U.S. Bureau of Economic Analysis does report industry data on Gross Operating Surplus (GOS) by industry in its calculations of value added by industry. Using these data, GOS by industry can be divided into five underlying categories. The categories include "Other GOS" which can be defined as corporate profits before tax plus net interest and

TABLE B-1 TAX RATES ON PERSONAL AND CORPORATE INCOME

Tax Rates on Personal Income

		2004 ($ Billions)	2004 ($ Billions)
	U.S. Disposable Personal Income		$8,664.2
Add Back	Personal Current Taxes		$1,049.1
Equals	U.S. Personal Income		**$9,713.3**
	Compensation of Employees	$6,687.6	
	Proprietors' Income	$889.6	
	Rental Income	$134.2	
	Personal Income Receipts/Assets	$1,396.5	
	Personal Current Transfers	$1,427.5	
Less	Contrib. Govern. Social Insurance	$(822.2)	
Equals	U.S. Personal Income	$9,713.2	**$9,713.2**
	Pers. Cur. Tax/Pers. Income		**10.8%**

Tax Rates on Corporate Income

	2004 ($ Billions)
U.S. Corporate Profits w Adjusts.	$1,161.5
Taxes on Corporate Income	$271.1
Corp. Inc. Taxes/Corp. Profits	**23.3%**
U.S. Other GOS (Corporate)	$1,822.9
Taxes on Corporate Income	$271.1
Corp. Inc. Taxes/U.S. Other GOS (Corp.)	**14.9%**

Taxes on Production

	2004 ($ Billions)
Taxes on U.S. Production and Imports less Subsidies	$809.4

miscellaneous payments and adjustments. While this measure is broader than U.S. corporate profits, it does provide an approximate measure of corporate profits on an industry-by-industry basis.

In Table B-1, U.S. corporate income taxes are also divided by "Other GOS" for corporations, an amount reported as $1,822 billion in 2004. This calculation yields a corporate tax rate on Other GOS of 14.9%.

PRODUCTION TAXES AND GROSS OPERATING SURPLUS

The major components of U.S. value added and value added for the industry sectors classified under NAICS 512 (motion pictures and recorded music) and NAICS 511 (all publishing including software) are shown in Table B-2. The three components are employee compensation, taxes on production and imports less subsidies and gross operating surplus. As shown in Table B-2, for these broad industry sectors, production taxes can be divided by employee compensation in order to derive industry-specific factors for the taxes. In Table B-2, production tax factors are derived for NAICS 512 and 511. These tax factors are subsequently used to estimate the production taxes lost for each of the four copyright industries that are analyzed in this report. For each industry, the production tax factor is applied only to the *direct* employee compensation that was lost as a consequence of piracy. The production tax factor is not applied to the *indirect* employee compensation that was also lost because the RIMS II model does not provide a breakdown of that lost compensation for each industry affected. For this reason, the production tax estimate derived in this report should be regarded as a conservative measure of the minimum production tax losses that can be attributable to copyright piracy.

As shown in Table 5 in the text, the estimated direct industry earnings lost to copyright piracy were $7.164 billion. The production tax factors for the industry sectors shown in Table B-2 (4.7% and 2.9%) were applied to the lost direct earnings for each copyright industry in order to derive an overall estimate of lost production taxes of $263 million (See Table 4).

Table B-2 Factors for Production Tax and Gross Operating Surplus

		U.S. Economy as a Whole ($ Billions)	NAICS 512 Movies and Records ($ Millions)	NAICS 511 All Publishing ($ Millions)
	Output	**$21,346.0**	**$94,100.0**	**$254,900.0**
equals	**Value Added**	**$11,734.3**	**$47,300.0**	**$125,300.0**
	Employee Compensation	$6,693.4	$23,094.0	$71,042.0
	Taxes on Productions + Imports less Subsidies	$809.4	$1089.0	$2,085.0
	Gross Operating Surplus	$4,231.5	$23,130.0	$52,188.0
plus	**Intermediate Inputs**	**$9,611.8**	**$46,800.0**	**$129,600.0**
	Tax on Prod./Employee Compensation	**12.1%**	**4.7%**	**2.9%**
	Gross Operating Surplus	**$4,231.5**	**$23,130.0**	**$52,189.0**
	Current Surplus Gov. Enterprises	$(3.0)	$ —	$ —
	Consumption of Fixed Capital	$461.9	$ —	$ —
	Business Current Transfer Payment	$91.1	$149.0	$868.0
	Other GOS (Corporate) [a]	$1,822.9	$12,028.0	$37,623.0
	Other GOS (Non-Corporate)	$1,858.6	$10,953.0	$13,698.0
	Sub-Total	$4,231.5	$23,130.0	$52,189.0
	Other GOS (Corporate)/Employee Comp.	**27.2%**	**52.1%**	**53.0%**

[a] Other GOS (Corporate) includes corporate profits before tax plus corporate net interest and miscellaneous payments and adjustments.

