THE COPYRIGHT TAX

by GLYNN S. LUNNEY, JR.*

> The principle of copyright is this. It is a tax on readers for the purpose of giving a bounty to writers.
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>   Lord Thomas Babington Macaulay (1841)[1]

Words have power. The labels we attach to things influence how we think about those things.[2] The words and label that dominate our copyright discourse intrinsically support the copyright system. Rights, property, protection, incentives — these are the labels that we use to describe copyright. All of them have generally positive connotations in our society. What if instead of these positive, reinforcing labels, we used a less sympathetic label and called copyright a tax? Would that change our views on copyright? This article explores that question.

As an initial matter, descriptively, Macaulay was right. Copyright is a government-imposed tax, on the one hand, and a government-provided subsidy on the other. By regulating the production of copies of books and other works of authorship, government increases the prices consumers pay for the regulated products.[3] Government then returns the increased prices to producers in the regulated industries as a subsidy. From an economic perspective, the consequences are identical to those of an express tax-and-subsidy system.[4] Same need for government action. Same higher prices. Same distortions of labor and consumption decisions.

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[1] Thomas Babington Macaulay, *A Speech Delivered in the House of Commons* (Feb. 5, 1841), *in* 8 THE WORKS OF LORD MACAULAY 195, 199 (Lady Hannah Trevelyan ed., London, Longmans-Green & Co. 1875), http://yarchive.net/macaulay/copyright.html).

[2] George Orwell powerfully illustrated this point with the English Socialist Party's slogan in *1984*:

<blockquote>
War is peace.
Freedom is slavery.
Ignorance is strength.
</blockquote>

                              GEORGE ORWELL, 1984, at 17 (1949).

[3] In this article, I will present evidence on this issue. *See* text accompanying notes 54-78 *infra.*

[4] *See* text accompanying notes 44-54 *infra.*

Recognizing this equivalence expressly, as Macaulay long ago did, opens the door to new ways of looking at and thinking about copyright. While some may reject the suggestion that copyright is a tax immediately and reflexively, treating copyright as a tax is helpful precisely to the extent that it makes us uncomfortable. Most immediately, it enables us to identify several questions that become critical for any normative evaluation of copyright. First, how much is the copyright tax? Second, who pays it? Third, as we might ask for any government subsidy, what do taxpayers receive in return? In this article, I explore and attempt to provide empirical answers to those questions. Along the way, I offer insights that come from thinking of copyright as a tax.

If we think of copyright as a tax, the first question becomes: How much is the tax? To answer this question, I have gathered and present in this article a novel data set comparing prices: (i) for the top books from the nineteenth century; and (ii) for the top books from the twenty-first century.[5] Because copyright in the United States regulates the production of copies of twenty-first century books, but not nineteenth century books,[6] this data set enables us to estimate directly, at least in a very rough way, the tax that copyright imposes on regulated book sales. By comparing prices for the nineteenth and twenty-first century books, we find that, on average, copyright regulation increases the price consumers pay for analog or paper copies of the top twenty-first century books by somewhere between $5.38 and $6.34.[7] This price difference provides a ballpark estimate of the tax that copyright effectively imposes on readers, and I mean that literally. Over the short term, we could abolish copyright entirely, replace it with a $6 tax on each copy of a book sold,[8] return that tax to the author and those with whom the author agrees to share the subsidy, and have effectively identical economic consequences. Rather than estimate the tax itself, we can also calculate the effective copyright tax rate, by dividing the amount of the copyright tax by the average retail price consumers pay for paper copies of these books. If we do, the effective copyright tax rate

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[5] *See* text accompanying notes 55-76 *infra*.

[6] Today, in the United States, for books first published before January 1, 1978, copyright lasts, at most, ninety-five years from the original data of publication. 17 U.S.C. § 304. Thus, copyright no longer regulates the production of books first published before December 31, 1924. Moreover, many of the top nineteenth century books were by non-U.S. authors and were therefore not regulated by U.S. copyright law from the outset.

[7] *See* text accompanying notes 70-76 *infra*.

[8] To accommodate authors who want to charge a higher price, we could alternatively set the tax at a level above the mean or median price difference. This leaves authors who want to charge a lower price free to do so through rebates to consumers. *See* text accompanying notes 95-96 *infra*.

amounts to somewhere between 46.6 and 56.0% of the average retail price for these paper copies.

When we move from paper to electronic copies, the copyright tax on reading increases significantly. Using the same data set and estimation techniques, the copyright tax on electronic copies of the top twenty-first century books ranges from $9.34 to $9.99.[9] Compared to the analog world, the shift to a digital production and distribution model for books is associated with an economically and statistically significant increase in the copyright tax. Merely by moving from analog to digital distribution, the amount of the copyright tax increased by between 55.4 and 73.2%, depending on the estimation technique we use. For digital copies, the copyright tax accounts for more than 93.8% of the average retail price consumers pay for an electronic copy of the top twenty-first century books.[10]

Knowing the magnitude of the copyright tax is important both descriptively and normatively. Descriptively, even if we take the lower of the estimated tax rates copyright imposes on analog copies, a 50% tax rate is exceedingly, indeed punitively, high. By way of comparison, the District of Columbia imposes the highest effective tax rate on cigarette sales in the nation.[11] Yet, that tax rate, at 50.5%, is no higher than the effective tax rate that copyright imposes on book sales in the analog market.[12] Normatively, recognizing that copyright imposes a 50% tax rate on analog book sales forces us to confront issues we may not otherwise consider. For example, with cigarettes, taxes are high, at least in part, to discourage smoking. Higher taxes mean higher prices for consumers. Higher prices mean marginally fewer cigarettes purchased and smoked. It would seem the same reasoning would apply to copyright. Macaulay made that very point more than one hundred years ago: copyright discourages reading.[13] Yet, today, almost no one focuses on it.[14] Instead, we cabin and then dismiss

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[9] *See* text accompanying notes 70-76 *infra*.

[10] *See* text accompanying notes 74-76 *infra*.

[11] Campaign for Tobacco-Free Kids, State Excise and Sales Taxes per pack of Cigarettes Total Amounts & State Rankings (2020), https://www.tobaccofreekids. org/assets/factsheets/0202.pdf.

[12] *Id.* (showing that the District imposes taxes on cigarette sales that account for 50.5% of the average retail price of cigarettes).

[13] Macaulay, *supra* note 1, at 199 ("The principle of copyright is this. It is a tax on readers for the purpose of giving a bounty to writers. The tax is an exceedingly bad one; it is a tax on one of the most innocent and most salutary of human pleasures; and never let us forget, that a tax on innocent pleasures is a premium on vicious pleasures.").

[14] Some may be thinking that the books would not be available but for the incentive copyright provides. Perhaps, but the available empirical evidence tends to refute that notion. *See* GLYNN LUNNEY, COPYRIGHT'S EXCESS: MONEY AND MUSIC IN THE US RECORDING INDUSTRY 120-21, 156 (2018) (showing that increased reve-

that issue with the label "deadweight loss" or "lost access." Yet, neither deadweight loss nor loss access fully accounts for copyright's social cost.[15]

Similarly, treating copyright regulation as a tax allows us to estimate whether and if so, by how much, the copyright tax has increased or decreased as we moved from analog to digital distribution. Over the last few decades, copyright owners have repeatedly appealed to Congress for tighter regulation of digital markets.[16] Yet, at least with respect to books, as we moved from analog to digital markets, from paper copies to electronic copies, the copyright tax increased by more than 50%.[17] If Congress wants to maintain the same tax-and-subsidy for books digitally distributed as it had previously imposed and provided for paper copy distribution, then sharply narrower or shorter copyright protection, at least for books, is the appropriate policy intervention. If copyright were an express tax-and-subsidy system, operating through the ordinary budgetary process, then Congress would have to decide expressly whether the subsidy in the digital world should be higher, lower, or the same as it was in the analog world. Yet, because we pretend that copyright regulation is not such a system, the tax and subsidy can increase by over 50% for books, as we transition from analog to digital distribution, without any express action by Congress at all.

Equally important, in this context, thinking of copyright as a tax brings out into the open what might otherwise remain hidden. Congress did not amend the Copyright Act to increase regulation of the production and distribution of digital copies of books, yet the copyright tax-and-subsidy on such copies increased by more than 50% nonetheless. Tell me honestly, until you read it here, were you aware of that increase? If we insist on thinking of copyright as a property right, we might simply take the prices for digital copies of regulated books as the natural and efficient operation of competitive markets working against a background of private property — the proverbial invisible hand. But by treating copyright as a tax, and estimating that tax directly, we can see the role copyright plays in the prices we observe. What was hidden becomes visible. We can more readily see that market prices for books do not represent the invisible

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nue to the recording industry during the 1990s reduced the output of high-quality popular music). I will provide additional evidence on the issue in part III of this article. *See* text accompanying footnotes 135-151 *infra*.

[15] *See* Glynn S. Lunney, Jr., *Copyright and the 1%*, 23 Stan. Tech. L. Rev. 1 (2020).

[16] The most famous attempt that ended in failure was the attempt to regulate digital copies on the Internet through the proposed Stop Online Piracy Act (SOPA) and the Protect Intellectual Property Act (PIPA). *See, e.g.*, Glynn S. Lunney, Jr., *Copyright's Mercantilist Turn*, 42 Florida State L. Rev. 95, 102-03 (2015)

[17] *See* text accompanying notes 70-77 *infra*.

hand of the market, but the all too visible hand of copyright regulation. Prices for electronic copies of books are high, not because of the market, but because of copyright. Recognizing the role that copyright plays can enable agency for those responsible for ensuring that copyright rationally advances its constitutional purpose: promoting the Progress of Science.[18]

As to the second question of tax incidence, or more colloquially, who pays, the answer depends, inter alia, upon the intermediary market structure. For the book market, the data shows that the copyright tax is passed directly on to book consumers. In contrast, when copyright regulates products distributed through a natural monopoly market intermediary, such as radio broadcasts of music, it may be that all, or at least part, of the copyright tax will come out of the rents of the intermediary, rather than from the pockets of consumers.[19] In such a situation, the copyright tax may serve primarily as a rent redistribution mechanism. It takes rents that the radio station would collect from consumers in any event and forces the radio station to share some of those rents with content creators.[20] In such cases, copyright may impose no social cost at all, or at the very least, may impose less social cost for a given amount of tax-and-subsidy. Thinking of copyright as a tax and focusing on the question of tax incidence may allow us to identify ways to maximize the subsidy copyright provides, while minimizing the inefficiencies and distortions copyright causes by raising prices in the economy.

Third, even if we think of copyright as a tax, that label does not necessarily mean that copyright is undesirable. Even Macaulay, in the same speech where he characterized copyright as a tax, recognized its potential value.[21] The question, as Macaulay, recognized is what, if anything, we, as taxpayers, get in return.[22] Recognizing copyright as a tax, however, forces us to confront that question directly. Taxes are costly. To be justified, taxpayers must get something in return.

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[18] U.S. CONST., art. I, § 8, cl. 8.

[19] *See* Glynn S. Lunney, Jr., *Aereo and Copyright's Private-Public Performance Line*, 162 U. PENN. L. REV. ONLINE 205 (2014).

[20] *Id.*; *see also* Glynn S. Lunney, Jr., *A Tale of Two Copyrights*, 53 AKRON L. REV. 987 (2019).

[21] Macaulay, *supra* note 1, 199 ("The advantages arising from a system of copyright are obvious. It is desirable that we should have a supply of good books; we cannot have such a supply unless men of letters are liberally remunerated; and the least objectionable way of remunerating them is by means of copyright.")

[22] *Id.* ("I admit, however, the necessity of giving a bounty to genius and learning. In order to give such a bounty, I willingly submit even to this severe and burdensome tax. Nay, I am ready to increase the tax, if it can be shown that by so doing, I should proportionally increase the bounty. My complaint is, that my honourable and learned friend doubles, triples, quadruples, the tax, and makes scarcely any perceptible addition to the bounty.").

On what taxpayers receive in return, the story of copyright has long been that copyright regulation increases creative output and ensures society a wide, vibrant, and varied supply of books, movies, music, and dance. If we label copyright "property" or "natural right" or "moral entitlement," we may take this story for granted, as Justice Breyer seemed to do during oral argument in *Allen v. Cooper*.[23] These labels connote something intrinsically desirable and thereby diminish the need to test whether the story of copyright is true. If proof is needed, mere observation is enough. After all, we have copyright, and we have blockbuster movies. Correlation establishes causation, right?

The correct answer, of course, is that correlation does not establish causation. To test scientifically whether copyright increases creative output, we would need a randomized control trial. Specifically, we would need two otherwise identical societies. We would then randomly impose copyright regulation on one of them and see whether satisfaction with the resulting creative output increased. Unfortunately, such a randomized control trial is not available. Fortunately, though, the rise and fall of the sound recording copyright provides us with a natural experiment that approximates such a randomized control trial. Until 1972, there was no sound recording copyright in the United States.[24] In this pre-copyright era, from 1961 through 1971, revenue from sales of recorded music averaged only $7.9 billion annually in constant 2019 dollars ("$2019").[25] After

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[23] Transcript of Oral Argument, Allen v. Cooper, No. 18-877, at 36-37 (Nov. 5, 2019) (asking whether the 11th Amendment would insulate a state from claims of copyright infringement or from a due process claim where a state publicly performed the movies "Rocky, Marvel, whatever, Spider-Man, and perhaps Groundhog Day" and deprived the movie producer of revenue it might otherwise have earned).

[24] Congress imposed copyright regulation on sound recordings fixed after February 15, 1972. *See* Sound Recording Amendment, Pub. L. No. 92-140, § 3, 85 Stat. 391, 392 (1971).

[25] Sales revenue for 1973 through 2019 is from the Recording Industry Association of America (or RIAA) database. *See U.S. Sales Database*, RIAA, https://www.riaa.com/u-s-sales-database (last visited Mar. 13, 2021). For the years 1961-1972, it comes from articles in a magazine. *See RIAA Reports All-Time High*, Billboard Music Week, May 26, 1962, at 4 (reporting sales for 1960 and 1961); *RIAA List Industry Sales Figures*, Billboard, June 27, 1964, at 6 (reporting sales for 1963 and 1964); Hank Fox, *Record Merchandiser Sales Up 116% in 3 Years*, Billboard Music Week, July 22, 1967, at 1, 17 (reporting sales for 1965 and 1966); *$1.1 Billion in Sales Racked up in 1967*, Billboard, July 20, 1968, at 3 (reporting sales for 1967); *Recorded Sales Put at $1.7 Billion for '70*, Billboard Music Week, Nov. 7, 1970, at 3 (reporting sales for 1969 and 1970; *RIAA Shows Disk, Tape Sales Up*, Billboard, June 1, 1974, at 3 (reporting sales for 1972). I could not find reported sales for 1968 and 1971. As an estimate of sales in those years, I used an average of the two adjacent years. All sales data from 1961 through 1972 was inflated to 2019 dollars using the Bureau of Labor Statistic's CPI

Congress regulated sound recordings, effective February 15, 1972, sales revenue rose, and from 1972 through 1987, averaged annually $11.8 billion ($2019) — a 49.6% increase over the pre-sound recording copyright era sales.[26] After 1987, with the improvement of the economy and the introduction of the CD, sales revenue began to rise sharply, peaking at over $22 billion ($2019) in 1999.[27] During this period, from 1988 through 1999, revenue averaged $18.0 billion ($2019) annually — a 52.5% increase over the 1970s and 1980s, and a 128.2% increase over the 1960s.[28] In 1999, however, Napster opened its virtual doors.[29] After that, sales revenue began to decline and to decline sharply. By 2014, it had fallen to $7.2 billion ($2019) — a decline of 67.7% from its peak and a level not seen since 1966. From 2000 through 2019, revenue averaged just $12 billion ($2019) annually — a 36.3% decrease from the peak revenue 1990s.

This rise and effective fall of the sound recording copyright, and the corresponding rise and fall in industry revenue, allows us to test directly whether the story of copyright is true. Did we, as copyright taxpayers, get more and better music in the 1970s, 1980s, and 1990s than we got in the 1960s? Did we get less and worse in the post-file sharing 2000s? Existing empirical work uses various measures of music output and demonstrates that the answer to these questions is no.[30] Music output did not increase with the rise of revenue from the 1960s through the 1990s.[31] And it did not decrease as revenues began to fall in the 2000s.[32]

In this article, I present new data on this issue. While the existing studies used a variety of approaches to measure the quantity and quality of music output in a year, each of them has limitations.[33] The best data on

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calculator *See CPI Inflation Calculator*, U.S., Bureau of Labor Statistics, https://data.bls.gov/cgi-bin/cpicalc.pl (last visited Mar. 13, 2021).

[26] Based upon the RIAA data set forth in note 24 *supra*.

[27] *Id.*

[28] *Id*.

[29] *See* Lunney, Copyright's Excess, *supra* note 14, at 70.

[30] These studies include: Lunney, Copyright's Excess, *supra* note 14; Christian Handke, *Digital Copying and the Supply of Sound Recordings*, 24 Info. Econs. & Pol'y 15 (2012); Joel Waldfogel, *Copyright Protection, Technological Change, and the Quality of New Products: Evidence from Recorded Music Since Napster*, 55 J.L. & Econ. 715 (2012)

[31] *See* Lunney, Copyright's Excess, *supra* note 14, at 120-21, 130-33, 154-56.

[32] *See id.* at 120-21, 130-33, 154-56; Handke, *supra* note 29, at 16; Waldfogel, *supra* note 29, at 717.

[33] *See* Lunney, Copyright's Excess, *supra* note 14, at 84-86, 88, 90-94, 112 (discussing the use of sales, album count, appearance on the *Billboard* Hot 100 chart and Spotify stream counts as measures of the quantity and quality of music released in a given year); *see also* Glynn S. Lunney, Jr., *Empirical Copyright: A Case Study of File Sharing, Sales Revenue, and Music Output*, 24 Supreme Court Econ. Rev. 261 (2016).

music output so far comes from Spotify.[34] Spotify has released world-wide
stream count on its service from 2014 for songs that appeared on the Hot
100 before 2006. Unlike some of the other data, the Spotify stream count
data provides a direct measure of the satisfaction consumers derive from
listening to the music from each year the data set covers.[35] Even so, the
data has limitations.[36] It provides stream counts for Spotify listeners only;
it provides stream counts from 2014 only for the most popular 3,823 of
these older songs[37]; and it provides data only for songs that appeared on
the Hot 100 before 2006.

In this article, I present stream count data scraped from last.fm. It
adds a second set of users and thus can help us understand whether there
was something idiosyncratic about Spotify users that drove stream counts
in that data. More importantly, it increases the size and range of the data
available. It covers songs that appeared on the Hot 100 chart through
2019 and thus measures music output for an additional fourteen years,
compared to the Spotify data. It also covers more songs, gathering stream
count for each song that appeared on the year-end Hot 100 chart for each
year from 1963 through 2019 — a total of 5,700 songs.

Using multivariate regression analysis, I use this data to confirm the
conclusion that the previous empirical work on this issue has uniformly
reached. There is no statistically significant and positive correlation be-
tween industry revenue in one year and music output in the next.[38] To the
contrary, where a statistically significant correlation was found, it was neg-
ative.[39] More money in one year was associated with less or poorer qual-
ity music in the next, *ceteris paribus*. I also extend the existing work by
showing that Congress's decision to impose copyright regulation on sound
recordings, for those recordings fixed after February 15, 1972,[40] did not
increase music output.[41] As with increased revenue, the imposition of
copyright regulation either had no statistically significant correlation with
music output,[42] or where a statistically significant correlation was found, it

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[34] *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 112

[35] *Id.*

[36] *Id.*

[37] In my original work, I used the world-wide stream count in 2014 for the top
1,001 Spotify songs that appeared on the Hot 100 chart before 2006. *Id.* I later
extended the analysis to the top 3,823 such songs. *See* Glynn S. Lunney, Jr., COPY-
RIGHT'S EXCESS *Revisited*, 7 TEXAS A&M J. PROP. L. 59 (2021).

[38] *See* text accompanying notes 137-155 *infra*.

[39] *See* text accompanying notes 150-155 *infra*.

[40] Sound Recording Amendment, Pub. L. No. 92-140, § 3, 85 Stat. 391, 392
(1971).

[41] *See* text accompanying notes 137-155 *infra*.

[42] *See* text accompanying notes 137-155 *infra*.

was negative.[43] In other words, the imposition of copyright regulation on sound recordings either did not affect the quantity and quality of music output, or it reduced music output, *ceteris paribus*.

While labeling copyright as property allows us to largely ignore this question, recognizing copyright as a tax forces us to confront this question directly. If copyright is a tax, what do taxpayers receive in return? When we confront this question directly, the answer proves surprising: Nothing.

In the remainder of this article, I will explore more thoroughly each of the three questions that thinking of copyright as a tax presents. Before I do, I begin with a preliminary issue: Is it fair or accurate to characterize copyright as a tax?

I.   RHETORIC AND REALITY: IS COPYRIGHT A TAX?

Copyright is property. Copyright is monopoly. Copyright is natural right. Copyright is statutory privilege. Copyright is moral entitlement. Copyright is theft.[44] In truth, copyright is all of these things, and none of them. While each of these labels captures an aspect of the truth, none of these labels is fully accurate. It nonetheless matters which label we attach to copyright. Not for me and those like me who study copyright extensively. For me, whatever label we attach will not serve as a heuristic shortcut to determine the normative desirability of copyright. For me, copyright's normative desirability will depend upon a realistic and comprehensive assessment of copyright's costs and benefits. But for judges, legislators, and others who have not devoted their lives to a critical and rigorous study of copyright, or for those, such as the direct beneficiaries of the copyright subsidy, whose self-interest blinds them to the broader picture, a label can be wielded like a weapon and become a heuristic shortcut to normative desirability. For that reason, labels matter.

As a label, copyright is as much a tax as it is property.[45] Copyright is as much a tax as it is a natural right. Copyright is as much a tax as it is a moral entitlement.

