<u>The Value Gap in Online Music Markets in Canada</u>
<u>The Case of Music Streaming</u>
<u>& the Role of the Law</u>

By

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Executive Summary

This paper examines whether Canadian Copyright law has prevented the full potential value of the online music streaming market to be realised, and thereby generated a "value gap". In particular we focus on the value gap in the music streaming market due to Canadian Copyright law being both very slow to adapt, and then badly adapted to new technological developments associated with the Information and Communications Technology (ICT) revolution.

In particular this paper identifies and examines the "value gap" in the music streaming market in Canada due two features of Canadian Copyright law:

  a) First the copyright royalties set by the Copyright Board of Canada for the distribution of online music streaming in Tariff 8; and
  b) Second the Copyright Modernization Act, (CMA) Bill C-11 adopted in November 2012, that offers a number of copyright exceptions, safe harbours and limitations on the liabilities for internet intermediaries.

These two components of Canadian law create a situation in the online music market where rights holders are prevented from giving full consent for use of their copyright works.

We estimate the value gap in the Canadian online music market due to these weaknesses in Canadian Copyright law to be from Cd$ 121.6 million up to nearly Cd$858 million

Our analysis suggests that in 2015 recorded music revenues for streaming in Canada, that currently total around 42 million, would be four to twenty times higher if Canadian Copyright law causing distortions were removed and market based royalties were paid. Our analysis thus suggests that relative to their true market value record industry revenues are highly depressed due to key distortions in Canadian law.

The results and analysis in this paper further complement earlier economic analysis of the negative effect of another key failure of Canadian Copyright law and that is to sufficiently deter unauthorised online downloading of music, or piracy, had on industry revenues (see Barker 2012, and Barker and Maloney 2015). These studies showed that the loss in music industry revenues due to unauthorised online downloading of music or piracy, had reached around C$1.3 billion by 2005 alone. (Barker 2012 p76).

The current work on unauthorised online streaming together with earlier work on unauthorised downloading thus suggest that, in total, by 2015 the value gap due to both unauthorised downloads and online streaming together might be over Cd$2 billion per annum.

It further appears this value gap has been caused by a failure of Canadian law to appropriately and adequately deter unauthorised downloads and unauthorised streaming. The data thus seems to show that the failure to respond appropriately to the advent of digital technologies and the spread of the internet by strengthening copyright law has led to lower effective copyright protection and greater free-riding on the creativity of others. This has been to the detriment of music revenues in Canada, the Canadian economy as a whole and future consumers of music, who will suffer from reduced investment in new music as a result.

At this stage then it appears that an evidence-based approach to policy requires strengthening copyright protections to deter unauthorised appropriation, limit market bypass, and instead enhance the extent of market transactions in copyright and therefore the total reward and incentive for creativity to the benefit of the Canadian community in the future.

Introduction

This paper identifies and examines the nature and consequences of two recent developments in Canadian Copyright law:

   a) First the copyright royalties set by the Copyright Board of Canada for the distribution of online music streaming in Tariff 8;
   b) Second the Copyright Modernization Act, (CMA) Bill C-11 adopted in November 2012, that offers a number of copyright exceptions, safe harbours and limitations on the liabilities for internet intermediaries.

The analysis in this paper suggests these two components of Canadian law create a situation in the online music market where rights holders are prevented from giving full consent for use of their copyright works. This is predicted to damage growth in legitimate markets both for music streaming and for music downloads. In this paper we shall seek to identify the extent of this "value loss" as a consequence.

The degree of lack of consent of interest here, and therefore the degree of unauthorised distribution extends over a spectrum as follows.

   a) At one extreme is full consent, or voluntary exchange of copyright in a competitive market. Theoretically this would support realisation of the *full* market value of copyright, and therefore no "value gap".
   b) At the other extreme is piracy, where no consent by copyright owners is sought or obtained at all, there is no license, and no authorisation of use, and instead simple theft, or a complete denial of owners rights, and as a consequence there is complete market bypass, and no market value is realised, so that the "value gap" in exchange is at its maximum possible.
   c) In between these two extremes one has constrained or partial consent, involving a value gap between zero, and its maximum possible amount. In this situation where there is less than full consent or fully authorized, or licensed use, but not a complete absent of consent, or fully unauthorised or unlicensed use or piracy, one could say there is "under-authorised" or "under-licensed" use.

In this paper we seek to measure the likely range of the economic costs or "value gap" due to the third problem of below competitive market royalty rates, arising from distortionary interventions by the Copyright Board, and/or the over-exploitation of safe harbour rules. We shall focus in particular on the value gap in music streaming markets in Canada and the question "how much revenue is the music recording industry in Canada losing" due to how poorly adapted Canadian Copyright Law is to the digital age.

Music streaming markets are rapidly growing in value, as the recording industry has negotiated licensing deals with on-demand subscription-based services such as Spotify, Apple Music, and Rhapsody, transforming music retailing from a physical to a cloud-based medium. This growth may have led to a failure to appreciate the possibility, let alone the extent of the value gap, due to distortionary interventions in the market by the Copyright Board, and/or the over-exploitation of safe harbour rules.