Source: U.S. Bureau of Economic Analysis, *Gross Domestic Product by Industry*, Release data: April 27, 2006.

In Table B-2, industry sector data is also reported for gross operating surplus. Recall that in this analysis, the corporate tax rate previously calculated in Table B-1 was measured as a tax on gross operating surplus. In Table B-2, the gross operating surplus is reported by industry sector. The ratio of "Other" GOS (Corporate)" to employee compensation is also calculated for each of the two industry sectors. This ratio is then applied to the lost employee earnings calculated for each of the four copyright industries that are analyzed in this report. The application of these sector-specific ratios to each of the four copyright industries yields estimates of the gross operating surplus earned by each of the four industries. The corporate tax factor estimated in Table B-1 is then applied to the estimated gross operating surplus for each industry in order to derive corporate income taxes lost through piracy. As shown in the text in Table 4, these lost corporate income taxes were $557 million. Note that, like the production tax estimate, the corporate income tax calculation was applied only to the direct industries affected by piracy. For this reason, this estimate should also be regarded as a minimum value for the corporate income taxes lost as a consequence of global copyright piracy.

Endnotes

1. See U.S. Census Bureau, *Statistics of U.S. Businesses – 2004*, for NAICS 5121- Motion Pictures and Video Industries and NAICS 5112 – Software Publishing Industry.
2. "Other" industries here mean the U.S. industries that supply intermediate goods and services directly to the U.S. copyright industries and the U.S. industries that directly and indirectly supply these supplier industries.
3. http://nbcumv.com/corporate/Engines_of_Growth.pdf
4. Siwek, Stephen, E., *The True Cost of Motion Picture Piracy to the U.S. Economy*, Institute for Policy Innovation, Policy Report 186, September 2006, http://www.ipi.org
5. The North American Industry Classification System (NAICS) is used by U.S. statistical agencies such as the Census Bureau and the U.S. Bureau of Economic Analysis to classify industrial sectors, groups and industries.
6. U.S. Census Bureau, *Estimated Revenue for Employer Firms: 2004 through 2005*, Table 3.0.1.
7. U.S. Census Bureau, *2005 Service Annual Survey*, Table 3.0.1.
8. U.S. Office of Management and Budget, *North American Industry Classification System, United States, 2002*, 511210 Software Publishers.
9. U.S. Census Bureau, 2005 Service Annual Survey, Table 3.0.1
10. The NPD Group, Inc., *2006 U.S. Video Game and PC Game Retail Sales reach $13.5 Billion Exceeding Previous Record Set in 2002 by Over $1.7 Billion*, January 19, 2007.
11. Siwek, Stephen, E., *Copyright Industries in the U.S. Economy – The 2006 Report*, International Intellectual Property Alliance, Table A-5, Page 18.
12. In most copyright products, the content provided to consumers is a public good but the mechanism of delivery is frequently in the form of a private good like a CD or DVD.
13. Owen, Bruce M.; Wildman, Steven, S., *Video Economics*, Harvard University Press, 1992, page 23.
14. See Siwek, Stephen, E., *The True Cost of Motion Picture Piracy to the U.S. Economy*, Institute for Policy Innovation, Policy Report 186, September 2006, Appendix C.
15. IFPI, *2006 Global Recording Industry in Numbers*, August 2006, page 9.
16. In recorded music, physical piracy is the unauthorized sale or consumption of protected music on a physical medium such as compact disk. Physical piracy can be distinguished from "download" piracy in which protected music is transferred using virtual media such as an MP3 computer file.
17. For example, as noted earlier in this report, IFPI estimated that in 2005, the value of the worldwide market for pirate CDs was $4.5 billion at pirate prices.
18. Siwek, Stephen E., *The True Cost of Motion Picture Piracy to the U.S. Economy*, Institute for Policy Innovation, Policy Report 186, September 2006, Appendix C – Conclusions of the LEK Study, page 24.
19. In the RIMS II model, the multipliers used to derive changes in output and employment for the supplier industries that are affected indirectly by piracy are not identified on an industry-by-industry basis. For this reason, supplier industry values for employee compensation, gross operating surplus and taxes on production are not available. As a result, the tax effects that would result from changes in these supplier industry values cannot be measured using RIMS II.
20. NOTE: The RIMS II Model produces separate industry-specific multipliers that can be used to estimate employment and earnings effects in the "direct" industries under study.
21. Siwek, Stephen E., *The True Cost of Motion Picture Piracy to the U.S. Economy*, Institute for Policy Innovation, Policy Report 186, September 2006, page 14.
22. Id. Pages 14-15.
23. In these figures, corporate profits have been adjusted to reflect changes in inventory valuation and capital consumption.