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[43] *See* text accompanying notes 150-155 *infra*.

[44] One can rely on Proudhon for this proposition. *See* Pierre-Joseph Proudhon, What Is Property? 10 (1840). Proudhon, however, distinguished between property based upon capital and property based upon labor. In his view, only capital-based property was theft. Thus, to rely on Proudhon, one would also need to argue that copyright regulation primarily protects capital. Alternatively, one can argue that copyright is theft because it deprives individuals of their natural right to copy. *See* Glynn S. Lunney, Jr., *A Natural Right to Copy*, 99 B.U.L. Rev 2491 (2019). Or one can argue that copyright is theft because it uses force or the threat of force, albeit government-sanctioned force, to take money from book readers and give it to book producers.

[45] For recognition of the equivalence between public regulation and taxation, see John Brooks, Brian Galle, & Brendan Maher, *Cross-Subsidies: Government's Hid-*

True, the price surcharge copyright imposes on consumers is neither set directly by Congress, nor is it collected by the government. Neither point, however, undermines the appropriateness or accuracy of calling copyright a tax. We should not elevate form over substance. While the copyright tax may take a different form than some other taxes, it remains a tax nonetheless.

With respect to the first concern, copyright is a tax even though Congress does not set the copyright tax directly.[46] Rather than set it directly, Congress sets the copyright tax indirectly. Congress enacted copyright. Congress thus decided how tightly to regulate the production of copies of books and the other products that copyright regulates. By regulating the production and distribution of these products, copyright forces consumers to pay for these products a price higher than they would pay in the absence of copyright regulation.[47] That price surcharge is the direct result of congressional action. When Congress enacts copyright that restricts the production and distribution of the regulated products more extensively and for longer periods, the price surcharge or copyright tax increases. When Congress enacts copyright that restricts the production and distribution of the regulated products less extensively or for shorter periods, the price surcharge or copyright tax decreases.[48]

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den Pocketbook, 106 Geo. L.J. 1229, 1247-48 (2016) (recognizing patent protection as a type of benefit tax); Richard A Posner, *Taxation by Regulation*, 2 Bell J. Econ. & Mgmt. Sci. 22, 25 (1971) (recognizing internal subsidies that regulated rates can create).

[46] Of course, for some aspects of copyright regulation, government does set the tax directly. For example, under the ASCAP and BMI consent decrees, federal courts have the final say on whether the rates these collectives charge for the blanket licenses they offer for public performances of musical works are reasonable. Similarly, under sections 114 and 115 of the Copyright Act, Copyright Royalty Judges set the rates for certain mechanical licenses. *See* Lunney, Copyright's Excess, *supra* note 14, at 204-05.

[47] For the data on this, see text accompanying notes 55-78 *infra.* I understand the argument that the books would not exist but for copyright. Too bad, it's wrong. For data on this second issue in the recording industry, see text accompanying notes 138-155 *infra.*

[48] David Ladd once argued that imposing exceptions to and limitations on copyright, or requiring proof of harm to show copyright infringement, represented government rate setting. David Ladd, *The Harm of the Concept of Harm in Copyright: The Thirteenth Donald C. Brace Memorial Lecture*, 30 J. Copyright Soc'y 421, 431-32 (1983) ("Every limitation on copyright is a kind of rate setting. And however high-minded, every person who thus sets rates applies a value judgment: how much the author or publisher should receive. . . . This control of idea laden copyrighted works is more wisely left with the people than vested in a government tribunal, a statutory license fee, or even a sincere judge searching a record for undefined harm."). Such rate setting was inappropriate, in his view, because it made a judgment about a product's value. That question, in his view, is better left

That Congress did not set the price surcharge and thus the amount of the tax directly does not mean that copyright is not a tax. There are many taxes, local, state, and federal, where the legislature does not set the dollar amount of the tax directly. Governments routinely set income, property, and sales taxes as a percentage of a person's income, or of a property's value, or of a sales' price. The federal income tax, for example, required an individual to pay a marginal tax rate of 37% on taxable income over $518,400 in 2020.[49] In that sense, the government set a tax rate. Yet, the federal government did not set the actual amount of the tax an individual must pay directly. The actual amount of income tax an individual must pay will depend on their income. An individual's income is not set by the government through the tax code, but through the market. As a result, the actual amount of federal income tax an individual must pay is set through a combination of government action and market forces. Similarly, government also does not determine a property's value or a good's sales price. As with income, it leaves those determinations to the market. Again, rather than set the tax through government action alone, the dollar amount individuals must pay for these taxes are set through a combination of government action and market forces.

Copyright regulation works in the same way. Congress did not set the amount of the copyright tax directly.[50] It did not even set a tax percentage directly, as it does for the income, property, and sales tax. Nevertheless, Congress did determine how extensively copyright regulates the production and distribution of certain products. That determination, working in combination with market forces, then effectively sets the increased price consumers pay for the regulated products. Just like income or property or sales tax, that increased price — the copyright tax — is set through a com-

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to the market. As Ladd explained: "[H]owever high-minded [such rate setting], every person who thus sets rates applies a value judgment: how much the author or publisher should receive." That question, Ladd insisted, is "more wisely left with the people," presumably by allowing people to demonstrate what they feel an author should receive by purchasing the regulated product and thus revealing their preferences in a market. But that reasoning contradicts itself. If imposing an exception to, or limitation on, copyright regulation represents government rate-setting, then so too does a decision not to impose an exception or limitation. They are two sid es of the same coin. Both decisions make a judgment about the product copyright regulates. The issue is reciprocal. If imposing an exception to or limitation on copyright is government rate-setting, then so too is imposing copyright itself.

[49] *IRS Provides Tax Inflation Adjustments for Tax Year 2019*, IRS (Nov. 15, 2018), https://www.irs.gov/newsroom/irs-provides-tax-inflation-adjustments-for-tax-year-2019.

[50] Government does set the copyright tax directly for certain compulsory licenses and reviews additional taxes for reasonableness as part of the ASCAP and BMI consent decrees. *See* Lunney, Copyright's Excess, *supra* note 14, at 60-67.

bination of government action and market forces. Yet, just like income or property or sales taxes, copyright remains a tax even though it relies, in part, on markets forces to determine the precise dollar amount taxpayers have to pay.

Similarly, copyright is a tax even though the government does not collect the tax and then redistribute it back to the regulated industries through the usual budgetary process. To justify applying the tax label, this difference in form does not matter. For the last ten years, the federal government has spent roughly twenty billion dollars annually on agricultural subsidies.[51] To pay for these subsidies, government collects tax revenue from a variety of sources. To determine the amount of these subsidies and pay them out, government authorizes these subsidies through the usual budgetary process. These subsidies are undeniably a tax-and-subsidy system. As such, both the taxes and the subsidies distort individual behavior in predictable ways.[52] They generate wasteful rent-seeking as those who must pay the tax try both to minimize the subsidies and to shift the tax burden to others. They generate wasteful rent-seeking as those who receive the subsidies try both to increase the size of the subsidies and to capture more of them for themselves.[53] Depending on the precise nature

[51] *See, e.g.*, Renee Johnson & Jim Monke, What Is the Farm Bill (Congressional Research Service 2016) (fig. 3), https://fas.org/sgp/crs/misc/RS22131.pdf). Other estimates are higher. *See, e.g.*, Chris Edwards, *Agricultural Subsidies*, Downsizing the Federal Government (Apr. 16, 218), https://www.downsizinggovernment.org/agriculture/subsidies (estimating subsidies at over $20 billion annually).

[52] For some of the literature on the potential distortions associated with taxes, see U.S. Gov't Accountability Office, Reform Debate: Background, Criteria & Questions 41 (2005) (GAO-05-1009SP), http://www.gao.gov/products/gao-051009sp.pdf ("Three choices commonly discussed are the choice between work and leisure, the choice between consumption and saving, and the choice between domestic and foreign investment."); Louis Kaplow, The Theory of Taxation and Public Economics 317 (2008) (stating that incentive concerns "involving labor effort" are "the focus of most optimal tax analysis"); Joel Slemrod & Shlomo Yitzhaki, *Tax Avoidance, Evasion, and Administration, in* 3 Handbook of Public Economics 1423, 1427, 1454-57 (Alan J. Auerbach & Martin Feldstein eds., 2002); Emmanuel Saez, Joel Slemrod & Seth H. Giertz, *The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review*, 50 J. Econ. Literature 3, 3 (2012) ("Indeed, until recently, the labor supply elasticity was the closest thing that public finance economics had to a central parameter."); Joel Slemrod, *The Consequences of Taxation*, Soc. Phil. & Pol'y, July 2006, at 73, 73 ("[T]raditionally, economists have focused on the behavioral responses of labor supply, saving, and investment. . . .")

[53] *See, e.g.*, Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies, and Rents*, 5 Western Econ. J. 224 (1967) (showing that the availability of rents will lead to the expenditure of resources to capture them); *see also* Richard A. Posner, Antitrust Law: An Economic Perspective 11 (1976) ("[A]n opportunity to obtain a lucrative transfer payment in the form of monopoly profits will attract real resources into efforts by sellers to monopolize, and by consumers to prevent being

of the taxes used to pay for the subsidies, the taxes may distort individual decisions on how much to work, what kind of work to do, and how much to save. Depending on the precise nature of the subsidies, the subsidies may distort who becomes a recipient and the recipients' decision on how much to work, what crops to grow, and whether to farm or engage in some other form of work. These distortionary effects represent the potential social cost of any tax-and-subsidy system. As long as these distortionary effects are present, the system remains a combination of taxes and subsidies even if we change its form.

Imagine, for example, that instead of raising the revenue for the agricultural subsidies through general tax revenue, and instead of setting the amount of the subsidy itself, the government authorized farmers to add and collect a surcharge to the prices of the crops they grow. How would the government achieve that? Easy. Simply regulate entry into agricultural markets. By regulating entry, government could increase the prices that consumers pay and farmers receive for their products in the market. By regulating entry to the proper extent, the government could enable farmers to set, collect, and receive exactly the same $20 billion dollars that they currently receive in express subsidies directly, in the form of higher prices. With such an approach, the government would not need to collect $20 billion in taxes, and it would not need to authorize the $20 billion in subsidies through the usual budgetary process. Rather than setting the subsidy as a specific number through the budgetary process, government would set the subsidy by adjusting the restrictions on entry. Regulate entry more tightly, and the tax and subsidy increase. Relax the restrictions on entry, and the tax and subsidy fall. Through regulations on entry, the government could impose whatever tax and subsidy it wanted — all without collecting a dime in additional tax revenue or working through the usual budgetary process for the subsidy.

A simple example illustrates this equivalence. Consider the market for corn. To simplify the model, we shall assume a linearly-decreasing demand curve with a constant marginal cost of $1 (which includes a reasonable return on investment). If the market for corn were competitive, then the price of corn, or P*, would equal $1 — its marginal cost.[54] Some consumers would be willing to pay more than $1 for corn, but in a competitive market, they would not have to. If any farmer tried to raise her price for

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charged monopoly prices."); Richard A. Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807, 817-20 (1975) (same).

[54] *See*, *e.g.*, F.M. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 9-10 (1970); Po-Hsuan Lin, Alexander L. Brown, Taisuke Imai, Joseph Tao-yi Wang, Stephanie W. Wang & Colin F. Camerer, *Evidence of General Economic Principles of Bargaining and Trade from 2,000 Classroom Experiments*, NATURE HUMAN BEHAVIOR (Aug. 2020).

corn to capture more of consumers' reservation values, those consumers could simply buy from one of the many other farmers offering corn at $1 in the market. As a result, in a competitive market, any difference between a particular consumer's reservation price or willingness to pay, and the market price for corn, would remain in that consumer's pocket as consumer surplus. Figure 1 illustrates this equilibrium.

Figure 1. Corn: A Competitive Market Equilibrium

Consumer Surplus

P*

Q*
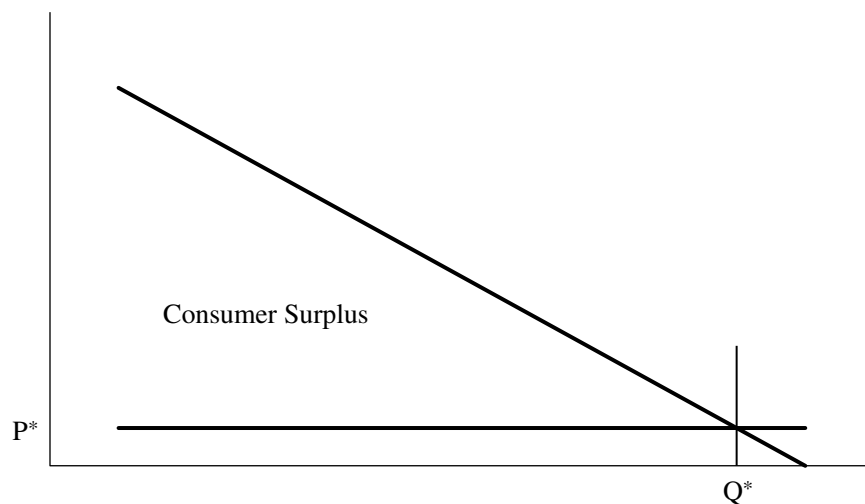
Assume that the government, for whatever reason, has decided that the price of corn is too low. It wants to increase the price of corn in order to provide additional money to corn producers. There are a variety of mechanisms that the government could use, but for our purposes, we can focus on two: (i) entry regulation; and (ii) a tax on corn sales, returned to corn producers as an express subsidy. Assume with the first that the government restricts entry into corn production, so that effectively, a single entity sets the output and price for corn. Under such entry regulation, the corn producing entity will set the output and price of corn to maximize its producer surplus. In the absence of an ability to price discriminate, the entity will set output at the level where the marginal cost of an additional unit of corn and the marginal revenue from an additional unit of corn are equal, and set the price for corn to clear the market for that level of output.[55] Such a pricing strategy converts half of the consumer surplus (or

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[55] *See, e.g.*, HAL. R. VARIAN, INTERMEDIATE MICROECONOMICS: A MODERN APPROACH 414-16 (5th ed. 1999).

CS), shown in Figure 1, into producer surplus (or PS).[56] Because this strategy raises prices above a competitive level, some consumers will be unable to afford the higher prices and will have to do without corn, or as much corn, in their diet. This pricing strategy will thus impose a dead-weight loss (or DWL) for these consumers. Under the assumptions made, this deadweight loss will equal one-fourth of the consumer surplus shown in Figure 1.[57] Figure 2a illustrates this entry-regulated equilibrium.

*Figure 2a. Corn: Entry-Regulated Equilibrium*
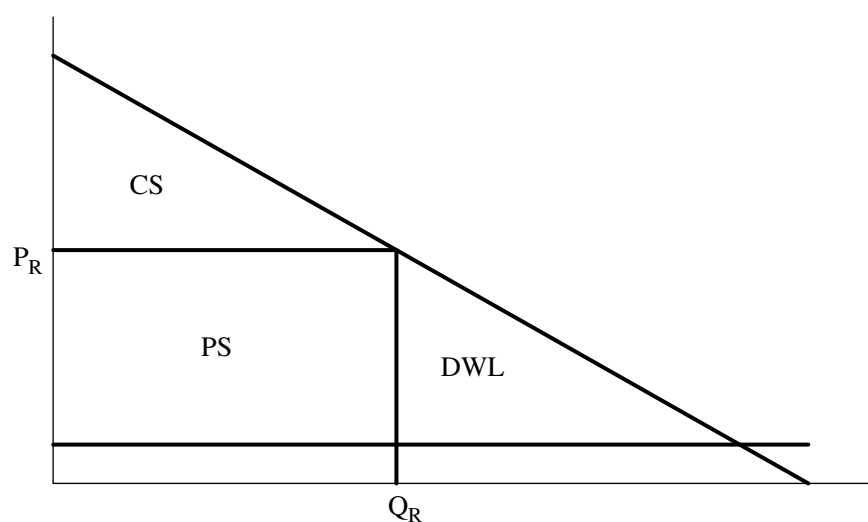
Alternatively, the government could raise corn prices by imposing a direct tax-and-subsidy system on an otherwise competitive corn produc-tion market. Specifically, the government could impose a tax on each unit of corn sold and return the resulting revenue to corn producers as a sub-sidy. By setting the unit tax, T, on corn sales equal to the difference be-tween the competitive price, P^*, and the entry-regulated price, P_R, the market equilibrium and welfare consequences would be identical. Figure 2b illustrates this tax-and-subsidy equilibrium.

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[56] *See* Glynn S. Lunney, Jr., *Reexamining Copyright's Incentives-Access Para-digm*, 49 VAND. L. REV. 483, 557 n.283 (1996).
[57] *Id.*

Figure 2b. Corn: Express Tax-and-Subsidy Equilibrium
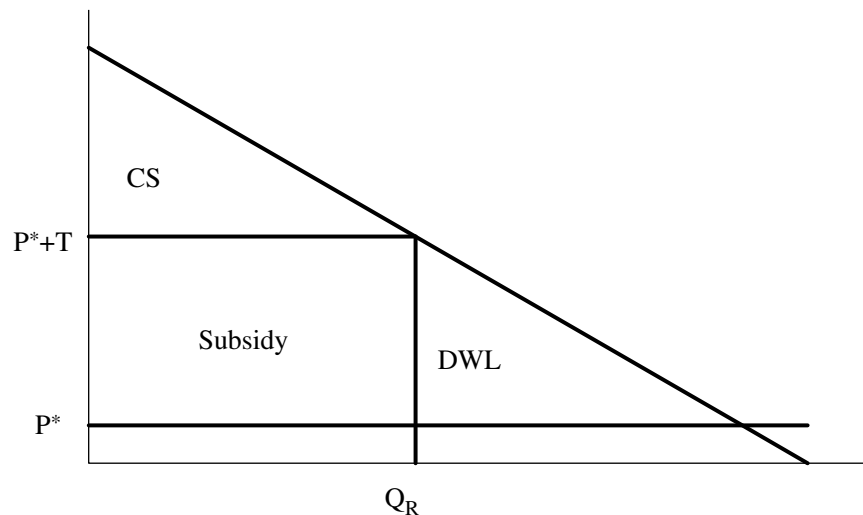
As Figure 2a and 2b illustrate, whether the government provides the subsidy directly through an express tax-and-subsidy mechanism, or indirectly, through restrictions on entry, the welfare consequences are the same. Same deadweight welfare loss.[58] Same conversion of consumer surplus into producer surplus or subsidy.[59] As a result, the distortionary effects of the indirect, entry-regulation mechanism would be the same as they would be for the direct tax-and-subsidy system. There would be the same distortions on individual work and consumption decisions. There would be the same regulatory rent-seeking losses. For these welfare losses, whether the revenue for the subsidy passes through the hands of the government is irrelevant. In that sense, regulating entry into farming would be every bit as much a tax-and-subsidy system as the express mechanism of agricultural subsidies we have today.

Copyright is the same. It restricts entry into the markets it regulates.[60] By doing so, copyright raises prices for the associated products.[61]

[58] ROBERT BORK, THE ANTITRUST PARADOX 92-101, 110-15 (1978) (explaining how deadweight loss arises from supracompetitive pricing and identifying it as a social cost of monopoly); WALTER BOWMAN, JR., PATENT AND ANTITRUST LAW: A LEGAL AND ECONOMIC APPRAISAL 1-8 (1973) (same).

[59] RICHARD POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE 11 (1976) ("An opportunity to obtain a lucrative transfer payment in the form of monopoly profits will attract real resources into efforts by sellers to monopolize, and by consumers to prevent being charged monopoly prices").

[60] For empirical evidence of this, *see* text accompanying notes 61-78 *infra.*

[61] For empirical evidence of this, *see* text accompanying notes 61-78 *infra.*

It then returns the additional revenue from those higher prices as a subsidy to the producers in those markets. This should not come as a surprise to readers. Higher prices are where the "incentives" in copyright's incentives-access paradigm come from. As with the agricultural subsidies, whether the tax-and-subsidy are imposed and collected expressly, or implicitly, by regulating entry, the distortionary consequences are the same. Same distortions on work and consumption decisions. Same regulatory rent-seeking losses. For that reason, copyright is every bit as much a tax-and-subsidy system as it would be if Congress imposed an express tax on book sales and re-distributed the resulting tax revenue to book publishers through an express subsidy.

This equivalence readily differentiates copyright from other forms of government regulation. Other forms of government regulation, such as workplace and product safety regulations, may increase prices. However, they increase prices not to provide a subsidy to the regulated industry, but because they force the regulated producers to use higher cost production methods. Traditional personal and real property are also not taxes. While they too may raise prices of the associated *rem*, assigning ownership of a private good, such as an apple or land, provides a mechanism to resolve disputes over conflicting uses of the rem at issue. For rivalrous goods, such a mechanism is essential. Do I get to eat the apple, or do you get to bake it into a pie? Where consumption is rivalrous, only one use or the other can be made. Assigning ownership determines who gets to decide. But the printing of a novel is non-rival. I can print the novel, and you can too. Copyright does not resolve disputes over conflicting, rivalrous uses in the way that traditional property rules do. Other forms of government regulation are thus readily distinguishable and are not, as copyright is, a tax.

We can see this difference between copyright and other forms of government regulation most directly by asking whether the government regulation at issue can be replaced by an express tax-and-subsidy system. Copyright can. Simply impose a six-dollar-a-book tax on each copy of a book sold, collect the tax, and return the tax receipts as an express subsidy to the book's author and those with whom the author contractually agreed to share the subsidy. The result of such an express tax-and-subsidy system would be nearly identical to the markets for copies of books that we see today with copyright regulation. In contrast, such an express tax-and-subsidy system cannot replace other forms of government regulation, including traditional property ownership. Licensing requirements that regulate entry, such as the bar exam for attorneys, probably come closest. Even licensing requirements, however, have, or at least are supposed to have, a quality control function. And if the quality control justification becomes

entirely pre-textual, then courts may rightfully strike such entry restrictions down under rational basis scrutiny.[62]

Copyright then is not like other forms of government regulation, including traditional property itself. It is a pure entry-regulation mechanism and could be entirely replaced with an express tax-and-subsidy system. Copyright regulation differs from such an express tax-and-subsidy system only in form. It is therefore perfectly fair to characterize copyright as a tax.

However, the difference in form, while not material to the accuracy of the tax label, does matter in another way. By restricting entry, rather than setting the tax-and-subsidy directly, Congress has eliminated the oversight that comes from setting the subsidy directly and expressly through the usual budgetary process. Every year, agricultural interests must defend their subsidy against competing claims on the federal budget. And Congress has to make an express decision that the subsidy represents the best use of scarce public resources. If technology and consumer preferences change, or other exogenous shocks occur, the budgetary process for an express subsidy forces Congress to consider those changes and evaluate whether the subsidy should be higher, lower, or the same as a result. In contrast, when using an indirect mechanism, such as a restriction on entry, similar shocks may lead to sudden, large, and unexpected changes in the amount of the tax-and-subsidy. Unlike an express tax-and-subsidy mechanism, these large changes in the tax-and-subsidy that an indirect, entry restriction mechanism imposes and provides may occur without the oversight that such a change in an express tax-and-subsidy system would require.

Some may see this dynamism as a good thing. Efficient prices are supposed to move up and down without government intervention. But we should not mistake the movement of the copyright tax-and-subsidy for the movement of prices in efficient markets. In efficient markets, prices rise or fall when costs rise or fall. As we shall see, this is not the case in the markets for copyright-regulated products.[63] The revenue and prices for recorded music, for example, rose as law and technology came together to make copyright regulation more effective, increasing the extent to which producers could extract rents from the associated markets. They fell when law and technology came together to make copyright regulation less effective, reducing the extent to which producers could extract rents from the

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[62] *See*, *e.g.*, St. Joseph Abbey v. Castille, 835 F. Supp. 2d 149 (E.D. La. 2011) (striking down state statute that restricted entry into the casket market where the court found the health and safety justifications that the state offered for the statute entirely pretextual).

[63] *See* text accompanying notes 74-83 *infra*.

associated markets. A change in the underlying marginal cost of recorded music justified neither the rise nor the fall.

So, in that sense, copyright is not just a tax. It is worse than a tax. It has the same distortionary consequences as an express tax-and-subsidy system. Yet, by imposing the tax and providing the subsidy indirectly through restrictions on entry, it can bypass the need for express congressional action and hence, oversight. Unless we recognize copyright for the tax that it is, copyright will continue to avoid the much-needed political scrutiny it deserves.

In this respect, copyright is much like the use of special exemptions or deductions in the tax code to subsidize certain activities. Take the tax deduction for interest paid on a home. To the extent the money borrowed to buy a home is a form of investment, the deduction is legitimate and consistent with the broader definitions of income and expense that the tax code uses. Investment expenses are generally deductible. However, to the extent that the money borrowed is to provide a more comfortable place to live, the deduction is inconsistent with the broader definitions of income and expense that the tax code uses. Living expenses are not generally deductible. Stanley S. Surrey coined the phrase "tax expenditures" for deductions and exclusions in the income tax code that subsidize certain activities, such as home ownership.[64] As with copyright, these tax expenditures are not express tax-and-subsidy mechanisms. Government does not collect additional tax revenue and then formally return it to homeowners as an express subsidy. Instead, as with copyright, these are implicit subsidies. Through the home mortgage interest deduction, government subsidizes home ownership by failing to collect taxes that, based on the broader definitions of income and expense the tax code employs, it otherwise should.

As a result of Surrey's work, today, the Office of Budget and Management and the Joint Committee on Taxation publish annual summaries of such tax expenditures, known as the Tax Expenditure Budget.[65] Doing so provides Congress with a clearer and more complete picture of the budgetary issues Congress faces and the priorities its actions reflect. I propose that we do the same for copyright and other "rights expenditures."[66] In either case, the goal is not a perfect measure of the subsidy, but a rough, ballpark estimate. When Congress restricts entry into an area of economic activity in order to enable the producers to raise prices and collect an implicit subsidy, we should estimate the extent of that tax and subsidy and

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[64] STANLEY S. SURREY, PATHWAYS TO TAX REFORM 6 (1973).

[65] *See*, *e.g.*, THE TAX POLICY CENTER, BRIEFING BOOK (*What Is the Tax Expenditure Budget?*) (2020), https://www.taxpolicycenter.org/briefing-book/what-tax-expenditure-budget.

[66] *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 202.

provide that information to Congress in the form of a Rights Expenditure Budget. To begin that project, in the next section, I attempt to estimate the tax-and-subsidy Congress provides through copyright for popular novels and music.

II.   THE COPYRIGHT TAX: ESTIMATION AND INCIDENCE

If we treat copyright as a tax, then, our first task is to estimate the magnitude of the copyright tax. In the next sections, I focus on estimating the copyright tax for: (i) copies of popular books; and (ii) public transmissions of sound recordings. In these sections, I estimate not only the magnitude of the copyright tax for these two industries, but also estimate how the copyright tax has changed in both as we moved from analog to digital distribution. To begin our examination of these issues, I turn to an estimate of the copyright tax on popular books.

A.   "A Tax on Readers": The Copyright Tax on Popular Books

Our task here is simple. We seek an estimate of how much more copyright's regulatory regime forces consumers to pay for a copy of a popular book. As I mentioned in the introduction, in an ideal world, the data would come from a randomized control trial (or RCT). In a RCT, we would randomly assign varying degrees of copyright regulation to separate, but otherwise identical markets. We would then observe products and prices in those markets and determine how they differ. Are there differences in the prices? Are there differences in the books available? So long as the extent of copyright regulation is the only variable that changes between the test and control markets, we could plausibly draw causal inferences that whatever changes we see in the products and prices available are due to the differing degrees of copyright regulation. Unfortunately, that sort of ideal experiment and data is not available. Instead, we must make do with differences in the existence, scope, and duration of copyright regulation that have arisen naturally, and then see what differences we can observe in the associated markets. As I and many others have acknowledged, these sorts of natural experiments face inherent weaknesses that may limit our ability to draw conclusive causal inferences.[67] They can nevertheless provide some helpful insight. Certainly, they are better than no data at all and force us to ground our thinking in empirical realities, as opposed to wishful thinking.

To determine the amount of the tax that copyright imposes on book sales, I attempted to identify a situation where there were two sets of equivalent books sold in otherwise identical markets, where the only difference is that copyright regulates the reproduction and distribution of one

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[67] See, e.g., LUNNEY, COPYRIGHT'S EXCESS, supra note 14, at 119.

set of books, but not the other.[68] One such difference is that copyright presently regulates the production and distribution of twenty-first century books, but not nineteenth century books.[69] As one possible way of estimating the price surcharge copyright regulation imposes, I therefore collected by hand a novel data set containing the prices for paper and electronic copies of: (i) the most popular two hundred fifty books from the nineteenth century; and (ii) the most popular two hundred fifty books from the twenty-first century.[70] To ensure the most direct apples-to-apples comparison of pricing data, I took all prices from Amazon.[71] For the paper copies, I used the lowest price for a new English-language copy of the book at issue, whether paperback, hard cover, or otherwise, that appeared on the first page of the Amazon results. For the digital or electronic copies, I used the lowest price for a Kindle English-language version that did not rely on a special access program, such as Kindle Unlimited or Amazon Prime. Here's what I found.

For the nineteenth century books, the prices for a paper copy ranged from $1.49 for *The Strange Case of Dr. Jekyll and Mr. Hyde* to $20.99 for *Conversations with Goethe.* For three of the 250 nineteenth century books,[72] a new paper copy edition was not available in English. For the

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[68] Others have relied on similar natural experiments to test various propositions with respect to patent and copyright. *See*, *e.g.*, Michela Giorcela & Petra Moser, *Copyright and Creativity: Evidence from Italian Operas*, J. POL. ECON. (forthcoming 2021) (arguing that France's takeover of certain Italian states and the imposition of French law, including copyright, led to increased output of operas); Paul Heald, *How Copyright Keeps Works Disappeared*, 11 J. EMP. LEGAL STUD. 829 (2014) (showing that copyright regulation reduces the availability of copies of the books that copyright regulates); Xing Li, Megan MacGarvie & Petra Moser, *Dead Poets' Property - How Does Copyright Influence Price?*, 49 RAND J. ECON. 181 (2018) (showing that copyright regulation increases the price of copies).

[69] In the United States, the copyright has expired for all books published before January 1, 1924. Thus, even if the United States originally regulated one of the nineteenth century books under copyright, that regulation has expired. Moreover, in the nineteenth century, the United States did not regulate through copyright the production and distribution of copies of books by non-U.S. authors. Thus, for some of the nineteenth century books, such as Charles Dickens, *A Tale of Two Cities*, U.S. copyright regulation never applied.

[70] I identified the top two hundred fifty books for both centuries using the list at www.goodreads.com. Best Books of the 19th Century, May 9, 2020, https://www.goodreads.com/list/show/16.Best_Books_of_the_19th_Century); Best Books of the 21st Century, May 9, 2020, https://www.goodreads.com/list/show/7). The point is not that these lists are definitive. Rather, both provide a list of top novels that I did not cherry-pick.

[71] I hand coded the prices found for the books at issue over May 9-11, 2020.

[72] In this article, I will not address the argument that copyright regulation is necessary to ensure that copies are available. *See* Eldred v. Ashcroft, 537 U.S. 186, 207 (2003) (reasoning that Congress could rationally extend copyright terms on the grounds that "longer terms would encourage copyright holders to invest in the

remaining two hundred forty-seven, the mean price for a paper copy was $5.54, with a median price of $4.98. For an electronic copy of the nineteenth century books, the prices ranged from zero to $10.99. I did not find one of the nineteenth century books available in a Kindle English-language format. For the remaining two hundred forty-nine, the mean price for an electronic copy was 62 cents, with a median price of zero.

In contrast, for the twenty-first century books, the prices for a paper copy ranged from $3.99 for *Marley and Me: Life and Love with the World's Worst Dog* to a high of $76.91 for *The Millennium Trilogy*. For four of the two hundred fifty twenty-first century books, a new paper copy edition was not available in English. For the remaining two hundred forty six, the mean price for a paper copy was $11.55, with a median price of $11.32. For an electronic copy of the twenty-first century books, the prices ranged from $1.99 to $21.99. I did not find three of the twenty-first century books available in a Kindle English-language format. For the remaining two hundred forty-seven, the mean price for an electronic copy was $9.96, with a median price of $9.99.

Figure 3 illustrates the distribution of prices for paper copies of the 19th and 21st century books.

Figure 3. Distribution of Paper Copy Prices: Top 19th Century Books vs. Top 21st Century Books
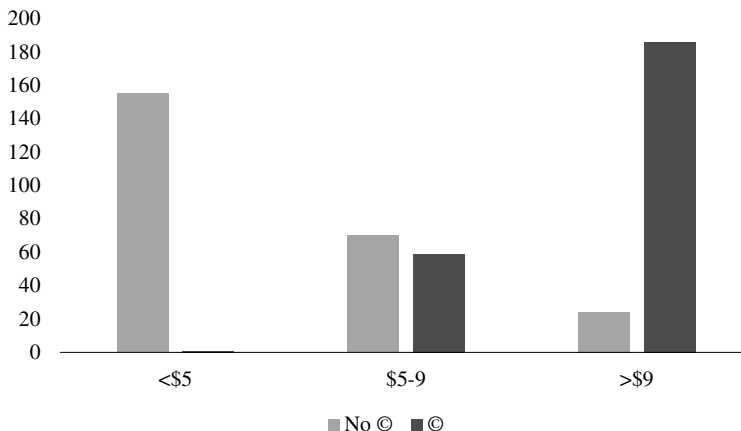

restoration and public distribution of their works"). I would note however that the data presented in this article does not support the argument. Where a new paper copy edition of three of the two hundred fifty nineteenth century books were not available on Amazon, a new paper copy edition of four of the two hundred fifty twenty-first century books were similarly not available. Where a Kindle edition of one of the two hundred fifty nineteenth century books was not available on Amazon, a Kindle edition of three of the two hundred fifty twenty-first century books were similarly not available.

As Figure 1 illustrates, the pricing patterns for paper copies of nineteenth and twenty-first century books are inverted. A consumer can purchase a paper copy of most of the nineteenth century books, 62.2%, for under $5. In contrast, for most of the twenty-first century books, 75.6%, a consumer will pay more than nine dollars for a paper copy. Similarly, less than 10% of the nineteenth century books in the sample had a paper copy price more than nine dollars. In contrast, only one of the twenty-first century books had a paper copy available for less than five dollars. In technical terms, copies of the nineteenth century books were generally cheap. Copies of the twenty-first century books were generally expensive.

We see a similar divide in prices for digital copies. Figure 4 presents the distribution of prices for digital copies of the books in the data set.

Figure 4. Distribution of Digital Copy Prices: Top 19th Century Books vs. Top 21st Century Books
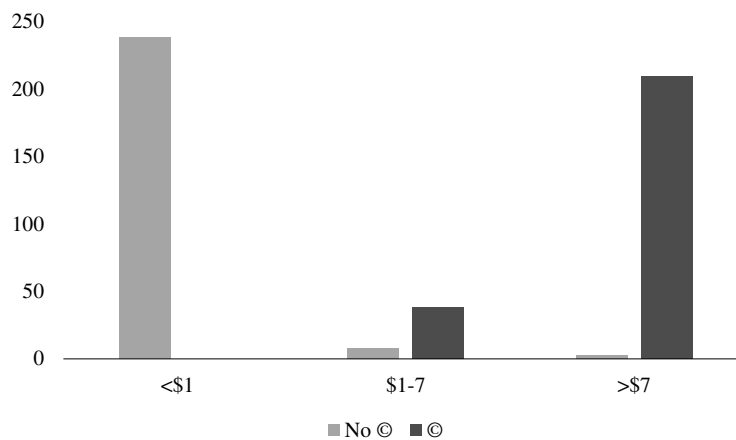
As we saw for paper copies in Figure 3, Figure 4 demonstrates a similarly sharp divide in pricing for digital copies of the books at issue. For 95.6% of the nineteenth century books, a consumer will pay less than one dollar for an electronic copy. Indeed, the median price for an electronic copy of one of the nineteenth century books is zero.[73] That means that a consumer today can obtain an electronic copy of a majority of the nineteenth century books in the data set for free. In sharp contrast, there is not a single twenty-first century book with an electronic copy in that price range. For more than 70% of the twenty-first century books, a consumer will pay more than nine dollars for an electronic copy.

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[73] Moreover, all of these digital copies are in Kindle format. None represents the difficult to read scanned pdfs you can find of older books for free in Google books.

Does Copyright Create Monopoly? This data conclusively resolves the debate over whether copyright creates monopoly and constitutes a barrier to entry.[74] For the twenty-first century books in the data set, copyright is a barrier to entry and does create monopoly. Two aspects of the data demonstrate the presence of a barrier to entry and monopoly. First, the prices for copies, whether analog or digital, of the twenty-first century books are higher, on average, than prices for the copies of the nineteenth century books. Second, and more conclusively, the cost savings that switching from analog to digital copies generates are passed along to consumers for the nineteenth century books, but not for the twenty-first century books.

With respect to the first point, prices are undeniably higher for copies, whether analog or digital, of the twenty-first century books than for the nineteenth century books. Moreover, for both sets of books, there is also a wide range of prices. If we define monopoly as a situation where a defined product market has only one producer, deciding whether copyright creates monopoly turns on how we define the relevant product market. Is the relevant product market books generally? Is it two markets, one for nineteenth century books and one for twenty-first century books? Is it two markets, one for digital copies and one for paper copies? Or is it many markets, one for digital copies of each book and a second for analog copies of that book? Or to put it another way, does a book, such as *The Hunger Games*, compete with another somewhat similar book, such as *Divergent*, or not? If these books, or copies of them, compete, then they are properly considered part of the same market. If they do not, then each book defines its own market. Indeed, depending on how consumers actually behave, we may have separate markets for the digital and for the paper copies of even the same book.

Answering these questions requires us to decide, in turn, whether we mean "compete" in the ordinary sense of the word or in the technical economic sense. More than twenty years ago, I used an example involving Coke and Pepsi to illustrate these two meanings of the word "compete."[75]

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[74] As I have said before, I am not particularly interested in whether we characterize these higher prices as "monopoly" or not. *Compare* Edmund W. Kitch, *Elementary and Persistent Errors in the Economic Analysis of Intellectual Property*, 53 Vand. L. Rev. 1727, 1729-38 (2000) (explaining why the characterization of these higher prices is monopoly is wrong). But, in this article, I am exploring why labels matter. The pricing data shows that as a label, as well as in the technical economic sense, the term monopoly is fully appropriate for the effects copyright regulation has on the markets for copies of popular books.

[75] *See* Glynn S. Lunney, Jr., *Trademark Monopolies*, 48 Emory L.J. 367, 424-26 (1999); *see also* Mark Lemley & Mark McKenna, *Is Pepsi Really a Substitute for Coke? Market Definition in Antitrust and IP*, 100 Geo. L.J. 2055, 2056 (2012) (extending the implications of the model).

In the ordinary sense, two products compete if they have the same general characteristics and consumers will make do with one if the other is not available. Coke and Pepsi are both brown, carbonated colas. If a restaurant does not have Coke, I am likely to settle for a Pepsi. In that general sense, Coke and Pepsi compete.

However, Coke and Pepsi probably do not compete in the technical sense. In the technical sense, whether products compete depends upon their cross-elasticity of demand. Two products compete, in the technical sense, only where a small but significant increase in the price of one will lead enough consumers to actually switch to the other to make the price increase unprofitable.[76] For years, I have tested whether Coke and Pepsi compete in this technical sense by posing a simple hypothetical to my students. If there are two vending machines in the hallway, and one offers Coke products and the other Pepsi, both for 50 cents, how many of you would prefer Coke? Of those who prefer Coke, if the price at the vending machine offering Coke products increased to 55 cents, how many would switch to Pepsi? Invariably, almost no one raises their hand. I then contrast that with a second hypothetical. You need gas for your car, and you can stop equally easily at either a Chevron or an Exxon gas station. Both have gas priced at $1.50 per gallon. How many would stop at the Exxon? For those who preferred Exxon, if the prices at the Exxon station increased to $1.65 per gallon (the same 10% increase in price I used in the Pepsi-Coke hypothetical), would you switch to the Chevron station? In this version of the hypothetical, I see far more hand raising. While informal, that suggests that Chevron and Exxon retail gasoline compete against each other in a way that Coke and Pepsi do not.[77]

For our purposes, the technical, not the general, meaning of competition is the one that matters. To establish the first theorem of welfare economics, and to show that markets more generally can lead to a Pareto optimal allocation of resources,[78] it is not enough that markets are com-

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[76] *See* Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines § 1.11 (1992); *see also* Satellite Television & Associated Res., Inc. v. Cont'l Cablevision, Inc., 714 F.2d 351, 355 n.5 (4th Cir. 1983) (applying *Guidelines* approach to define relevant product market), *cert. denied*, 465 U.S. 1027 (1984); Bon-Ton Stores, Inc. v. May Dept. Stores Co., 881 F. Supp. 860, 872 (W.D.N.Y. 1994) (using Guidelines approach to define relevant product market).

[77] We can, of course, switch from competition as on-or-off to competition as more or less. Thus, we might say that Chevron and Exxon retail gasoline compete against each other more directly than Coke and Pepsi. However, that risks us getting lost in trying to define the appropriate labels, whether Chamberlin's monopolistic competition, or Robinson's imperfect competition, or product differentiation more generally.

[78] For statements of the First Theorem of Welfare economics, see, e.g., William J. Baumol & Alan S. Blinder, Economics: Principles and Policy 64-69 (4th

petitive in the ordinary sense of the word. Markets must be competitive, and perfectly so, in the technical sense of the word.[79]

When we look at the pricing data, the variation in prices suggests that, in this technical sense, copies of these different books do not compete with each other. If all of these books competed with each other, no consumer would purchase a paper copy of *Harry Potter and the Deathly Hallows* at $23.75 when they could purchase a paper copy of *The Hunger Games* at $8.79. If the two copies are perfect substitutes one for the other, consumers would always purchase the cheaper copy, just as they would purchase the cheaper of Exxon or Chevron gasoline. Indeed, the variation in prices further suggests that, again in the technical sense, electronic and paper copies of even the same book do not compete with each other. Otherwise, no consumer would purchase the paper copy of *Harry Potter and the Deathly Hollows* at $23.75 when she can purchase the Kindle version at $8.99.

We see the same variation in prices among the nineteenth century books. A paper copy of *Pride and Prejudice* is $5.99, while a paper copy of *Jane Eyre* is $3.99. A digital copy of *Pride and Prejudice* is free, while a paper copy is $5.99.

Yet, the markets for copies of the nineteenth century books are competitive, where the markets for copies of the twenty-first century books are not. This is not because *Pride and Prejudice* competes, or competes more directly, with *Jane Eyre*, than *Harry Potter* competes with *The Hunger Games*. Nor is it because electronic copies of *Jane Eyre* compete with paper copies of *Jane Eyre*, where paper and electronic copies of *Harry Potter* do not. No. The markets for copies of the nineteenth century books are competitive because copyright does not regulate the number of publishers that can enter the market for either analog or digital copies of even a single book. As a result, for the nineteenth century books, such as *Pride and Prejudice*, we have multiple publishers offering paper copies and multiple publishers offering electronic copies of each nineteenth century book. The relevant markets are thus defined identically for the nineteenth and twenty-first century books. For both sets of books, we have separate markets for the paper copies and for the electronic copies of each nineteenth and each twenty-first century book. But so defined, the markets for the analog and digital copy of each nineteenth century book are competitive because copyright does not regulate entry into each market. As a result, we have multiple publishers within each such market and hence competition. In contrast, for the twenty-first century books, copyright prohibits the

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ed. 1988); Hal Varian, Intermediate Microeconomics: A Modern Approach 495 (1987).