About the Author

Stephen E. Siwek is Principal at Economists Incorporated, a research and consulting firm with offices in Washington D.C. and in the San Francisco Bay area. Active in research and consulting for over 30 years, Mr. Siwek specializes in the analysis of economic, financial, and accounting issues. He has testified as an expert witness before regulatory bodies and courts on more than 80 occasions.

Mr. Siwek has particular expertise in the economic analysis of the U.S. entertainment industries and of the related U.S. industries that depend on the effective protection of their copyrights. Since 1990, Mr. Siwek has published eleven studies on behalf of the International Intellectual Property Alliance (IIPA) that analyzed in detail the economic importance of the U.S. "copyright" industries (including the sound recording industry) to the U.S. economy. In these studies, Mr. Siwek quantified the substantial contributions made by the copyright-based industries to U.S. economic growth, employment and foreign trade.

Mr. Siwek has also been instrumental in furthering the efforts of the World Intellectual Property Organization (WIPO) to encourage other nations to measure the economic contribution of copyright-based industries in their own countries. In this regard, Mr. Siwek has been closely associated with the development of the WIPO "Guide" for the measurement of copyright industry contributions and he has directly assisted a number of foreign governments in the preparation of their own studies.

Mr. Siwek is co-author of *International Trade in Films and Television Programs* (American Enterprise Institute/Ballinger Publishing Company, 1988) and *International Trade in Computer Software* (Quorum Books, 1993).

In 2005, Mr. Siwek authored a widely reported study entitled *Engines of Growth: Economic Contributions of the U.S. Intellectual Property Industries* (Commissioned by NBC Universal, 2005). In that study, Mr. Siwek quantified the substantial contributions made by the IP sector as a whole to real U.S. growth. More recently, Mr. Siwek authored a study on the effects of motion picture piracy on the U.S. economy as a whole. That study was entitled *The True Cost of Motion Picture Piracy to the U.S. Economy*, (Institute for Policy Innovation, Policy Report 186, September 2006).

In February of 2007, Mr. Siwek participated as a panelist in the Motion Picture Association of America's first-of-its-kind industry symposium entitled, *The Business of Show Business*. In May 2007, he also served as a panelist for the launch of the Copyright Alliance, a non-profit education group whose 29 member organizations represent an estimated 11 million Americans working in the copyright sector.

Mr. Siwek earned his undergraduate degree at Boston College and his M.B.A. at George Washington University.

About the Institute for Policy Innovation (IPI)

The Institute for Policy Innovation (IPI) is a nonprofit, non-partisan educational organization founded in 1987. IPI's purposes are to conduct research, aid development, and widely promote innovative and nonpartisan solutions to today's public policy problems. IPI is a public foundation, and is supported wholly by contributions from individuals, businesses, and other non-profit foundations. IPI neither solicits nor accepts contributions from any government agency.

IPI's focus is on developing new approaches to governing that harness the strengths of individual choice, limited government, and free markets. IPI emphasizes getting its studies into the hands of the press and policy makers so that the ideas they contain can be applied to the challenges facing U.S. today.

About the IPI Center for Technology Freedom

The IPI Center for Technology Freedom is the technology division of the Institute for Policy Innovation. The purpose of the Center is to sort out the policy challenges posed by technological change for both the American people and policy makers.

The IPI Center for Technology Freedom points the way for a society that encourages freedom to develop new technologies, and the freedom to access them.

1660 South Stemmons Frwy.
Suite 475
Lewisville, TX 75067
(972) 874-5139 [voice]
(972) 874-5144 [fax]
Email: ipi@ipi.org
Website: www.ipi.org