[79] *See, e.g.*, Baumol & Blinder, *supra* note 77, at 64-69.

entry of more than one publisher into each market.[80] In the paper copy market and the digital copy market for each twenty-first century book, copyright regulation thus constitutes a barrier to entry and ensures monopoly.[81]

We see further evidence to support this conclusion in the sharply lower prices for digital copies of the nineteenth century books. When markets are competitive, cost savings in production are passed along to consumers in the form of lower prices. When markets are monopolistic, they are not. When we compare the prices for paper and electronic copies, average prices fall far more dramatically for electronic copies of the nineteenth century books than they do for electronic copies of the twenty-first century books. Specifically, for the nineteenth century books, the average price for a paper copy was $5.54. The average price for an electronic copy, on the other hand, was only $0.62. That is a $4.92, or 88.8%, reduction in price. Presumably, this sharp price reduction represents the costs savings, or at least some part of them, that a shift from analog to digital generates for book distribution. For a paper copy, the producer must pay for paper, ink, and binding; it must pay for shipping and storage of the physical copies; and it must pay to print, distribute, and then dispose of any copies that prove in excess of demand. Electronic distribution entails none of these costs. The nearly $5 difference in the average price for electronic and paper copies of the nineteenth century books provides a lower bound estimate of the likely magnitude of these cost savings. At the very least, it establishes the portion of the cost savings associated with the transition from analog to digital that were passed along to consumers in the form of lower prices.

In contrast, when we compare the average prices for hard and digital copies of the twenty-first century books, we find a much smaller drop. For the twenty-first century books, the average price of a paper copy was $11.55. The average price for a digital copy was $9.96. In other words, the average price dropped by only $1.59, or 13.8%. If we take the price difference between the analog and digital copies of the nineteenth century books as a lower bound estimate of the cost savings from the shift to digital for book distribution generally, then we would expect to see the same $4.92 reduction in price between paper and electronic copies — at least if

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[80] The copyright "owner" could of course license multiple publishers, but so long as the owner sets the licensing fees for each, the market for copies of the associated book would remain a monopoly. To have competition, we need entry by multiple, independent publishers, not multiple publishers controlled by a single overriding entity.

[81] That others may write and publish their own books does not ensure competition, but rivalry. Markets with rivalry do not ensure a Pareto optimal allocation of resources.

the markets for copies of the twenty-first century books are competitive, or as competitive, as the markets for copies of the nineteenth century books. Yet, we do not. Instead of seeing a $4.92 drop in the average price, we see a drop of only $1.59. Rather than see average prices fall by 88.8% as they did for the nineteenth century books, we see average prices fall by only 13.8% as we shift from analog to digital for the twenty-first century books. If we assume that the cost savings associated with the shift to digital are the same for the nineteenth and twenty-first century books, only $1.59 of the $4.92 in cost savings, or less than one-third of the cost savings, are passed along to consumers for the twenty-first century books. This tends to confirm that copyright regulation ensures that copies, whether analog or digital, of the twenty-first century books are traded in markets with only one producer.

For the top twenty-first century books, copyright is a barrier to entry and generates monopoly.[82] Both (i) the higher prices for copies of the twenty-first century books and (ii) the failure to pass along to consumers the cost savings associated with the switch to digital book distribution; establish that the analog and the digital copies of each specific book are, in the technical sense, separate markets. By allowing only one entity to enter each such market,[83] copyright ensures monopoly in the markets for copies of the most popular books from the twenty-first century.

Estimating the Copyright Tax: For our first estimate of the copyright tax in the book market, we can simply subtract the mean price for the paper and electronic copies of the nineteenth century books from the mean price for the paper and electronic copies of the twenty-first century books. Table 1 presents the results.

Table 1. Initial Estimate of the Copyright Tax on Popular Books

Type of Book	21st Century Mean	19th Century Mean	© Tax
Analog	$11.55	$5.54	$6.01
Digital	$9.96	$0.62	$9.34

As Table 1 details, this approach estimates the copyright tax at $6.01 for each analog copy and at $9.34 for each digital copy. Under this approach, the copyright tax accounts, on average, for 52.6% of the retail price con-

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[82] William R. Johnson, *The Economics of Copying*, 93 J. POL. ECON. 158, 161 (1985) ("There are many sellers of originals, each with the monopoly power that stems from the fact that his work is not a perfect substitute for the others").

[83] Of course, copyright allows that one entity, the copyright owner, to license others to enter the market. For our purposes, however, that is the same thing. The licensing process gives the copyright owner authority to set the prices for all market entrants. So long as one entity is setting the prices for every market entrant, that is the functional equivalent of a market with only one entrant.

sumers pay for a paper copy of the twenty-first century books and for 93.8% of the retail price for an electronic copy. This approach also shows that the copyright tax increased from $6.01 in paper copy markets to $9.34 in electronic copy markets — an increase of 55.4%.

Admittedly, this initial approach attributes the difference in the mean prices for the nineteenth and twenty-first century books entirely to copyright. To be sure, copyright is a real difference in the markets for copies of these books. During the study time-frame, copyright regulated the production and distribution of copies of the twenty-first century books, but not the nineteenth century books. It may be, however, that differences other than copyright are driving, at least to some extent, the observed difference in prices. Even within the twenty-first century books, all of which copyright regulates, we find a wide range of prices. For example, a paper copy of *Marley and Me* costs $3.99, while a paper copy of *The Millennium Trilogy* costs $76.91. Presumably, the price difference between these two represents something other than a difference in copyright regulation. Copyright regulates both, after all. Part of the explanation may be that *Marley and Me* is only 304 pages long, while *The Millennium Trilogy*, an omnibus edition, reprinting three novels together, is over 2,000 pages.

To determine whether differences in length can explain the observed price differences, I used three additional methods to estimate the copyright tax. First, I switched from means to medians. While a few outliers, such as *The Millennium Trilogy*, can sharply skew a mean, they will not skew a median. As a result, if a few books are much longer and hence much more costly to print, and that is driving the observed difference in mean prices, using medians would tend to discount those outliers. As it turns out, however, switching from means to medians did not significantly change the estimated copyright tax. Using medians rather than means for paper copies, the estimated copyright tax increased from $6.01 to $6.12. For electronic copies, using medians rather than means, the estimated copyright tax increased from $9.34 to $9.99. Table 2 presents these results.

Table 2. Estimate of the Copyright Tax on Popular Books: Medians

Type of Book	21st Century Median	19th Century Median	© Tax
Analog	$11.32	$4.98	$6.12
Digital	$9.99	$0.00	$9.99

As Table 2 reflects, switching from means to medians slightly increases the estimate of the tax copyright imposes on both analog and digital copies of the books it regulates.

As a second additional method, I used a multivariate, instrumental variable regression to estimate the copyright tax. This approach estimates

the copyright tax after accounting for variations in the length of the books at issue. To do so, I obtained the page length for four hundred ninety seven of the 500 books at issue.[84] I then regressed the price of analog and digital copies of the nineteenth and twenty-first century books together against a constant, the page length of each book, and an instrumental variable reflecting whether copyright regulated the production and distribution of copies of the book at issue. This approach found a statistically significant and positive correlation between page length and price for the paper copies,[85] but not the electronic copies. Because the twenty-first century books were, on average, 121.6 pages longer than the nineteenth century books, this approach attributes part of the increased price for twenty-first century books to their greater length. It therefore estimated a somewhat lower copyright tax of $5.41 for each paper copy of a regulated book. For electronic copies, this approach estimated the copyright tax to be $9.36 for each electronic copy of a regulated book.

There are, of course, factors other than page length that may affect a copy's pricing. For a paper copy, in particular, differences in the copy's binding, whether hard cover or paperback, as well as the presence of illustrations may affect the cost, and hence, the price of a copy. Popularity too may play some role, though not necessarily the one you may initially think. Differences in advertising and marketing expenditures might also explain the observed price differences. The question is whether I should perform further regressions to account for these variations. As I have explored elsewhere,[86] part of copyright's cost is that it encourages wasteful rent-seeking expenditures. Expenditures on advertising campaigns for films, talented back-up dancers for concert tours, and hard-cover copies of books may be mechanisms designed to extract additional rents from consumers.[87] If such efforts merely redistributed surplus from consumers to producers, they might be objectionable on distributional grounds,[88] but they would not necessarily entail an efficiency loss. These efforts do, however, generate efficiency losses. All of these entail the expenditure of real resources. Simply put, it is more expensive to print a hard cover edition of a book than a paperback edition. Thus, these efforts may not merely re-

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[84] I obtained the page count for each book from *Reading Length*, https://www.readinglength.com. The site had page counts for 497 of the 500 books. For purposes of this portion of the analysis, the three books without page counts were dropped from the analysis.

[85] All else constant, each extra page added, on average, 0.5 cents ($p<0.0001$) to the retail price of a paper copy of a book.

[86] *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 24-29; Glynn S. Lunney, Jr., *Copyright and the 1%*, 23 STAN. TECH. L. REV. 1 (2020).

[87] *See* Lunney, *supra* note 85, at 12-15.

[88] *See* Lunney, *supra* note 20 (explaining why copyright should not strive to distribute more of society's wealth to copyright owners).

distribute surplus from consumers to producers. They may convert part of the available surplus into cost and thus represent a real efficiency loss.

I am less concerned with the potential for such wasteful rent-seeking with respect to the unregulated markets for copies of the nineteenth century books. For these books, anyone can produce and distribute copies. The resulting competition ensures a wide variety of options for consumers. While I have focused on the lowest priced edition in the data set, that edition was not the only option available. For most of the nineteenth century books, there was a wide array of pricing and edition options. Consumers who want a less expensive paperback version can find one; those who want a more expensive hard cover, or even a leather-bound copy, of a book can so choose. In such a competitive market, the presence of a low price paperback version ensures that any additional costs incurred to print hard cover or other special editions of a book are justified, not as rent-seeking, but based upon consumer preferences. In contrast, for the twenty-first century books, when copyright regulates the production of books in a way that restricts the number of entities that can supply copies of a given book to one, I am more concerned with socially wasteful rent-seeking. In that context, if the one entity that copyright allows to offer copies decides to offer only a more costly and higher priced hard-cover edition, at least initially, and only later offers a lower cost, lower priced paperback edition, that sort of windowing may represent a price discrimination mechanism designed to redistribute part of the surplus associated with the book from consumer to producer. However, because the hard cover copies costs more to print than the paperback copies, this rent redistribution scheme also converts part of the otherwise available surplus into cost. This sort of wasteful rent-seeking is a cost of copyright and should be included, if it occurs, in estimating the tax copyright imposes. For that reason, I have not included (i) hard cover versus paper back, or (ii) the presence of illustrations, variables in the copyright tax regressions.

I did however include quality or popularity.[89] Initially, it is tempting to believe that the price for a copy of a more popular, or higher quality,[90] book should be higher. As it turns out, however, whether there is a correlation between price and popularity, and whether the correlation will be

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[89] As I have explained elsewhere, the consequentialist issue that I am trying to address is whether a given book produces greater satisfaction among its readers. This is the classic utilitarian measure. Thus, a book is better or higher quality if it generates greater satisfaction for its readers. If we assume that each reader derives the same satisfaction from any given book, then popularity is a perfect proxy for total satisfaction. If we assume, more realistically, than readers, on average, derive roughly equal satisfaction from each book they read, then popularity, while no longer a perfect proxy for total satisfaction, may serve as a rough proxy.

[90] For books, popularity is in some sense a measure of quality.

positive or negative depends upon whether the market for copies of a book is competitive or monopolistic. In a competitive market, prices are based upon costs. In such a market, holding all else, such as page length, constant, the price for copies of a more popular book should be lower. The production and distribution of any book, whether in paper copy or digital copy format, entails certain fixed costs. If marginal costs are constant with respect to scale,[91] and we measure a book's popularity by sales, then a more popular book will be able to amortize its fixed costs over a larger number of copies. As a result, the average cost per copy will be lower. In a competitive market, that lower cost will be passed along to consumers in the form of lower prices.

In a competitive market, then, more popular books will have lower prices, all else constant. In contrast, in a monopolistic market, prices are based upon consumer willingness to pay, or value. In such a market, popularity may cut in different directions. A more popular book still enjoys the average cost savings advantage from amortizing its fixed costs over more copies. However, consumers may be willing to pay more for a more popular book or for a book that they otherwise like better. As a result, the producer of copies of a more popular book may maximize its profits by charging a higher price than the producer of copies of a less popular book of similar length.

Putting to one side the theorizing, we can test for whether there is a correlation, and if so, whether there is a positive or negative correlation, between popularity and prices directly for copies of our nineteenth and twenty-first century books. To do so, I used multivariate, instrumental variable regression. Specifically, I regressed paper copy and digital copy prices for the nineteenth and twenty-first century books separately against page count, rank from one to two hundred fifty of each book on the *Goodreads* list, and a constant. For the nineteenth century books, both the lower prices for copies of the nineteenth century books and the fact that the cost savings associated with the switch to digital distribution were passed along to consumers suggest that the markets for copies of the nineteenth century books are competitive. In our regression, we therefore expect price to increase for paper copies as rank increases (i.e., as rank increases the book becomes less popular and has fewer copies to amortize the fixed costs over). And that is precisely what we find. For paper copies of the nineteenth century books, the popularity rank coefficient is positive, 0.0080, and statistically significant ($p=0.00036$).[92] That we find such a cor-

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[91] Scale here refers to the number of copies produced.

[92] Length is also statistically significant and positively correlated with price for paper copies of the nineteenth century books. For a paper copy of one of the nineteenth century books, the price increases, on average, by 0.3 cents per additional page ($p<0.0001$), all else constant. Neither rank nor page length have statis-

relation tends to confirm our previous conclusion that in the absence of copyright's regulation, the markets for copies of nineteenth century books are competitive.

In contrast, as previously discussed, both the prices were higher and the cost savings associated with digital copies were not passed along to consumers for the twenty-first century books. Both considerations demonstrate that the markets for copies of those books are not competitive. In a monopolistic, or value-based pricing, market, a book's popularity may cut in different directions with respect to pricing, as discussed, and so we expect no statistically significant correlation between popularity and price. Again, that is precisely what the regression shows. For the twenty-first century books, while page length has a positive and statistically significant correlation with paper copy price,[93] the correlation between a book's ranking on the *Goodreads* list and its paper copy price is not statistically different from zero.[94] Whether the producer charged a higher price to reflect greater willingness to pay, or for some other reason, the producer of copies of a more popular twenty-first century book did not pass along to consumers the average cost savings in the copies' price. This tends to confirm our previous conclusion that because of copyright regulation, the markets for copies of twenty-first century books are monopolistic.

Putting the monopoly versus competition issue to one side, and returning to our efforts to estimate the copyright tax, these regression results suggest that we should incorporate a book's popularity into our multivariate regression to estimate the copyright tax. I therefore did so. I regressed prices for hard and digital copies of the nineteenth and twenty-first century books together against a constant, page length, rank on the *Goodreads* list, and an instrumental variable for whether copyright regulates the production of the copies of the book at issue. Using this third additional approach, the regression estimated the copyright tax to be $5.38 per analog copy and $9.36 per digital copy. In other words, because of copyright, consumers will, on average, pay an additional $5.38 for an analog copy of the twenty-first century books, and an additional $9.36 for a digital copy.

To determine whether marketing or advertising expenditures explained any part of the observed price difference, I used multivariate regression and added a variable set to the year in which a book was first

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tically significant correlations with price for digital copies of the nineteenth century books.

[93] The price of a paper copy of a book increases by 0.6 cents per additional page (p=0.00023).

[94] For paper copies, the coefficient is positive, 0.0020, but not statistically significant (p=0.659). Neither page length nor rank bear a statistically significant correlation with price for electronic copies.

published. Under the assumption that more recently published books would be more actively marketed, this allows us to test whether marketing or advertising expenditures might justify or explain a part of the observed price difference. If publishers spend more on advertising recently published books and must price the book more highly to recoup those expenditures, we would expect a positive correlation between publication date and price. However, there was no statistically significant correlation between a book's first publication date and its price. Marketing and advertising expenditures do not therefore appear to explain or justify the observed price difference.

Table 3 summarizes our estimates of the copyright tax on analog and digital copies.

Table 3. Estimates of the Copyright Tax on Popular Books: Analog and Digital Copies

Estimation Method	© Tax: Analog Copy	© Tax: Digital Copy
Means	$6.01	$9.34
Medians	$6.34	$9.99
Regression: Page Length	$5.41	$9.36
Regression: Page Length, Popularity	$5.38	$9.40

We can also convert these estimates of the copyright tax into estimates of the effective copyright tax rate, by dividing each estimate by the average price of an analog or digital copy, respectively. Table 4 presents the result.

Table 4. Estimates of the Effective Copyright Tax Rate on Popular Books: Analog and Digital Copies

Estimation Method	© Tax Rate: Analog Copy	© Tax Rate: Digital Copy
Means	52.03%	93.79%
Medians	56.01%	100%
Regression: Page Length	46.81%	94.00%
Regression: Page Length, Popularity	46.58%	93.99%

These four different techniques for estimating the copyright tax all suggest that copyright imposes a very high tax on regulated book sales. If we take the lowest estimate of the copyright tax, then copyright imposes a tax of $5.38 on paper copy sales of the books it regulates. With an average

retail price of $11.55 for paper copies of these books, copyright imposes an effective tax rate on paper copy sales of the books it regulates of 46.58%. For digital copies, the copyright tax is significantly higher. Again taking the lowest estimate from the four techniques, copyright increases the prices consumers pay for, and thus imposes an effective tax on sales of, digital copies of the books copyright regulates of $9.34. With an average retail price of $9.96 for an electronic copy of the twenty-first century books, copyright imposes an effective tax rate on digital copies of the books it regulates of 93.8%.

In the United States, revenue for the book publishing industry in 2017 was $28.99 billion.[95] How much of that represents the copyright tax-and-subsidy? That depends, first, on what fraction of those sales are of books copyright regulates, such as the twenty-first century books, and what fraction are of books copyright does not regulate, such as the nineteenth century books. It also depends, second, on the breakdown of analog versus digital sales. Third, it also depends on whether the copyright tax on the regulated books in the sample is representative of the copyright tax for all regulated books. Nevertheless, to obtain a rough estimate of the tax copyright imposes on readers to provide a bounty for writers, we will assume: (i) that 95% of the industry's revenues derive from books copyright regulates[96]; (ii) that, of those, sales were split 70-30 between analog and digital formats; and (iii) that the lowest estimate of the effective copyright tax rate is accurate and representative for all regulated books. Using those assumptions, copyright regulation imposed a tax on book readers and provided a subsidy to the book publishing industry in 2017 of $16.7 billion.

Moreover, we can also estimate the extent to which copyright's tax-and-subsidy would increase as the industry switches from entirely analog distribution to entirely digital distribution. First, we estimate the copyright tax and subsidy for $28.99 billion in revenue if: (i) 95% of the industry's revenues come from books copyright regulates; (ii) the copyright tax estimated for the sample is representative for regulated books generally; and (iii) sales are entirely analog. With such assumptions, the copyright tax-and-subsidy would amount to $12.83 billion. Using the same assump-

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[95] *Information: Summary Statistics for the U.S., States, and Selected Geographies: 2017*, *Revenue*, United States Census Bureau, https://data.census.gov/cedsci/table?q=book%20publishing%20revenue&hidePreview=false&tid=ECNBA-SIC2017.EC1751BASIC&t=value%20of%20Sales,%20Receipts,%20Revenue,%20or%20Shipments&vintage=2017 (last visited Mar. 15, 2021) (estimated revenue for NAICS 51113).

[96] *See* Burcu Yucesoy, Xindi Wang, Junming Huang & Albert-László Barabási, *Success in Books: A Big Data Approach to Bestsellers*, 7 EPJ Data Sci. (2018), https://link.springer.com/article/10.1140/epjds/s13688-018-0135-y (finding that 94% of the sales of 1,699 nonfiction bestsellers and 96% of the sales of 2,035 fiction bestsellers occur in the first year).

tions, but switching entirely to digital distribution and holding all else constant[97] would increase the copyright tax and subsidy to $25.83 billion — more than doubling the tax on reading and the bounty to the publishing industry that copyright imposes and provides.

Today, Congress has imposed this tax and provides this subsidy through copyright's restrictions on entry. Over the short term, Congress could readily abolish copyright and replace it with a direct tax-and-subsidy system.[98] It could impose the same effective tax rate on book sales directly, just as the District of Columbia does for cigarettes, and then return those collected taxes to the industry through an express subsidy that Congress approved through the usual budgetary process, just as it does for agricultural subsidies. To implement such a system, Congress could abolish copyright for books as a first step. This would permit anyone to publish copies of any given work, and we would expect prices for copies to fall for the twenty-first century books in the same way that they have fallen for nineteenth century books. Congress could then, as a second step, impose a tax of, for example, $6 per copy sold, no matter who printed the particular copy at issue. Congress could then, as a third step, return the tax receipts to each author and those the author has contractually agreed to share those receipts with (perhaps in return for editing or promotional services). Authors who wanted to set a lower effective price for copies could, in the face of the $6 per copy tax, offer rebates to consumers. This would leave room for the variation in effective prices for copies that we see in the existing markets for copies. Such an express tax-and-subsidy system would have the same economic consequences and resulting distortions as the existing copyright regulations.

In that sense, Macaulay was right. Copyright is a tax. For the book publishing industry, the restrictions copyright places on competitive entry impose a high effective tax rate of roughly 50% on sales of analog copies of regulated books. With the transition to digital, that effective tax rate has increased to over 90%. Moreover, the increase in the tax-and-subsidy accompanying the transition to digital distribution occurred without any express determination by Congress that such an increase was desirable or appropriate.

B.   The Copyright Tax for Public Transmissions of Songs

The copyright tax on public transmissions of songs shows a similarly sharp increase as we transitioned from more traditional distribution tech-

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[97] It may be that prices for electronic copies have not yet reached equilibrium and will fall as the industry moves more completely to digital distribution.

[98] In other work, I have expressed a preference for the implicit tax-and-subsidy approach copyright adopts. *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 201-04. Increasingly, however, I am not so sure.

nologies to newer digital distribution technologies. Specifically, as we moved from terrestrial broadcasting to Internet streaming, the effective tax rate copyright imposes directly on public transmissions has increased from under 5% to over 50%. However, in addition to this high effective tax rate that copyright imposes directly, it imposes a second indirect tax on music transmissions by reshaping the market structure of streaming services. Instead of the free entry and robust competition that we saw in the late 1990s and early 2000s, the licensing requirements copyright imposes on Internet streaming has re-created the oligopoly market structure for streaming that we have long endured for radio broadcasts.[99] Such a structure existed naturally for broadcast radio because of limited broadcast spectrum and the high fixed, low marginal cost structure of broadcast radio. There is no reason it should exist in streaming, but the cost and difficulty of obtaining the necessary copyright licenses has re-created it. Thus, on top of the 50% tax rate copyright imposes directly on public transmissions of a song through Internet streaming, copyright imposes additional taxes by re-creating an oligopoly market structure for streaming services.

For traditional broadcast radio, we can estimate the copyright tax in two ways. First, we can look at royalty rates for the government-required permissions directly. Second, we can look at industry revenue and cost data.

To transmit a song to the public using the traditional technology of radio broadcast, the government requires a radio station to pay a fee to the song's writer(s) and music publisher. Since the 1930s, rather than pay this fee for each song individually, radio stations typically pay the fees to performing rights organizations (or "PROs"), such as ASCAP, BMI, SESAC, and the more recently formed GMR. By paying each PRO a fee, usually set as a percentage of the radio station's revenue, the radio station may play any song in that PRO's repertoire. ASCAP and BMI currently operate under consent decrees with the Department of Justice. As a result, the fees that they impose are subject to review and approval for reasonableness by the United States District Court for the Southern District of New York. Under the current agreement between BMI and radio

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[99] Consultancy Midia Research estimates that the big-four in music streaming have a combined market share of 77%: (i) Spotify, 36%; (ii) Apple, 18%; (iii) Amazon Music, 13%; and (iv) Tencent Music, 10%. *See* Stuart Dredge, *Report: Spotify Has 36% Market Share of Music Streaming subs*, MUSICALLY.COM (Dec. 9, 2019), https://musically.com/2019/12/09/report-spotify-has-36-market-share-of-music-streaming-subs. While not the sole determinant, where the market shares of the top four firms in an industry exceeds 40% that level of market concentration is associated with the presence of oligopoly. *See, e.g.*, CAMPBELL R. McCONNELL & WILLIAM HENRY POPE, MICROECONOMICS 208 (1984) ("Generally, when the largest four firms control 40% or more of the total market, the industry is oligopolistic.").

broadcasters, the copyright tax to transmit songs in BMI's repertoire is 1.78% of the broadcaster's revenue.[100] Under the current agreement with ASCAP, the copyright tax to transmit songs in ASCAP's repertoire is 1.73 to 1.75%.[101] The copyright tax to transmit songs in SESAC's repertoire is lower, under 0.26%.[102] Because a radio station will need to pay each of the PROs in order to operate, summing these payments suggests an effective copyright tax rate on the order of 4% for traditional radio broadcasters.

We obtain roughly the same estimate of the effective copyright tax rate for traditional broadcast radio by looking at industry revenue and cost data. Until 2012,[103] the United States Census Bureau published, as part of its annual survey of service activity, estimates of the revenue and expenses of radio stations.[104] As one of the expense categories, the Census Bureau broke out separately "[b]roadcast rights and music license fees." If we divide these fees by the radio station revenues, also from the Census Bureau, we can estimate the tax copyright has imposed on traditional broadcast radio for transmitting music. Consistent with the estimate from the PRO fee data, the effective copyright tax rate, in the form of broadcast rights and music license fees for radio stations, averaged 4.3% of revenue from 2004 through 2012. The effective copyright tax rate on radio stations peaked at 6.4% in 2009. For this period, the copyright tax on radio stations averaged $568.1 million annually and peaked in 2007 at $865 million.

At less than one billion dollars annually, the copyright tax on traditional radio broadcasts of music is and has been relatively low. It falls far

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[100] *See*, *e.g.*, Ed Christman, *New BMI Radio Royalties Revealed Following RMLC Settlement*, Billboard (Apr. 15, 2020), https://www.billboard.com/articles/business/publishing/9359392/new-bmi-radio-royalties-rmlc-settlement).

[101] *See*, *e.g.*, Jessica Nicholson, *BMI Responds to RMLC Rate Court Filing*, MusicRow (May 18, 2018). https://musicrow.com/2018/05/bmi-responds-to-rmlc-rate-court-filing).

[102] *See*, *e.g.*, *SESAC*, Radio Music License Committee (Aug. 24, 2020), https://www.radiomlc.org/sesac.

[103] After 2012, the Census Bureau began reporting data on expenses for "broadcast rights and music license fees" for radio and television combined. U.S. Census Bureau, Service Annual Survey Historical Data (NAICS-based) 2013 (2015), https://www.census.gov/data/tables/2013/econ/services-annual/sas-naics.html (Tbl. 5, line 462 reporting "Broadcast rights and music license fees" for radio and television broadcasting together).

[104] *See* U.S. Census Bureau, Statistical Abstract of the United States 717 (2012); U.S. Census Bureau, Service Annual Survey Historical Data (NAICS-based) 2011 (2013), https://www.census.gov/data/tables/2011/econ/services-annual/sas-naics.html (Tbl. 2 for revenue and Tbl. 5 for copyright fees for the years 2007-2011); U.S. Census Bureau, Service Annual Survey Historical Data (NAICS-based) 2006, at 20, 39 (2008), https://www2.census.gov/programs-surveys/services/tables/2006/sas/sas-06.pdf.

below our estimate of $15 billion in copyright taxes on books. The effective copyright tax rate on the traditional distribution model, at only 4 to 5%, is also far below the effective copyright tax rate on the traditional distribution model for books, at roughly 50%. Yet, as we saw for books, a shift from the traditional distribution model to the Internet has sharply increased both the copyright tax and the effective copyright tax rate on music transmissions.

Where the effective copyright tax rate on traditional broadcast radio is somewhere between 4 and 5%, the effective copyright tax rate on Internet streaming services, such as Spotify, Pandora, and Apple Music, is an order of magnitude higher, ranging from 40 to 80%.[105] Where the copyright tax for radio broadcasts peaked at less than $865 million in 2007, the copyright tax for Internet streaming reached roughly $10.62 to $10.85 billion in 2019[106] and is still rising.

However, for Internet streaming, Congress made a deliberate and affirmative choice to increase the copyright tax as we transitioned from traditional radio broadcasting to streaming. In 1995, Congress formally amended the Copyright Act to impose additional regulations and copyright taxes on Internet streaming.[107] The cover story for this tax increase was that Internet streaming threatened sales of physical copies of songs in

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[105] *See* Ben Sisario, *For Pandora, Ruling on Streaming Royalty Rates is Critical*, New York Times (Dec. 13, 2015), https://www.nytimes.com/2015/12/14/business/media/for-pandora-ruling-onwebcasting-royalty-rates-is-crucial.html (stating that copyright fees paid to record companies "amounted to 44% of the company's revenue last year"); Manatt, Phelps & Phillips, LLP, U.S. Music Streaming Royalties Explained (2016), https://www.manatt.com/Manatt/media/Media/PDF/US-Streaming-Royalties-Explained.pdf (estimating that Spotify pays 70.62% and Apple pays 71.5% of their revenue from streaming for copyright fees).

[106] To obtain this estimate, I first estimated the sound recording copyright tax. For this portion of the tax, I used *U.S. Sales Database* on the Recording Industry Association of America website, t https://www.riaa.com/u-s-sales-database. If we combine the reported "sales" for the four streaming categories, On-Demand Streaming (Ad Supported), Other Ad-Supported Streaming, Paid Subscription, Limited Tier Paid Subscription, and SoundExchange Distributions, the total "revenue" for 2019 was $8.8 billion. I then needed to estimate how much more the streaming services for paid for the musical work copyright tax. The law firm, Manatt, Phelps & Phillips, LLP, estimates that Spotify and Apple pay 58.5 and 58 cents, respectively, in sound recording copyright taxes and 12.12 and 12.5 cents, respectively, in musical work copyright taxes, out of every dollar in revenue they earn. *See* Manatt, Phelps & Phillips, *supra* note 105. Using those numbers, I divided the RIAA data by the percentage sound recording pay-outs and multiplied by the musical work pay-outs to estimate the total copyright pay-outs for streaming.

[107] *See* Digital Performance Right in Sound Recordings Act of 1995, Pub. L. No. 39, 104th Cong., 1st Sess. 109 Stat. 336, *codified as amended,* 17 U.S.C. §§ 106(6), 114(d).

a way that traditional radio broadcasts did not.[108] While this cover story was at least plausible for interactive or on-demand streaming, it did not make much sense, from the outset, as a basis for differentiating the treatment of non-interactive streaming or webcasting from traditional radio. To the contrary, given their similarities, one would expect webcasting to have the same effects on demand as traditional radio had. And of course, at the time Congress acted in 1995, neither form of streaming was widespread. There was therefore no evidentiary basis to show that either type of streaming would cut into sales in a way different from traditional radio broadcasting. From my perspective, Congress's action seemed mere regulatory arbitrage. An established industry, broadcast radio, used Congress to impose regulations and costs on, and thereby hamstring, potential future competitors in Internet streaming.

Today, however, we can test whether streaming has reduced sales of music directly, rigorously, and empirically. I recognize that, today, music sales are low, and music streaming is widespread. Again, however, correlation is not causation. The mere existence of those two facts together does not necessarily establish a causal relationship, let along one running in a particular direction.[109] According to the U.S. sales database of the Recording Industry Association of America, revenue from streaming began in 2004. Yet, according to the same data source, sales of physical copies of music in the United States peaked, both absolutely and on an inflation-adjusted basis, in 1999.[110] Thus, revenue from music sales began to fall several years before streaming began and more than a decade before it became widespread.

Figure 5 illustrates the rise and fall of recording industry revenue[111] in constant dollar or inflation-adjusted terms ("$2019") from 1961 through 2019.

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[108] *See, e.g.*, LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 65-67 (discussing Congress's reasons for adopting the digital performance right for sound recordings).

[109] In the abstract, the causal connection, if it exists at all, could run either way. Widespread streaming could cause low sales, or low sales caused widespread streaming. A correlation alone would not necessarily establish causality in either direction.

[110] Combining all of the categories of physical copies, the RIAA database reveals that revenue for the U.S. recording industry peaked from sales in 1999 at $14.6 billion in nominal dollars and at $22.4 billion in inflation-adjusted dollars. *See U.S. Sales Database*, RIAA, https://www.riaa.com/u-s-sales-database (last visited Mar. 15, 2021).

[111] The RIAA database includes sales of physical units, digital units, streaming revenue, and, at least some, synchronization license revenues. As I have noted elsewhere, it does not have data on three important sources of revenue for the industry: (i) concert revenue; (ii) merchandise sales; and (iii) licensing of the right of publicity. As I have discussed elsewhere, while these other sources may offset

Figure 5. U.S. Recording Industry Revenue: 1961-2019 ($2019, revenue in millions)[112]
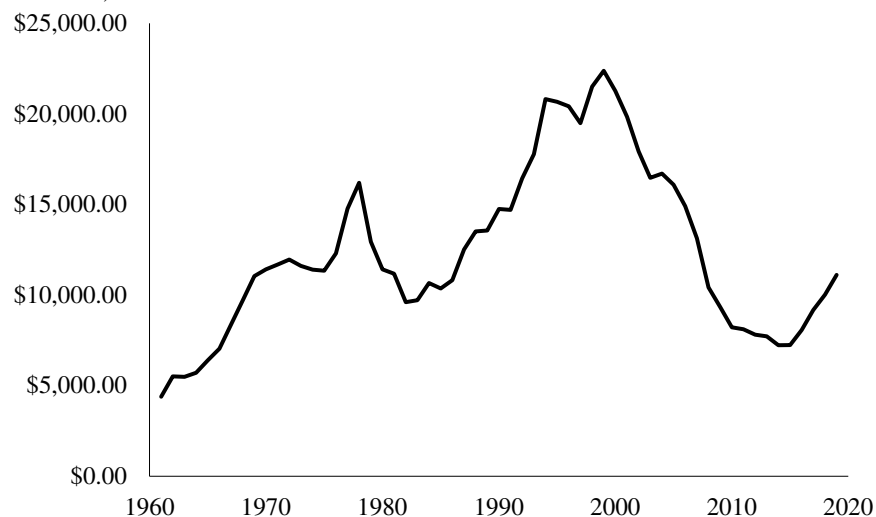
As Figure 5 shows, revenue to the United States recording industry was below $5 billion ($2019) in 1961. It grew steadily through the 1960s and into the early 1970s. Congress's decision to impose the sound recording copyright in 1972 did not have an immediate or readily apparent impact on revenues, though there is an odd spike in 1978. With the second OPEC oil embargo and associated recessions, revenues fell below $10 billion ($2019) in 1982 and 1983. After that, with the introduction of the CD and an improving economy, revenues rose more-or-less steadily. They peaked in

some of the fall in sales revenue from 1999 through 2014-2015, they do not change the overall shape of the sales revenue curve. In other words, even with these revenue sources, revenue likely peaked during the 1990s, declined after 1999, and then began to rise after 2014-2015.

[112] For 1973 through 2019 revenue, see U.S. Sales Database, RIAA, *supra* note 110. For the years 1961-1972, it comes from articles in *Billboard* magazine. *See RIAA Reports All-Time High*, BILLBOARD MUSIC WEEK,(May 26, 1962, at 4 (reporting sales for 1960 and 1961); *RIAA List Industry Sales Figures*, BILLBOARD, June 27, 1964, at 6 (reporting sales for 1963 and 1964); Hank Fox, *Record Merchandiser Sales up 116% in 3 Years*, BILLBOARD MUSIC WEEK, July 22, 1967, at 1, 17 (reporting sales for 1965 and 1966); *$1.1 billion in sales racked up in 1967*, BILLBOARD, July 20, 1968, at 3 (reporting sales for 1967); *Recorded Sales Put at $1.7 Billion for '70*, BILLBOARD MUSIC WEEK, Nov 7, 1970, at 3 (reporting sales for 1969 and 1970; *RIAA Shows Disk*, *Tape Sales Up*, BILLBOARD, June 1, 1974, at 3 (reporting sales for 1972). I could not find reported sales for 1968 and 1971. As an estimate of sales in those years, I used an average of the two adjacent years. All sales data from 1961 through 1972 was inflated to 2019 dollars using the Bureau of Labor Statistic's CPI calculator, https://data.bls.gov/cgi-bin/cpicalc.pl.

1999 at $22.4 billion ($2019), and then began to fall. Revenues continued to fall until they reached their nadir, $7.2 billion ($2019), in both 2014 and 2015. From there, with an increase in streaming revenue, revenue for the industry as a whole began to rebound. In 2019, revenues were $11.1 billion according to the RIAA database. That is a significant improvement from 2014 and 2015, but still below the average annual revenue of $12.4 billion for the 59-year period as a whole.

If we focus on the post-file sharing era, we can break out physical sales,[113] all sales,[114] and total revenue separately. Figure 6 presents the results.

Figure 6. U.S. Recording Industry Physical Sales, Sales, and Revenue: 1999-2019 (constant 2019 dollars, revenue and sales in millions)[115]
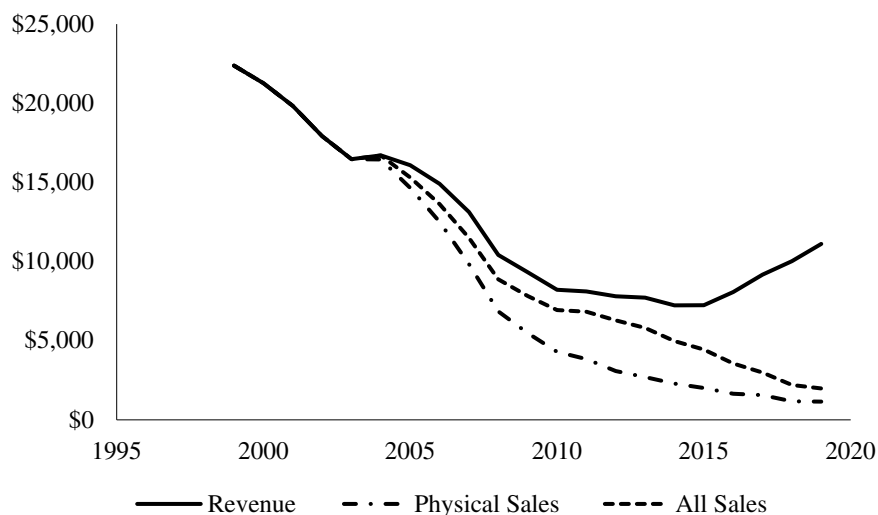
As Figure 6 illustrates, sales revenue, whether from physical copies alone, or physical and digital copies combined, peaked in 1999 and then began to fall. As we saw in Figure 5 and again here in Figure 6, total industry revenue begins to rebound after 2014-2015 because of streaming. Sales revenue does not. To the contrary, sales revenue, whether from purely

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[113] "Physical sales" includes all physical formats, whether single or album. In the RIAA database, it includes the following revenue categories: 8-track, CD, CD single, Cassette, Cassette single, DVD Audio, LP/EP, Music Video (Physical), Other tapes, SACD, and Vinyl single.

[114] In addition to the categories included in "physical sales," "all sales" adds revenue for digital sales and includes the following RIAA categories: Download album, Download music video, Download single, Kiosk, and other digital.

[115] *See* RIAA, U.S. Sales Database, *supra* note 110.

physical sales or from physical and digital sales, continues to fall unabated through 2019.

With the RIAA data, we can use multivariate regression analysis to test whether the introduction and growth of streaming played any role in declining revenue from sales after 1999. When we do, we find no statistically significant correlation. To test for a correlation, I ran separate regressions for CD sales, all physical sales, or all sales for each year after 1999 against a constant, the previous year's CD, physical, or total sales, and streaming revenue for that year. In all of the regressions, there was a statistically significant correlation between one year's sales, whether CD, physical, or all sales, and the previous year's sales of the same type. That coefficient ranged from 0.935 to 0.987 ($p<0.0001$). In contrast, the correlation between streaming revenue and sales was not statistically different from zero in any of the regressions. In other words, sales revenue began to decline after 1999. That decline continued through 2019, but did not increase, decrease, or otherwise change following the introduction and growth of streaming.

The RIAA data does not therefore support the proposition that streaming has displaced sales.[116] This does not necessarily mean that streaming does not displace sales. Rather, it means only that if streaming does have an effect on sales, that effect is too small to detect using the RIAA data. It also does not mean that Congress was wrong in enacting the streaming tax. Even if streaming does not displace sales, the copyright subsidy from sales nevertheless decreased. If the subsidy had been working to achieve a public benefit, then that decrease, on its own, may suggest the need for a new form of copyright subsidy.

In any event, putting to one side whether streaming does or does not displace sales, and returning to the tax copyright regulation imposes on music consumption, our initial estimate of the copyright tax on streaming, of between \$10.62 and \$10.85 billion in 2019, may be too low. For streaming, and indeed, for other industries as well, copyright regulation may lead to greater concentration within the industry than we would have in the absence of copyright regulation. Re-creating in Internet streaming the oligopolistic industry structure we see in radio broadcast may impose additional costs on consumers, not captured by the tax Internet streaming ser-

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[116] Other approaches has yielded mixed results on the issue. *Compare* Luis Aguiar & Bertin Martens, *Digital Music Consumption on the Internet: Evidence from Clickstream Data*, 34 INFO. ECON. & POL'Y 27 (2016) (finding that streaming does not displace physical sales using clickstream data from a panel of 16,500 European music consumers), *with* LUIS AGUIAR & JOEL WALDFOGEL, STREAMING REACHES FLOOD STAGE: DOES SPOTIFY STIMULATE OR DEPRESS MUSIC SALE? (2015), https://ec.europa.eu/jrc/sites/jrcsh/files/JRC96951.pdf (finding a displacement effect using a short-term data set).

vices are paying to transmit music. To the extent copyright regulation creates such an overly concentrated industry structure and imposes associated costs, we should consider these additional costs part of the tax copyright imposes.

As time passes, the early days of Internet radio or webcasting are increasingly forgotten. But they should not be. It was an exciting time. In 1995, Progressive Networks released RealAudio, the first technology for streaming audio.[117] With that software and a personal computer, anyone could set up their own Internet radio station, and anyone with the RealAudio software and a personal computer could tune in.[118] Neither an FCC license nor a broadcast tower were necessary. For a relatively trivial sum, anyone could set up their own radio station transmitting music over the Internet. Thousands did.

But copyright brought the joyous freedom of those early years to a crashing end. In 1995, Congress extended copyright regulation to the transmission of sound recordings on the Internet.[119] In 2002, pursuant to those regulations, the Librarian of Congress imposed a tax on such transmissions. The Librarian rejected arguments that the tax be set as a percentage of the Internet radio station's revenue, as income, property, and sales tax are set, and as had been done for radio broadcasts. Instead, the Librarian imposed a tax on a per performance, per sound recording basis, as if there were some marginal cost incurred by the recording artist or record label for each such performance.[120] Moreover, the Librarian set the tax at a level that was unaffordable for many small, independent Internet radio stations. Newspaper headlines quickly proclaimed the Librarian's decision the death of webcasting: *Curtain Call for Webcasts?*, *Royalty Fees Killing Most Internet Radio Stations*, *Webcasters Head to Washington in Royalty Protest*, *Webcast Royalty Proposal Draws Fire From All Sides*.[121] In response to the outcry, Congress enacted the Small Webcaster Settlement Act of 2002.[122] Among other things, the Act authorized SoundExchange to negotiate an agreement on behalf of all copy-

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[117] Kimberly L. Craft, *The Webcasting Music Revolution is Ready to Begin, as Soon as We Figure Out the Copyright Law: The Story of the Music Industry at War with Itself*, 24 Hastings Commc'ns. & Ent. L.J. 1, 12 (2001).

[118] *Id.*

[119] *See* Digital Performance Right in Sound Recordings Act of 1995, Pub. L. No. 39, 104th Cong., 1st Sess. 109 Stat. 336, *codified as amended*, 17 U.S.C. §§ 106(6),114(d).

[120] *See* Librarian of Congress, Determination of Reasonable Rates and Terms for the Digital Performance of Sound Recordings and Ephemeral Recordings, 67 Fed. Reg. 45,240, 45,273 (July 8, 2002).

[121] Headlines in order: Wash. Post, June 21, 2002, at E1; USA Today, July 22, 2002, at D.01; Wash. Post, May 8, 2002; Wash. Post, Aug. 8, 2002.

[122] Pub. Law No. 107–321, 107th Cong., 2d Sess., 116 Stat 2780 (2002).

right owners of sound recordings to set copyright tax rates for "small" webcasters. Pursuant to the Act, an agreement was quickly reached, and based upon the agreement, the Librarian imposed a revised tax schedule for small webcasters.[123]

Yet, these efforts to save small, independent webcasters proved futile. From thousands, small webcasters, independent of a broadcast radio station, dwindled to none.[124] The revolutionary potential of Internet radio was destroyed as copyright forced Internet radio into the mold of broadcast radio. Copyright re-created in Internet radio, the same oligopoly market structure we find in broadcast radio, and ensured that, for both, a handful of players dominate the market.

Of course, one could argue that the loss of a vibrant community of small, independent webcasters is no real loss at all. So long as we have Spotify, Apple Music, YouTube, and a handful of others, we can still listen to all of the music we want. While I understand this argument, I do not agree with it. Among other problems, it is hypocritical. We can make the same argument with respect to music. Demand for music is, after all, highly skewed. According to BuzzAngle, there were more than 36 million songs streamed in 2018.[125] Yet, the top 1.38% of these were responsible for more than 90% of the streams.[126] We can thus ask: After the first million songs, what do the rest matter? Hardly anyone listens to them anyway. Yet, we do not hear that argument. We take for granted that

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[123] Notification of Agreement Under the Small Webcaster Settlement Act of 2002, 67 Fed. Reg. 78, 510 (Dec. 24, 2002).

[124] In the 2005 rate determination, the Copyright Royalty Board expressly disclaimed any need to consider whether the rates imposed would drive some webcasters out of business. In re Digital Performance Right in Sound Recordings and Ephemeral Recordings, Docket No. 2005-1 CRB DTRA, 72 Fed. Reg. 24,084, 24,089 n.8 (May 1, 2007). As the Board explained:

> It must be emphasized that, in reaching a determination, the Copyright Royalty Judges cannot guarantee a profitable business to every market entrant. Indeed, the normal free market processes typically weed out those entities that have poor business models or are inefficient. To allow inefficient market participants to continue to use as much music as they want and for as long a time period as they want without compensating copyright owners on the same basis as more efficient market participants trivializes the property rights of copyright owners.

But this reasoning, if you can call it that, is asinine. If a record label can charge small webcasters a smaller fee that keeps those webcasters in business, while still charging charge large webcasters the same higher fee, the record label would capture more fees in total. More fees in total is a rational choice for the record label, and one any willing seller would make.

[125] BUZZANGLE MUSIC, 2018 YEAR-END REPORT: U.S. MUSIC INDUSTRY CONSUMPTION 33 (2019), https://www.buzzanglemusic.com/buzzangle-music-2018-report-on-music-consumption.

[126] *Id.*

more music is necessarily better, but we refuse to extend the same presumption to Internet radio. Yet, the same question of marginal benefit arises for both.

Moreover, even proponents of extensive copyright regulation have recognized the costs of undue concentration in the radio industry. With the rise of Clear Channel following the Telecommunications Act of 1996, for example, the Future of Music Coalition released a study in 2002 finding that the consolidation of commercial radio had resulted in "loss of localism, less competition, fewer viewpoints and less diversity in radio programming in media markets across the country."[127] If there are costs from undue concentration of broadcast radio, presumably there are also costs from undue concentration of Internet radio.[128]

These costs from increasing concentration are difficult to estimate, however. The increasing concentration copyright has caused in streaming mirrors a broader trend towards increasing concentration, and parallel price and profit increases, in the economy more generally.[129] Because of these broader trends, economists have been actively working to determine whether increasing concentration: (i) has driven the parallel increases in price and profit rates; (ii) is unrelated to the parallel increases; or (iii) is even perhaps working against the parallel increases. Lack of data and conflicting models have so far prevented economists from reaching consensus on these issues.[130] For these reasons, I am not able to offer an estimate of the amount of the indirect tax copyright imposes by potentially

[127] *Commercial Radio Station Ownership Consolidation Shown to Harm Artists and the Public*, FUTURE OF MUSIC COALITION (Nov. 18, 2002), at http://www.futureofmusic.org/news/PRradiostudy.cfm.

[128] This is one of the most troubling aspects of Paul Goldstein's "celestial jukebox" metaphor. PAUL GOLDSTEIN, COPYRIGHT'S HIGHWAY: THE LAW AND LORE OF COPYRIGHT FROM GUTENBERG TO THE CELESTIAL JUKEBOX (1994). Although just a metaphor, Goldstein repeatedly uses celestial jukebox in the singular without any apparent recognition of the welfare losses such a monopoly intermediate would impose on those who both produce and consume the jukebox's music. *See id.* at 199. Such a monopoly intermediate becomes both a monopolistic supplier of music to consumers and a monopsonistic buyer of music from producers. It imposes social costs on both sides of its markets.

[129] *See* Simcha Barkai, *Declining Labor and Capital Shares*, 24 REV. FIN. (forthcoming 2020); Jan K. De Loecker, *Recovering Markups from Production Data*, 29 INT'L J.I.O. 350, 353-55 (2011); Gustavo. Grullon, Yelena Larkin, and Roni Michaely, *Are US Industries Becoming More Concentrated?*, 23 REV. FIN. 697 (2019).

[130] *See* Chad Syverson, *Macroeconomics and Market Power: Context, Implications, and Open Questions*, 33 J. ECON. PERSPS. 23, 26 (2019) ("[C]oncentration is worse than just a noisy barometer of market power. Instead, we cannot even generally know which way the barometer is oriented. Even if researchers agree on a definition of the market, concentration can be associated with either less or more competition.").

increasing concentration in the streaming industry. I will simply note for the reader the possibility that such costs exist.

C. *Some Initial Thoughts on the Copyright Tax and How It is Changing*

Copyright is a tax. By regulating entry into certain markets, copyright increases the prices that consumers pay for the products copyright regulates. This copyright tax adds on average, at least, $5.38 to the price of a paper copy of a popular book. Copyright imposes an average effective tax rate of 46.6% on such copies. The copyright tax has increased significantly, in both a statistical and economic sense, for books distributed digitally. For an electronic copy of a popular book, the copyright tax adds on average, at least, $9.34 to the price, and imposes an average effective tax rate of 93.8%.

We find a similar pattern in the tax copyright imposes on music transmissions. For traditional transmissions through radio broadcasts, the tax averaged $568.1 million from 2004 through 2012, and copyright imposed an effective tax rate on such broadcasts of 4.3%. In contrast, both the copyright tax and the effective tax rate has sharply increased as music transmissions have shifted to new digital models of distribution. For streaming services, our estimate of the direct copyright tax in 2019 ranged from $10.62 to $10.85 billion, with an effective tax rate of 40 to 80%. Copyright may also have contributed to increased concentration in music streaming and thereby imposed additional costs on streaming consumers as a result.

For both copies of books and transmissions of music, the copyright tax-and-subsidy increased sharply as we moved from traditional analog to newer digital distribution technologies. However, for books, the increase came without any express action by Congress. In contrast, Congress expressly acted to increase the tax on newer music transmission technologies. While the justification Congress offered for this tax increase, that streaming will displace sales, is not supported by the RIAA data, the increase may be appropriate to offset a declining tax-and-subsidy from record sales generally.

As a rough estimate, the government through enactment of copyright has imposed a tax on readers and provided a bounty to the book publishing industry of $16.7 billion annually. That tax-and-subsidy for books was lower when books were distributed only in paper copy form and has increased and will continue to increase as distributions shifts to digital. In contrast, the direct tax on music transmissions, and the corresponding bounty to the music industry, has been somewhat smaller, $10.62 to $10.85 billion annually, but is also increasing.

In addition to the economic distortions and losses that copyright as a tax-and-subsidy system imposes, using restrictions on entry to impose an

indirect tax and provide an indirect subsidy also raises three other issues. First, the tax imposed and subsidy provided may vary quite substantially over time based upon the general performance of the economy and exogenous technological shocks. Thus, we see the sharp rise in the tax and subsidy copyright imposes and provides on sound recordings during the 1990s as the CD became popular, and then a sharp fall with the introduction of file sharing. There is little reason to believe that such variations in the subsidy provided accurately match the level of subsidy needed to achieve optimal cultural output. Second, the subsidy provided tends to be cyclical rather than counter-cyclical. The subsidy rises in good economic times and falls in poor economic times. Macroeconomic theories generally prefer counter-cyclical government subsidies. Government subsidies should increase when the economy is faring poorly. Third, as previously discussed, the implied tax-and-subsidy slips past the checks and balances of the political system in ways that an express tax-and-subsidy would not.

At a more general level, even if copyright increases creative output, providing a subsidy to the regulated industries through regulations on entry may also increase the price to consumers of reading books or listening to music. This puts copyright, to a certain extent, at war with itself. The copyright subsidy may simultaneously encourage book production, but discourage reading. It may encourage music production, but discourage music listening. If the goal is to encourage book or music production, without discouraging consumption of the result, a different regulatory intervention, one that does not tie the subsidy to a retail price increase, would be more appropriate.[131] It may be however that copyright is not at war with itself. It may be that the copyright tax is not passed along to consumers in the form of higher prices. Someone other than end consumers may pay the copyright tax. If that is the case, then copyright might be able to encourage authorship without discouraging reading. To see whether that is likely, and if so, under what circumstances, we now turn to the question of tax incidence: Who pays the copyright tax?

III. *"A TAX ON READERS": A BRIEF ASIDE ON TAX INCIDENCE OR WHO PAYS?*

Macaulay characterized copyright as a tax on readers, but this is not strictly accurate in two senses. First, in some cases, it may not be the end consumers, readers for example, who pay the copyright tax. It may be an intermediary, such as a publisher or broadcaster, who pays the tax. Second, while the tax is applied directly to certain activities, such as reading,

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131 *See, e.g.*, W. Nicholson Price II, *Grants*, 34 Berk. Tech. L.J. 1 (2019) (exploring the use of grants to encourage invention).

the copyright tax is a tax not just on reading but on every productive activity in our economy.

In tax scholarship, the first issue is known as the incidence of taxation. Government imposes a tax on employers or on sellers. Does the employer pay the tax or is it passed along to employees in the form of lower wages? Does the seller pay the tax or is it passed along to consumers in the form of higher prices? We confront the same issue with respect to the copyright tax. Through copyright, government imposes a tax on reading or listening to music. Does some intermediary, such as a bookstore, radio station, or streaming service pay the tax or is it passed along to consumers in the form of higher prices?

For books, I estimated the copyright tax by determining the increase in the retail price of hard and digital copies of books that consumers pay. Thus, the tax I estimated was the tax that readers, rather than book stores or other intermediaries, pay. In contrast, the data I use to estimate the copyright tax for music streaming uses the percentage of industry revenue paid over to the copyright regulated industry by the intermediaries, whether radio stations or streaming services. On its own, that data does not establish whether the copyright tax for those transmission is passed along to consumers in the form of higher prices, paid for by the intermediary out of the monopoly profits it would otherwise earn in any event, or somehow split between consumers and the intermediaries.

I have suggested in other work that the copyright tax for radio stations likely comes out of radio stations' pockets, rather than consumers.[132] If each radio station is a natural monopoly in its geographic and product market, then it will run advertisements for that fraction of airtime that maximizes the radio station's profits. Whether copyright forces the radio station to pay over a percentage of its revenue to the producers of music or not, that will not change the amount of advertising the radio station runs. In this situation, the monopoly intermediary bears the full burden of the copyright tax, and consumers pay none of it, at least directly.

This is the most sympathetic case for imposing a copyright tax. In this situation, copyright merely forces a monopoly intermediary to share some of its monopoly rents with others who make earning those rents possible. In this one situation, the copyright tax imposes few costs on society beyond those the monopoly intermediary would impose without copyright in any event.[133] If our goal is to maximize the copyright tax-and-subsidy, while minimizing its social cost, we should look for situations where the

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[132] *See* Glynn S. Lunney, Jr., *Aereo and Copyright's Private-Public Performance Line*, 162 U. Penn. L. Rev. Online 205 (2014); Lunney, *supra* note 20, at 1011-13.
[133] Here, the marginal additional costs are the rent-seeking expenditures by the various parties seeking to claim or enlarge the share of the monopoly rents they capture.

copyright tax comes out of monopoly rents that would exist even in the absence of copyright regulation. Examples include: (i) licensing fees for music and television performances through natural monopoly intermediaries, such as broadcast stations; or (ii) licensing fees for use of music in commercials for products or services that have market power and would continue to have it even in the absence of copyright.[134] By taxing such uses, copyright can provide a subsidy to the regulated industry while imposing few costs on society.

We should be careful not to extend such reasoning too far, however. As I have explained elsewhere,[135] to the extent copyright regulation creates or enhances an intermediary's market power, copyright may both impose high social costs and reduce the subsidy provided. Consider Article 17 of the recent European Union directive, for example. The aim is to force intermediaries generally, and YouTube specifically, to share more of their monopoly rents with content providers. The risk, however, is that Article 17 creates a substantial new barrier to entry for such intermediaries. To the extent that it does so, it reinforces and increases YouTube's market power. By reinforcing YouTube's market power, Article 17 creates monopoly in the market for selling creative content and thus increases the price that consumers pay. At the same time, however, Article 17 also creates monopsony in the market for buying creative content. In the traditional economic model, market power as a buyer, or monopsony, reduces the prices YouTube will pay for creative content.[136] Although intended to increase payments from YouTube to content creators, it may perversely have the exact opposite effect. In using the monopoly intermediary excuse to justify extending copyright regulation, we must ensure that copyright itself does not become the source of the intermediary's market power.

With respect to the second issue, Macaulay postulated copyright as "a tax on readers." Of course, today, copyright regulates far more than just books. Today, copyright imposes a tax not merely on reading, but on listening to music, watching television, playing video games, and browsing. Moreover, it imposes a tax not only on leisure activities, but also on productive labor, such as working on a computer and learning. That copyright imposes a tax on all of these specific activities is undeniable. But what you may not realize is that copyright imposes a tax not just on these specific activities, but on every productive activity in our economy.

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[134] So licensing fees for use of music in commercials for iPhones, but not for movies.

[135] *See* Lunney, *supra* note 20, at 1013-15.

[136] *See, e.g.*, JOAN ROBINSON, THE ECONOMICS OF IMPERFECT COMPETITION 47-52 (2d ed. 1969)

To illustrate, consider a simple two-good market.[137] In one market, we have a necessity, food. Copyright does not regulate the production of food, and so the market for food is competitive. In such a competitive market, farmers make food available at cost.[138] If one farmer tries to raise her price for food above cost, other farmers will undercut her price. In the second market, we have a luxury, music. Copyright regulates entry into the music market, however. Because of copyright, musicians can price music above cost and will set a price that maximizes their profits. The extent to which their price exceeds cost is the copyright tax. Consumers have identical preferences and starting endowments, so we can focus on a single consumer with an initial endowment of $100. The cost of supplying the food the consumer wants is $20. In a competitive market, that $20 is also the food's price. The cost of supplying the music that the consumer wants is also $20. However, because copyright regulates entry, that $20 is not the price the consumer will pay. To maximize his profits, the musician will price the music at $80.[139] Of this $80 "price," $20 represents the cost of the music and $60 represents the copyright tax.

But what if farmers work hard and increase the yield of their land, so that the cost of the food the consumer desires drops to $10? Surely, the farmers will reap the rewards of their labor. Nope. With a competitive market for food, the price for food will drop to $10. Instead of the farmers capturing the value of their hard work, the musician does. With copyright regulating entry into the market for music, the price of music will increase to $90. In other words, because the farmer worked hard, the copyright tax increased from $60 to $70 and the musician, not the farmers, captured the value of the farmers' hard work. In that sense, the copyright tax is a tax not just on listening to music but also on farming.

What if an individual discovers home building and begins to offers consumers in our two-good model a third good: a home? What if another individual discovers clothing and begins to offer consumers in our three-good model a fourth good: clothing? Surely, these individuals will reap the rewards of their discoveries. Not necessarily. Let us return to our base

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[137] This discussion is adapted from, and extends, the two-good model I have presented elsewhere. *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 44-49; Lunney, *supra* note 20, at 999-1004.

[138] F.M. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 9-10 (1970); Po-Hsuan Lin, Alexander L. Brown, Taisuke Imai, Joseph Tao-yi Wang, Stephanie W. Wang & Colin F. Camerer, *Evidence of General Economic Principles of Bargaining and Trade from 2,000 Classroom Experiments*, NATURE HUMAN BEHAVIOR (Aug. 2020)

[139] Because there are no other goods in the market and it is a single period game, there is no benefit to the consumer from refusing to purchase the music or trying to save her surplus for the next period. As a result, the consumer is better off purchasing the music at $80 than doing without.

two-good model, with food and music each costing $20 to produce, and assume that each additional good in our model: (i) costs $20 to supply and adds $50 to the consumer's endowment and thereby generates an additional $30 in surplus, and (ii) is traded in a competitive market that copyright does not regulate. Under these assumptions, when the third good, housing, becomes available, home builders capture the cost of homes, $20. The musician captures the associated surplus, increasing the copyright tax from $60 in the base model to $90. Thus, the copyright tax on listening to music is also a tax on home-building. When a fourth good, clothing, becomes available, and again adds $30 in surplus to the economy, the same thing happens. So long as clothing is sold in a competitive market, clothes designers and manufacturers capture the cost of clothing, or $20. Once again, the musician captures the additional surplus associated with the introduction of clothing by increasing the copyright tax from $90 to $120. Thus, the copyright tax on listening to music is also a tax on clothing.

We can extend the model indefinitely. Each time a new good is added and generates additional surplus for the economy, the copyright tax increases to capture it. Of course, the heterogeneity of consumers, as well as varying degrees of market power held by different entities in different markets, prevent copyright from enabling the industries copyright regulates from extracting the full surplus from our economy in the real world. The model is, in that sense, overly simplistic. Yet, that the model is, in the end, just a model does not detract from its essential point: Copyright is a tax not just on reading, but on every productive activity in our economy.

IV.   COPYRIGHT AS TAX AND SUBSIDY: PUBLIC BENEFIT?

Whatever the magnitude of, and whoever pays, the copyright tax, the ultimate question is what, if anything, taxpayers receive in return. The story of copyright has long been that copyright, even if a tax on reading, is both necessary and desirable because it ensures a wide and varied supply of high quality original works of authorship for taxpayers to enjoy. Sure, the story goes, prices for copies of a new book are high, but without those high prices, we wouldn't have the new book at all. Yet, the evidence in support of this story is remarkably thin. Indeed, for the most part, the evidence falls into two camps: (i) casual observation; and (ii) a naïve belief in the power of incentives. In the first camp are those who see: (i) a widespread supply of books, movies, and music; and (ii) the existence of copyright regulation; and infer that (ii) causes (i) merely from coexistence. In the second are those who believe that incentives can change human behavior in simple, predictable, and unvarying ways.[140] Apply the right incen-

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[140] For an example, see GUIDO CALABRESI, THE FUTURE OF LAW AND ECONOMICS 39-40, 140 (2016).

tives at one end and that will yield certain and predictable behavior at the other. Applied to copyright, this means that more incentives will invariably lead to more creative output.

An increasing body of recent empirical research suggests, however, that the story that copyright increases creative outset is just that, a story. Even in the absence of copyright, the market already provides firms in the industries that copyright regulates with substantial incentives. First-mover advantages, reputational rents, consumer self-interest, sales of complementary products or services, and the ordinary workings of the market more generally provide substantial incentives for creative output, even in the absence of copyright.[141] For four hundred years, the Stationers Guild's story of the copying competitor has loomed over us,[142] warning us that markets will fail, and no books will be published at all but for copyright. Yet, recent research has identified any number of markets where creativity flourishes even in the absence of legal protection against copiers. From innovation in football plays to recipes to fashion to open-source software, markets can find ways to work around the copying competitor problem and incentivize creativity without copyright.[143] If creativity can flourish in these markets without copyright, this raises a real question as to whether we need copyright at all.

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[141] *See* Stephen Breyer, *The Uneasy Case for Copyright – A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281, 301-07 (1970); Jessica Silbey, THE EUREKA MYTH: CREATORS, INNOVATORS AND EVERYDAY INTELLECTUAL PROPERTY 118-19, 126-28, 134, 230-31 (2015) (exploring the role that first-mover advantages, sales of complementary services, and other market mechanisms play in incentivizing innovation).

[142] In a 1586 petition to the Star Chamber, the Stationers Guild asserted:

> And further if priuileges be revoked no bookes at all shoulde be prynted, within shorte tyme, for comonlie the first prynter is at charge for the Authors paynes, and somme other suche like extraordinarie cost, where an other that will print it after hym, commeth to the Copie gratis, and so maie he sell better cheaper then the first prynter, and then the first prynter shall never vtter [sell] his bookes.

The Arguments of the Patentees in Favour of Privileges for Books (May 4, 1586), *in* 2 A TRANSCRIPT OF THE REGISTERS OF THE COMPANY OF STATIONERS OF LONDON, 1554-1640 A.D., at 805 (Edward Arber ed., London 1875) (alteration in original).

[143] *See* Christopher Kelty, Two BITS: THE CULTURAL SIGNIFICANCE OF FREE SOFTWARE (2008) (exploring the fundamental importance of openness and copying to software development); Jessica Litman, *The Exclusive Right to Read*, 13 CARDOZO ARTS & ENT. L.J. 29, 44-46 (1994); Kal Raustiala & Christopher Sprigman, *The Piracy Paradox: Innovation and Intellectual Property in Fashion Design*, 92 VA. L. REV. 1687, 1689 (2006); Yochai Benkler, *Coase's Penguin, or, Linux and The Nature of the Firm*, 112 YALE L.J. 369 (2002); Josh Lerner & Jean Tirole, *Some Simple Economics of Open Source*, 50 J. INDUS. ECON. 197 (2002).

Recent empirical research has focused on that question directly and has found no correlation between incentives and creative output in the U.S. recording industry.[144] As I did earlier in this article to estimate the copyright tax, this recent empirical research uses a natural experiment — the rise of file sharing — as a counterfactual to test for the long supposed causal link between copyright regulation, the copyright subsidy, and creative output. The research focused on the music industry because revenues from sales of recorded music began to fall, and fall sharply, after the introduction of file sharing in 1999, as we saw in Figures 5 and 6 above.[145] Whether as a direct or indirect result of file sharing,[146] or for some other reason entirely, after the introduction of file sharing in 1999, industry revenue from sales of recorded music in the United States fell from over $22 billion ($2019) in 1999 to just over $7 billion ($2019) in 2014, according to the Recording Industry Association of America.[147] While copyright itself did not change, its ability to control the production and distribution of unregulated copies in the real world did, and the subsidy copyright provided to the recording industry fell dramatically. If there is a direct causal link between the copyright subsidy and creative authorship, as the story of copyright asserts, then such a substantial fall in revenue should have produced some observable reduction in music output. Yet, it did not. Music output continued apace.[148]

While two of the empirical studies covered the period immediately before and after the introduction of file sharing, the third examined the relationship between revenue and music output over a much longer, fifty-four year period from 1962 through 2015. During this period, in constant dollar terms, we not only saw the post-1999 fall in revenue, but an initial rise in revenues from the 1960s into the 1990s. In addition to sales reve-

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[144] LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14; Christian Handke, *Digital Copying and the Supply of Sound Recordings*, 24 INFO. ECONS. & POL'Y 15 (2012); Joel Waldfogel, *Copyright Protection, Technological Change, and the Quality of New Products: Evidence from Recorded Music Since Napster*, 55 J.L. & ECON. 715 (2012).

[145] *See* figures accompanying notes 107-110 *supra*.

[146] Revenue would fall as a direct result of file sharing to the extent that a copy obtained by file sharing directly displaces an authorized sale. Revenue fell as an indirect result of file sharing to the extent that the competitive pressure of file sharing enabled Steve Jobs to obtain licenses to sell individual singles at the Apple iTunes store. As a result, instead of buying a full album to obtain copies of three hit songs, a consumer could simply buy the three hit songs instead. See LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 74-77.

[147] LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 81. Note that both before Congress enacted the sound recording copyright and after the rise of file sharing, the revenues from sales of recorded music were not zero.

[148] LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 95-99, 112-18, 125-33, 135-38; Handke, *supra* note 29, at 15-16, 20; Waldfogel, *supra* note 29, at 717, 735, 737-39.

nue, the study attempted to account for other changes in the music indus-try,[149] as well as other sources of revenue,[150] and used multivariate regression analysis to isolate and test for a relationship between revenue and music output.[151] Yet, despite running hundreds of regressions, it found no statistically significant and positive correlation between revenue and music output in any of them.[152] When revenues were increasing from the early 1960s into the 1990s, there was no corresponding increase in pop-ular music output. As revenues began to collapse after the rise of file sharing, there was no corresponding fall in popular music output. To the contrary, where a statistically significant correlation was found, it was neg-ative. More money in one year meant less music in the next, *ceteris paribus*.[153]

Working with students at Texas A&M's College of Engineering,[154] I have gathered and now present additional data on this key issue. For each song that appeared on the year-end Hot 100 chart for each year from 1963 through 2019, I scraped the song's total stream count from last.fm over a four-day period beginning June 7, 2020, and again over a four-day period beginning August 7, 2020. While other measures, such as the number of albums released in a year or the number of new songs that appear on the Hot 100 chart in a year can sometimes serve as proxies for the quantity and quality of music output in a given year, a song's stream count mea-sures directly the satisfaction consumers derive from a song.[155] Streaming one song rather than another reveals that the consumer prefers that song

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[149] In addition to examining the role of revenue and the rise of file sharing on music output, the study also accounted for the possible roles of: (i) the perform-ance of the economy generally; (ii) the size of the U.S. population, ages 15-19; (iii) the rise of Clear Channel radio; (iv) the rise of digital distribution; (v) the rise of alternative promotional channels, such as social media; and (vi) declining costs in the recording industry generally. Lunney, Copyright's Excess, *supra* note 14, at 124-25.

[150] *Id*. at 77 (noting that revenue from concerts grew from $2.3 billion ($2013) in 2000 to $5.1 billion ($2013) in 2013 and thus offset some of the decline in sales of recorded music).

[151] The study used four different measures of music output: (i) SoundScan's count of the number of albums released annually from 1996 through 2012; (ii) the *Rolling Stone*'s ranking of the five hundred greatest albums of all time; (iii) the number of new songs that appeared on the *Billboard* Hot 100 chart each year from 1962 through 2015; and (iv) the number of songs and the stream count for each song in the top 1,001 songs initially released from 1960 through 2005, based upon world-wide stream count on Spotify in 2014. Lunney, Copyright's Excess, *supra* note 14, at 84-121.

[152] Lunney, Copyright's Excess, *supra* note 14, at 95-99, 112-18, 125-33, 135-38.
[153] *Id.*
[154] The student team included Sicong Huang, Chen Liang, Fengqiao Wang, Joseph Cineros, David Qin, and Aditya Atul Vijayvergia.
[155] Lunney, Copyright's Excess, *supra* note 14, 12, 112.

to all others. Repeatedly streaming a song provides a measure of the strength of that preference. As mentioned in the introduction, the last.fm data covers more songs and a longer time period than the stream count data from Spotify that I have previously used. It also provides data for last.fm listeners, rather than Spotify listeners.[156] It thereby provides some ability to check for potential bias in the Spotify data that may arise from the unique characteristics of Spotify users.[157]

Once I collected the total stream count data for each song on the year-end Hot 100 chart for each year from 1963 through 2019, I summed the total stream count for the songs in each year to generate a total stream count for each year, as of June 7-10, 2020 and as of August 7-10, 2020. I then subtracted the June 7-10th totals for each year from the August 7-10th totals to get a two-month difference.[158] Figure 7 presents the result.

Figure 7. Stream Count for each year's year-end Hot 100 songs: 1963-2019, Two-Month Difference. Source: last.fm
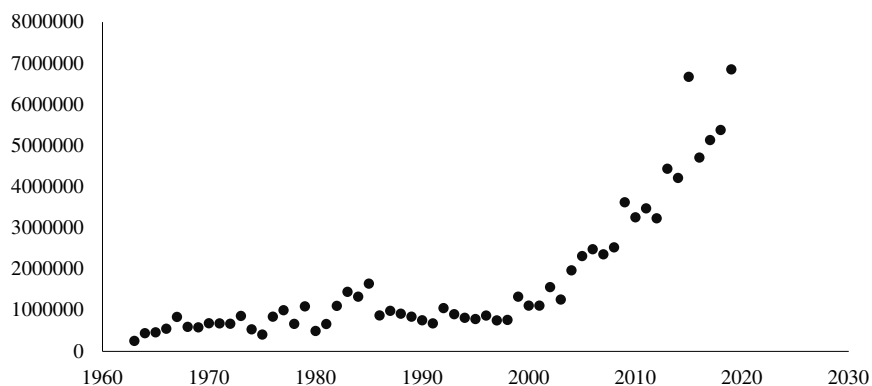
As Figure 7 illustrates, the two-month stream count rose slowly, and not always steadily from the early 1960s through 1999. Beginning in 2000, the stream count for the year-end Hot 100 songs began to rise somewhat more

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[156] Last.fm integrated with Spotify in 2014, and even before then, there may have been overlap between Spotify and last.fm users.

[157] Streaming on either Spotify or last.fm may have common sources for bias, such as the age demographic of users. At least some of these biases will likely fade with time, as the adoption of streaming becomes more widespread across the population.

[158] I did this to remove any bias in the total stream counts that might otherwise arise in the data from the different times at which the music became available. Specifically, if I simply use total stream counts for either the June 7-10th period or the August 7-10th period, 2016 is the best year. Apparently, it takes three years of availability for the top songs to reach or near their peak streaming activity and reach an equilibrium streaming rate.

sharply. Over the two-month period studied, the most recently-released songs, *i.e.* those from the 2019 year-end Hot 100 list, had the most streams or plays.

Visually, Figure 7 immediately refutes the story of copyright. Incentives peaked in the 1990s and then began to fall. The stream count data does not follow a similar pattern. To the contrary, stream count continues to rise, and begins to rise even more sharply, as revenue (and incentives) for music production begin to fall in the post-file sharing 2000s. Yet, before we jump to hasty conclusions based upon visual appearances alone, a more thorough evaluation is necessary. After all, something other than the rise of file sharing and the fall in revenue may be causing the continued increase in listener satisfaction with the post-file sharing music.

As an initial step, then in analyzing this data, I began by focusing on the pre-file sharing period, from 1963 through 1999. With the advent of file sharing in 1999, lots of things began to change in the recording industry. In contrast, from 1963 through 1999, while there were changes in the music industry, the changes, such as a steady increase in concert revenue, were fewer and more predictable. For that reason, music output and RIAA revenue from 1963 through 1999 presents a more apples-to-apples comparison. While I will try in the multivariate regression analysis to include variables that account for changes in the industry, focusing on the pre-file sharing era alone gives us more confidence that we are not missing some other key causal factor. For the period 1963 through 1999, Figure 8 presents the two-month stream count for the songs that appeared on each year's year-end Hot 100 chart.

Figure 8. Stream Count for each year's year-end Hot 100 songs: 1963-1999, Two-Month Difference. Source: last.fm.
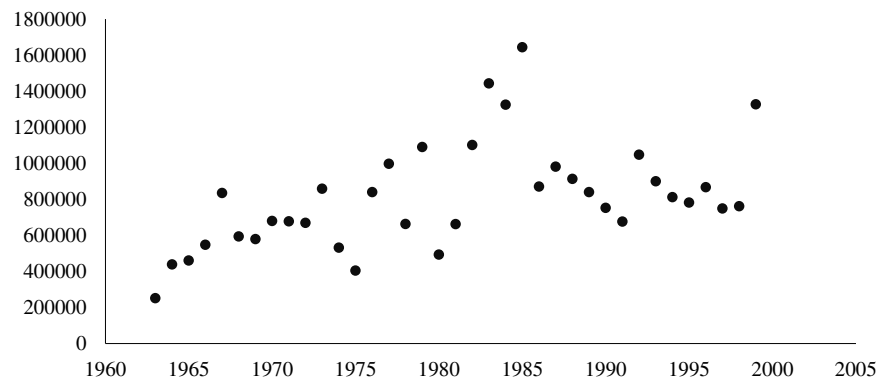
Statistical checks reveal that there is a time trend in the data. The data is trending generally upward. Last.fm listeners prefer more recent music.

Whether because of the age demographics of last.fm users specifically, or a preference for more recent music generally, there is a time trend in the data. This time trend creates a risk of spurious correlations in regression analysis, so the first step is to remove the time trend from the data. (Even with the time trend, Figure 8 shows that last.fm listeners are much more satisfied with the music from the lower revenue 1980s than the peak revenue 1990s, just as Figure 7 showed that last.fm listeners were even more satisfied with the music from the lower revenue, post-file sharing 2000s, than the peak revenue 1990s.) To remove the time trend so that we can do regression analysis, I first identified the time trend by regressing the natural log of each year's stream count against a constant and time to identify the time trend in the data.[159] That regression estimates the stream count we would expect for each year based upon time alone. The data tells us that more recent music is streamed more often, older music is streamed less often. And this first regression attempts to measure by how much – how much does the age of the music alone matter. We can then use the results of this first regression to predict the stream count we would expect for each year based merely on the age of the music at issue. To remove the time trend from the observed data, I then subtracted the predicted stream count from the actual stream count for each year. The resulting residual is the age-adjusted satisfaction associated with the songs that appeared on each year's year-end Hot 100 chart. If the residual is positive for a given year, then music from that year generated satisfaction among last.fm listeners higher than we would expect based upon the age of the music alone. If the residual is negative for a given year, then music from that year generated satisfaction among last.fm listeners lower than we would expect based upon the age of the music alone. In other words, a positive residual reflects a good year for music output. A negative residual reflects a bad year for music output.

Figure 9a presents the actual two-month stream count, the predicted stream count based upon the age of the music, and the residual representing the age-adjusted satisfaction of last.fm listeners from a given year's year-end Hot 100 songs. Figure 9b presents only the key result: the age-adjusted satisfaction.

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[159] I used various approaches to modeling the time trend and calculating the residuals. None of them approaches showed a statistically significant correlation between industry revenue in one year and music output in the next.

Figure 9a. Two-Month Stream Count, Predicted Count, and Age-Adjusted Satisfaction with the Year-End Hot 100 songs: 1963-1999.

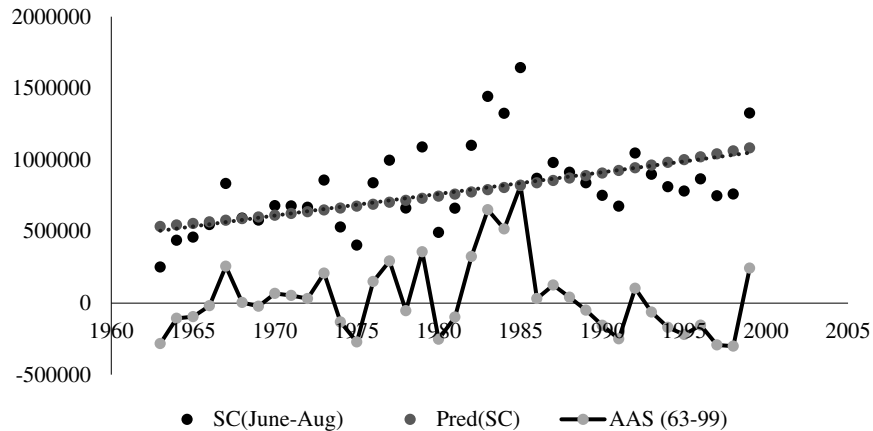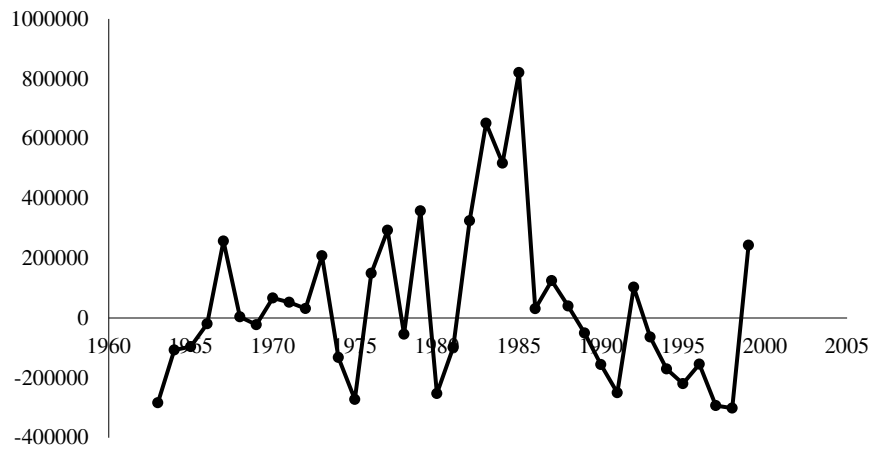● SC(June-Aug)   ● Pred(SC)   ━●━ AAS (63-99)

Figure 9b. Average Age-Adjusted Satisfaction: Year-End Hot 100 songs, 1963-1999.

If the story of copyright were true, we would expect to see a more-or-less steady rise in age-adjusted satisfaction in Figure 9b that would track the more-or-less steady rise in industry revenues that we saw in Figure 7 from 1963 through 1999. Yet, we do not. Last.fm listeners experienced the peak age-adjusted satisfaction with the year-end Hot 100 songs not from a year in the peak revenue 1990s, but from 1985. More generally, age-adjusted satisfaction with the top songs from the peak revenue 1990s was lower than the age-adjusted satisfaction with the top songs from the 1960s, 1970s, or 1980s. With only two years in which listener age-adjusted satis-

faction was positive, 1992 and 1999, the peak revenue 1990s was the worst of the four decades in Figure 9b in terms of last.fm listeners' satisfaction with music output.

Going beyond the visual appearance of Figure 9b, we can use multivariate regression analysis to isolate the relationship between revenue and music output. We can then determine precisely whether increased industry revenue in one year led to increased age-adjusted satisfaction with the year-end Hot 100 songs in the next. As I have done elsewhere,[160] to isolate the role of revenue, I included other variables in the regression that might help explain music output in a given year, including the population of teenagers age 15-19 in the United States, the unemployment rate (as a proxy for the economy generally), and the costs of music production.[161] Table 5 presents some of the key results, with p values in parentheses.[162]

Table 5. Regression Results for Age-Adjusted Satisfaction: 1963-2019

Variable[163]	1	2	3
Sales	-13.92 (0.174)	-31.176 (0.0634)	-26.334 (0.105)
U.S. Population (ages 15-19)		0.0257 (0.353)	0.0465 (0.111)
Unemployment		55,923.3 (0.106)	90,353.8 (0.020)
Costs		-3,433.99 (0.297)	-7,950.42 (0.050)
SR ©			-418,436 (0.064)
Adjusted R^2	0.025	0.251	0.309

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[160] *See* Lunney, Copyright's Excess, *supra* note 14, at 122-55.

[161] I have explained the bases for using, and how I calculated, each of these variables elsewhere. *See id.* 122-23. Because this analysis runs only through 1998, I do not need to consider the changes that occurred in the industry following the arrival of file sharing in 1999.

[162] Of the other variables, there was a statistically significant and negative correlation between the rise in radio concentration in a given year and listeners' age-adjusted satisfaction with the top songs from that year. There was also a statistically significant and negative correlation between the digital sales of music in a given year and listeners' age-adjusted satisfaction with the top songs from the next year. I plan to explore the implications of these results in future work.

[163] A constant was included in all regressions but is omitted from the reported results.

As Table 5 reflects, there was no statistically significant correlation between revenue in one year and listeners' age-adjusted satisfaction with music output in the next.[164] More revenue did not increase listeners' satisfaction with music output. Less revenue did not decrease it. Similarly, Congress's imposition of the sound recording copyright for music fixed after February 15, 1972 had no statistically significant correlation with listeners' age-adjusted satisfaction with the top songs. Listeners were just as satisfied with music before the adoption of the sound recording copyright as they were after. If the goal of copyright is to provide listeners with a broader and more varied supply of music, and better access to it, there is no evidence that the adoption of the sound recording copyright achieved this goal.

Having found no correlation in the initial step isolating the years 1963-1999, as a second step, I then used the same approach to analyze the last.fm data for the entire time period from 1963 through 2019. As in the initial analysis, the data for the entire time period has a time trend that I must remove from the data in order to use it for regression analysis. As in the initial analysis, I therefore first fit a time trend to the actual data.[165] This time trend predicted the stream counts that we would expect for each year based upon the age of the music alone. I then subtracted the time trend (or predicted stream count) from the actual stream count. As before, the residual or difference between the actual and predicted stream counts represents the age-adjusted satisfaction last.fm listeners derived from each year's year-end Hot 100 songs. Figure 10a presents all three of these together. Figure 10b presents only the key result: the average age-adjusted satisfaction with the year-end Hot 100 songs for each year.

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[164] Where music output for each year is proxied by the age-adjusted satisfaction last.fm listeners derived from that year's year-end Hot 100 songs. The estimated correlation between sales and satisfaction was negative in all three reported regressions (-13.92, -31.176, and -26.334), but because the p value was greater than 0.05 (0.174, 0.0634, and 0.105 respectively), the results were not statistically significant.

[165] To fit a time curve to the data, I took the natural log of each year's two-month stream count and regressed that against a constant and time. As I have elsewhere, I used other approaches to fit a time curve to the data and ran the same regressions against the resulting residuals. The results remained the same. In all of the approaches, there is either no statistically significant correlation between industry revenue in one year and music out in the next, or the correlation is negative.

Figure 10a. Actual Two-Month Stream Count, Predicted Stream Count, and Age-Adjusted Satisfaction with the Year-End Hot 100 songs: 1963-2019.
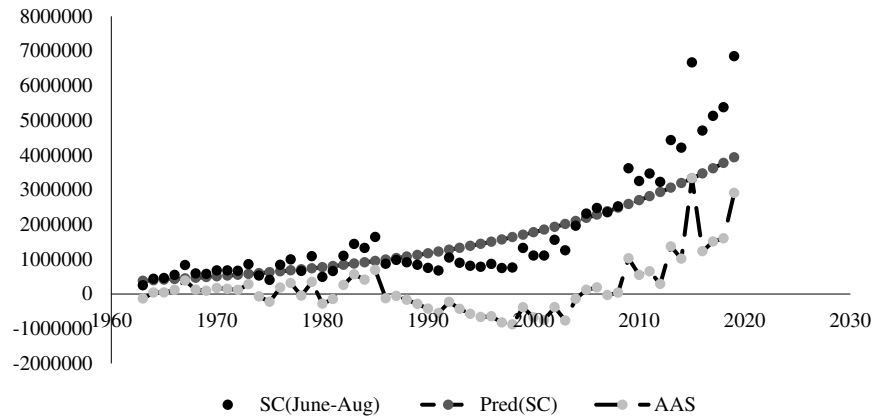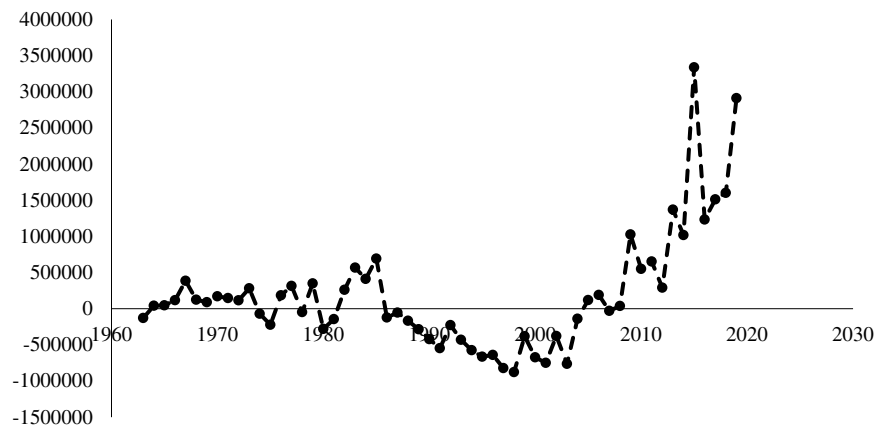

Figure 10b. Age-Adjusted Satisfaction: Year-End Hot 100 songs, 1963-2019.

Again, visually Figure 10b refutes the story of copyright. As in Figure 9b, when age-adjusted satisfaction exceeds zero for a given year, that year's music output is better than expected based upon the age of the music. When it is negative, that year's music output is worse than expected. In Figure 10b, the decade where age-adjusted satisfaction was the worst is again the 1990s — the highest revenue decade. Indeed, there is not a single year in the 1990s in which age-adjusted satisfaction exceeds zero. In contrast, age-adjusted satisfaction is generally positive during the 1960s,

before Congress imposed the sound recording copyright, and reaches its peak in the 2010s, after file sharing gutted it.[166]

Again, we need not rely on appearance alone, however. Multivariate regression analysis can determine whether there was a statistically significant correlation between industry revenue in one year and age-adjusted satisfaction from the year-end Hot 100 songs in the next. It can thus determine whether more industry revenue in one year led to more and better music in the next. In the regressions, to better isolate the role of revenue, I again included other variables that may explain music output. I thus included variables for the size of the teenage population, the unemployment rate, and the cost of music, as I did for the 1963-1999 regressions. However, the music industry experienced more radical change after 1999. These changes included: (i) increasing concentration in the broadcast industry because of Clear Channel; (ii) the rise of digital distribution; and (iii) the rise of file sharing. I therefore included additional variables to account for these changes.[167] Table 6 presents some of the key results, with *p* values in parentheses.[168]

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[166] I found this same sharp increase in age-adjusted satisfaction in the Spotify data, though that data extends only through songs that appeared on the Hot 100 chart before 2006. *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 128-29, 131-33.

[167] I used the same values for these variables that I used in my previous work. *See id.* at 123-24, 133-35. For file sharing, as I did in my previous work, I used both the instrumental and continuous variable approaches. *Id.* With either approach, the results are the same. The existence of file sharing and the amount of file sharing both show a positive correlation with the age-adjusted satisfaction last.fm listeners derive from any given year's year-end Hot 100 songs. Only the continuous file sharing variable results are reported here.

[168] Of the other variables, there was a statistically significant and negative correlation between the rise in radio concentration in a given year and listeners' age-adjusted satisfaction with the top songs from that year. There was also a statistically significant and negative correlation between the digital sales of music in a given year and listeners' age-adjusted satisfaction with the top songs from the next year. I plan to explore the implications of these results in future work.

Table 6. Regression Results for Age-Adjusted Satisfaction: 1963-2019

Variable[169]	1	2	3	4
Sales	-105.20 (<0.0001)	-65.39 (<0.0001)	-86.85 (0.0022)	-87.71 (0.0022)
File Sharing		1424.63 (<0.0001)	1143.84 (0.0006)	1176.68 (0.0006)
U.S. Population (Age 15-18)			0.035 (0.474)	0.0266 (0.604)
Costs			-4217.9 (0.465)	-1365.4 (0.858)
Unemployment			-35,540 (0.486)	-45,607 (0.401)
S.R. ©				225,851 (0.565)
Adjusted R^2	0.349	0.715	0.705	0.702

While the results for the initial analysis of the years 1963 through 1999 showed no statistically significant correlation between revenue and music output,[170] the results for the full time period are more definitive. As Table 6 shows, in every reported regression, the correlation between revenue in one year and music output in the next, as measured by last.fm listeners' age-adjusted satisfaction with the year-end Hot 100 songs, was consistently statistically significant and negative. More revenue in one year was associated with worse music in the next, *ceteris paribus.* With respect to the impact of file sharing, the visual spike in satisfaction last.fm listeners experienced for year-end Hot 100 songs released after the rise of file sharing we see in Figure 10b is statistically significant and positive. Songs released after the rise of file sharing, and also released as file sharing became more popular, were associated with a higher age-adjusted average satisfaction, *ceteris paribus.* This duplicates a result that I previously found with the Spotify data.[171] As the adjusted R-squared values in Table 6 show, industry revenue and the rise of file sharing account for more than 70% of the variation in last.fm listeners' age-adjusted satisfaction with the year-end Hot 100 songs from each year over the last fifty-seven years. The coefficients on the U.S. teenage population variable, the cost proxy, and the

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[169] A constant was included in all regressions, but its value is not reported here.
[170] Where music output for each year is proxied by the age-adjusted satisfaction last.fm listeners derived from that year's year-end Hot 100 songs.
[171] As I explained for the Spotify data, this correlation is independent of any effect file sharing may have on industry revenue.

performance of the economy generally, proxied by the unemployment rate, are not statistically significant. Similarly, when I added an instrumental variable for the imposition of the sound recording copyright in 1972 to the regression, the coefficient on that variable is also not statistically different from zero.[172] Congress's imposition of the sound recording copyright, on its own and independent of any effect it may have had on industry revenue, was not associated with any measurable change in music output.

As a general matter, the results confirm and extend those of previous studies. For the recording industry, the imposition of the sound recording copyright and increased industry revenue did not lead to more and better music. If anything, they led to less.

These results are not just surprising. They are, in truth, shocking. They upend the assumption that we have so casually made for hundreds of years that more copyright and more subsidies will necessarily lead to more creative output. By doing so, they undermine copyright's very foundation.

While these studies focus on the recording industry, that industry makes an excellent test case for copyright generally for three reasons. First, with the recording industry, the artist is readily identifiable. Who recorded and is performing a song is usually readily apparent. Unlike, for example, popular novels, there is little risk that a recording artist is relying on others to record or perform the song for her and simply putting her name on the finished product. This enables us to examine the impact of revenue on individual artist's decision whether to work, and if so, how hard, and also provides a secondary check on the quality of the music output.[173] Second, the study uses publicly available data for the quantity and quality of music, and for industry revenue. None of the data is cherry picked by those who receive or by those who oppose the copyright sub-

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[172] As with the 1963-1999 regressions, as a robustness check, I ran a regression for every possible combination of the three key variables: (i) the previous year's revenue; (ii) file sharing; and (iii) the instrumental variable for the imposition of the sound recording copyright; with the other six variables: (i) the unemployment rate; (ii) the cost of music production; (iii) the population of U.S. teenagers, ages 15-19; (iv) the rise of Clear Channel; (v) the rise of digital distribution; and (vi) the rise of social media. In all of them, the coefficients on the previous year's revenue and the instrumental variable for the imposition of the sound recording copyright were either not statistically significant. Or, if they were statistically significant, they were negative.

[173] A book written by a stable of young authors under the guidance of Tom Clancy may not be as good as a book written by Tom Clancy. *See, e.g.*, Daniel Van Boom, *Game of Thrones: All 8 Seasons Ranked From Worst to Best*, CNET.COM (May 19, 2020), https://www.cnet.com/news/game-of-thrones-all-8-seasons-ranked-from-worst-to-best (ranking seasons 7 and 8 which cover material not yet written into book form by George R.R. Martin as the worst and seasons 1 and 4 which cover material George R.R. Martin had already written as the best).

sidy. Third, both the existence and extent of copyright regulation of sound recordings and revenue for the recording industry change sharply over the period. Before 1972, there was no sound recording copyright. After 1999, file sharing effectively gutted it. This rise-and-fall of the sound recording copyright was associated with a similarly sharp rise, and then fall, in industry revenue.

While this study and the others like it focused on the music industry, their conclusions are likely to apply to other industries that copyright regulates for two reasons. First, the finding that more incentives did not lead to more creative output simply acknowledges the certainty of diminishing marginal returns. For creative products, whether books, music, or computer programs, there may be some base-level of incentives necessary to encourage their production. However, once that base level is reached, piling on more and more incentives will not lead to corresponding increases in creative output. Copyright is not an economic perpetual motion machine.[174] Ever more incentives will not lead to ever more creative output. Beyond some level, further incentives will not increase creative output. In my previous work on the recording industry, two of the four measures that cover the entire period suggest that creative output peaked in the late 1960s and early 1970s.[175] In other words, popular music output peaked before Congress enacted the sound recording copyright.[176] This suggests that the market alone, even without a sound recording copyright, provided near-optimal incentives for creative production in the recording industry. Even doubling or trebling those base-line incentives led to no discernible increase in creative output. It simply forced consumers to pay more for music they would have gotten anyway.

Second, markets for most of the products copyright regulates reflect a winner-take-all dynamic. In music, the top 10% of copyrighted songs, by

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[174] If we could put a dollar's worth of authorship in and get more than a dollar's worth of creative output out, no matter how many dollars we put in, then ever broader copyright would be a recipe for infinite social wealth.

[175] LUNNEY, COPYRIGHT'S EXCESS, supra note 14, at 89, 110. The unique song count for the *Billboard* Hot 100 chart peaked at 743 new songs in 1966. For the *Rolling Stone* magazine's list of 500 greatest albums, 1970 was the best year, with twenty-five albums making the list. The available Spotify data was based upon worldwide streaming in 2014. In that year, the Beatles' music was not yet on Spotify. Had it been, the pre-sound recording era may have been the best era for music by all three measures. With the last.fm data, the 1980s are the best decade for the period 1963 through 1999, but for 1963 through 2019, the best decade is the post-file sharing 2010s.

[176] Congress created the sound recording copyright by amendment in 1971 for recordings made after February 15, 1972. *See* Sound Recording Amendment, Pub. L. No. 92-140, § 3, 85 Stat. 391, 392 (1971).

popularity, capture more than 90% of revenue.[177] To put this in context, this 90-10 rule means that if copyright provides ten dollars of subsidies to ten songs, the single most popular song will capture nine of those ten dollars. The rest will capture, on average, eleven cents each. Because of this 90-10 rule, when revenue to the music industry peaked in the 1990s, 90% of that increase went to the most popular superstar artists. While more effective copyright protection in the 1990s generated a higher subsidy for sound recordings, most of this additional subsidy was, from the perspective of copyright's constitutional purpose, simply wasted. Rather than support additional sound recordings at the margins of profitability, the vast majority of these additional subsidies went towards overpaying superstar artists. Rather than ensure a livable wage for the average or marginal artist, the additional subsidies primarily enabled superstars to capture monopoly profits far in excess of their persuasion costs.[178] Rather than encourage these top artists to become more productive, as a simplistic view of incentive and output might suggest,[179] these excess incentives pushed them onto the backward-bending portion of the labor-supply curve and made our top artists less productive.[180]

We find this same winner-takes-all, or more accurately, winner-takes-most, dynamic in other markets that copyright regulates as well. For PC videogame players on Steam, the top 10% of the videogames captured 89.28% of the players.[181] Of the domestic box office for theatrical releases, the top 10% of the films captured 75.5% of the revenue.[182] For

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[177] BuzzAngle Music, 2018 Year-End Report: U.S. Music Industry Consumption 31, 34 (2019), at https://www.buzzanglemusic.com/buzzangle-music-2018-report-on-music-consumption) (providing data that shows that the top 10% of albums captured over 98.5% of sales and showing that the top 10% of music videos received 87.1% of the total music video streams).

[178] In our ten dollars for ten works hypothetical, there is a 90-to-1 ratio between the earnings for the most popular work and the average earnings for the remaining works. Of course, that ratio is merely hypothetical. The reality is far worse. The available data suggests that today's copyright creates markets that pay $4.29 million in royalties to the copyright owners of the most popular song on Spotify for every dollar in royalties those markets pay to the copyright owners of the median song on Spotify. Glynn S. Lunney, Jr., *Copyright and the 1%*, 23 Stan. Tech. L. Rev. 1 (2020).

[179] For an example of such a simplistic view, see Guido Calabresi, The Future of Law & Economics: Essays in Reform and Recollection 139-40 (2016) ("To develop what is rare and make it available—to make it part of the pie— significant incentives, positive or negative, are needed. Those with the remarkable physical capacities—whether athletic or sexual—that I just mentioned must be induced to develop and manifest these capacities and make them available.").

[180] *See* Lunney, Copyright's Excess, *supra* note 14, at 157-92.

[181] Lunney, *Copyright and the 1%*, *supra* note 177, at 40-41.

[182] For the data on which this calculation is based, see *Domestic Box Office for 2019*, Box Office Mojo (Oct. 7, 2019), https://www.boxofficemojo.com/yearly/

literary authors in the United Kingdom, 70% of the royalty income flowed to the top 10% of authors.[183]

As the Court has recognized, the purpose of copyright is not primarily to bestow monopoly profits on superstar authors and artists.[184] The purpose of copyright is to encourage the creation and dissemination of additional creative output at the margins.[185] Unfortunately, the vast majority of the subsidies copyright provides go to overpaying the winners in copyright's winner-takes-all markets. Only a small fraction flow directly to more marginal creative products.

Of course, we tell stories about how maximizing the prize that our winners take home might encourage creative output at the margins. We say that maximizing the prize will lead more would-be authors to enter the copyright lottery and thereby increase creative output.[186] We say that some of the winning authors' excess rents will be used to cover losses on works that prove unexpectedly unpopular and thereby increase creative output.[187] But neither of these stories, nor any other reason why more

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chart/?page=1&view=releasedate&view2=domestic&yr=2019&p=.htm ((domestic grosses).

[183] *See* Martin Kretschmer, Andres Azqueta Gavaldon, Jaakko Miettinen, and Sukhpreet Singh, UK Authors' Earnings and Contracts 2018: A Survey of 50,000 Writers 19 (2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3389685.

[184] Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, (1984) ("The monopoly privileges that Congress may authorize are neither unlimited nor primarily designed to provide a special private benefit."); United States v. Paramount Pictures., Inc., 334 U.S. 131, 158 (1948) ("The copyright law, like the patent statute, makes reward to the owner a secondary consideration."); Fox Film Corp. v. Doyal, 286 U.S. 123, 127 (1932) ("The sole interest of the United States and the primary object in conferring the monopoly lie in the general benefits derived by the public from the labors of authors.").

[185] Twentieth Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975) ("The immediate effect of our copyright law is to secure a fair return for an 'author's' creative labor. But the ultimate aim is, by this incentive, to stimulate artistic creativity for the general public good.").

[186] *See, e.g.*, Glynn S. Lunney, Jr., *The Death of Copyright: Digital Technology, Private Copying, and the Digital Millennium Copyright Act*, 87 VIRGINIA L. REV. 813, 879-80 (2001) (offering and critiquing the lottery justification for copyright).

[187] *See, e.g.*, Paul Goldstein, *Copyright*, 55 LAW & CONTEMP. PROBS. 79, 83 (1992) ("A robust copyright, by contrast, will mix the hope of high return on some works with risk of loss on others, giving publishers, if not quite a lottery, then at least a portfolio that will promote investment and sustain a wider variety of authorship than could command support under any other legal system."). I would note that this argument is not new. The Stationers' Guild also offered the argument in its 1586 petition to the Star Chamber:

> Also priviledges, are occasion, that many bookes are nowe prynted, which are more beneficial to the common welth, then proffitable to the prynter, for the Patentee beinge benefeted otherwise by Bookes of profitable sale is content to bestowe parte of his gayne in other bokes, which

subsidies might lead to more creative output, proved true in the music industry over the last sixty years. During the 1990s, when copyright regulation was most effective, and the copyright subsidy and industry revenues peaked, popular music output fell to its lowest level over the last six decades. Fewer new songs appeared on the Hot 100 chart annually during the 1990s than in the 1960s, 1970s, 1980s, or from 2000-2015.[188] And the most popular songs from the peak revenue 1990s had far fewer streams, on an age-adjusted basis, on Spotify world-wide in 2014, and on last.fm in the summer of 2020, than the most popular songs from the 1960s, the 1970s, 1980s, or from the 2000s.[189] In the music industry, a higher copyright subsidy did not mean more creative output. It simply meant more monopoly profits and more highly overpaid, and less productive, superstars in the industry.

For the music industry, these studies establish that a larger copyright subsidy did not increase creative output, and a smaller subsidy did not reduce it. Even very large increases and decreases in the copyright subsidy, whether doubling it or cutting it in half, produced no corresponding change in popular music output. To the contrary, where a statistically significant correlation between subsidies and creative output was found, more subsidies were associated with the production of fewer and poorer quality hit songs, *ceteris paribus*.

While these studies focus on the music industry, they tend to establish that copyright's supposed public benefit is a lie. Copyright does not benefit the public by ensuring a wide and varied supply of high quality works of

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are within the compas of his patent, verie beneficiall for the common welth, and yet suche whereby the printer shall scarse reape the Tenth parte of his charge: which Bookes wolde never be prynted if privileges were revoked.

Arber, *supra* note 146, at 805.

[188] *See* LUNNEY, COPYRIGHT'S EXCESS, *supra* note 14, at 95-97. The Hot 100 is released weekly, fifty-two weeks a year. As a result, every year, a total of five thousand two hundred songs appear on the chart. Most of those songs, however, repeat from week to week. If we count the number of new, unique, or non-repeating songs on the chart in a year, the number peaked in 1966 with 743 new songs appearing on the chart. It then began to fall, reaching its nadir of only 294 new songs in 2002. As revenues continued to decline, the unique song count began to rebound and reached a second peak of 477 new songs in 2010. From 1962 through 1969, an average of 703 new songs appeared annually on the Hot 100 Chart. During the 1970s, an average of 541.8 new songs appeared annually on the chart. During the 1980s, that number fell to 417.2. The average reached its lowest point in the peak revenue 1990s, with only 350.9 new songs annually. From 2000 through 2015, as revenues fell, the number of new songs appearing on the Hot 100 chart annually increased to an average of 368.5. This new song count represents an unbiased measure of popular music output. *Id*. at 129.

[189] *See* Glynn S. Lunney, Jr., *Copyright's Excess Revisited*, at 8, TEXAS A&M J. PROP. L. (forthcoming 2020), http://www.ssrn.com.

authorship. That supply would exist even without copyright. Indeed, the available empirical evidence suggests that strong and effective copyright protection, and a correspondingly high copyright subsidy, reduce creative output. At least, that is what happened in the music industry during the peak revenue 1990s.

Treating copyright as a tax forces us to confront this issue directly. It forces us to ask, in a way that some of the other labels we might apply to copyright do not, what taxpayers are receiving in return. If the answer is nothing, or less than nothing, as it appears to be, then that makes copyright a tax, not merely in the descriptive sense, but in the worst possible, pejorative connotation of the word.

V. COPYRIGHT AS TAX: WHY LABELS MATTERS

This article is an exercise in the power of language. The words we use to describe things control our thinking in ways we do not always realize and cannot consciously control. The language that dominates the copyright discourse, words such as rights, ownership, property, and protection, makes us: (i) overlook many of the costs copyright imposes and (ii) minimize those we do see. That language also predisposes us to see copyright as beneficial and desirable, without requiring any proof that copyright's supposed benefits are real.

The first point of the article is thus simple: If we change our language, we will change how we perceive copyright. Instead of property, ownership, or rights, we can call copyright government regulation. Instead of royalties or incentives, we can speak of taxes and subsidies. Instead of original works of authorship, we can speak of consumer products. In each case, merely changing our language changes our perceptions. We become more cognizant of copyright's costs and more skeptical of its supposed benefits. Language thus matters.

The second point is that copyright is a tax. Or at least, copyright is more tax than property, both descriptively and normatively. For the most popular of the products copyright regulates, copyright limits competitive entry and raises the prices that consumers pay. These increased prices are effectively a tax. Both derive from government action. Both raise the prices consumers pay. Both generate similar distortionary welfare losses. These taxes are then returned to the regulated industry as a subsidy. With copyright, government does not collect the tax itself or return the subsidy to the regulated industry through the usual budgetary process for government expenditures. Yet, while different in form, copyright imposes the same economic distortions and inefficiencies as would an express tax-and-subsidy system. Indeed, over the short term, Congress could abolish copyright and replace it with an express tax-and-subsidy system. Simply impose a $6 tax on every copy of a book sold and return the tax receipts to the

book publishing industry as an express subsidy through the usual budget-
ary process. The economic consequences would be the same. That Con-
gress choose to do so indirectly, through restrictions on entry, rather than
directly, does not change copyright's basic nature. As Macaulay long ago
recognized: Copyright is "a tax on readers for the purpose of giving a
bounty to writers."

Third, thinking of copyright as a tax offers new insights and new ways
of thinking about copyright. It: (i) provides a way to measure the tax; (ii)
identifies who pays it; and (iii) forces us to examine critically what, if any-
thing, taxpayers receive in return. It takes none of these for granted. It
recognizes that none of these represents the invisible hand of the market.
All represent the visible hand of copyright. By recognizing copyright's
role in market prices, thinking of copyright as a tax enables agency in
those responsible for ensuring that copyright advances its constitutional
purpose: the Progress of Science.