The Wider Context

A recent more general analysis of the wider recorded music market in Canada has clearly already shown that the spread of digital technologies and the internet since the 1990's has

coincided with a major collapse of the revenues of the recording industry in Canada. This is contrary to the "golden age" the technologies were forecast to unleash 20 years ago as justifications for the adoption of a number of copyright exceptions, safe harbours and limitations on the liabilities for internet intermediaries in the United States in the 1998 Digital Millennium Copyright Act (DMCA) Instead as Figure A below clearly illustrates, the last 20 years has seen a growing deficit between actual nominal revenues of the Canadian Music industry (which is the lower downward sloping line), and what revenues would have been in each year from 1997 had revenues kept up with the rate of inflation (CPI) and the economy-wide real GDP growth rate, which is the upward sloping line.

Figure A: Total Canadian Music Industry Revenues
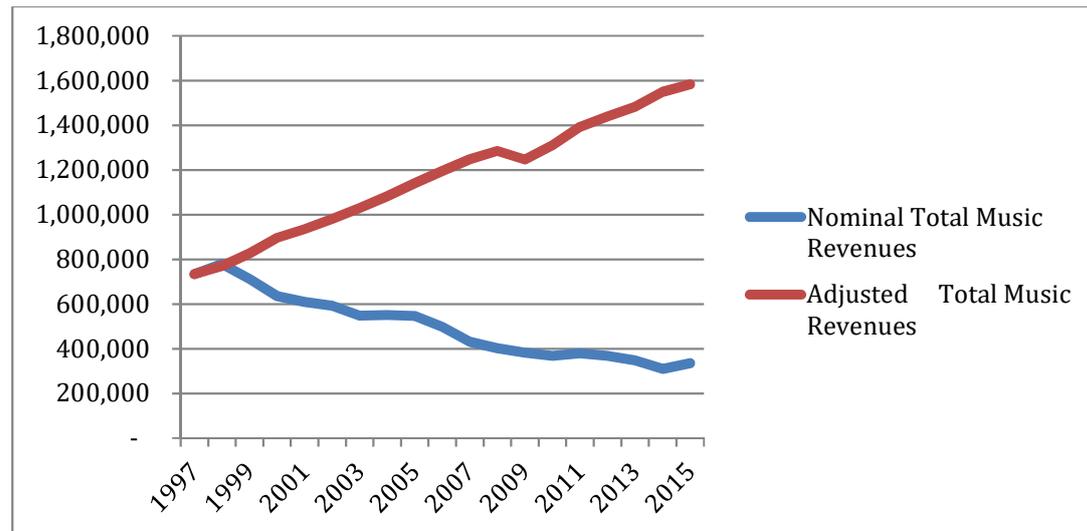
The above analysis of Canadian music revenues from 1997-2015 suggests that

- Canadian music revenues have failed to keep up with the underlying economy wide rate of inflation and real GDP growth rate, as shown in figure A above. By 2015, total music revenues in Canada had fallen to $335 million, which is only 21% of what they would have been had they kept up with the rate of inflation and the economy-wide real GDP growth rate from 1997. Music revenues would thus have been nearly $1.25 billion higher, at $1,582 million, if they had they kept up with the rate of inflation and the economy-wide real GDP growth rate from 1997. This is 4.72 times higher than the level of Canadian music revenues in 2015.
- The Canadian music value gap, or total lost or foregone revenues in Canada over the eighteen-year period since 1997, is around $12.6 billion. This is the cumulative loss or the sum of the difference (deficit/loss) per annum, between actual realized revenues and the hypothetical revenues that would have been realized had revenues kept up with the rate of inflation and the economy-wide GDP rate from 1997. The total loss per annum averaged $663 million a year over the eighteen-year period, but the deficit per annum rose above $1 billion a year by 2011, and has since risen to nearly 1.25 billion in 2015.

It seems likely that the above analysis underestimates the true extent of the value gap in music industry revenues in Canada, to the extent better designed and enforced law would have enabled the music industry to grow faster than the rest of the economy, as it had done in the 1990's. To obtain a better estimate one needs to break the analysis down more and focus on the value gap due to unauthorised downloads and online streaming separately

Focusing on the effect of unauthorised downloads, earlier economic analysis of a nationally representative survey of commissioned by Industry Canada in 2005 that controlled for demographic and economic factors confirmed that unauthorised online downloading of music or piracy, substituted for individual legitimate music purchases, and had strong negative effects on legitimate music purchases, and therefore industry revenues (see Barker 2012, and Barker and Maloney 2015). The responses to the nationally representative Industry Canada survey clearly showed that by 2005 there was already a substantial value gap in music revenues due to Canadian copyright law failing to deter unauthorised music downloads. Indeed that the loss in music industry revenues due to unauthorised online downloading of music or piracy, had reached around C$1.3 billion by 2005 alone. (Barker 2012 p76).

In this paper we will focus on another source of the value gap, the revenue loss due to unauthorised and under-authorised streaming. We shall show the value gap in the online streaming market is estimated to have reached between Cd$100 million and Cd$850 million per annum by 2015 following the development of the unauthorised online streaming market from around 2010.

This suggests that, in total, by 2015 the value gap due to unauthorised downloads and online streaming together was nearly C$2 billion per annum. It further appears this value gap has been caused by a failure of Canadian law to appropriately and adequately deter unauthorised downloads and unauthorised streaming. The data thus seems to show that the failure to respond appropriately to the advent of digital technologies and the spread of the internet by strengthening copyright law has led to lower effective copyright protection and greater free-riding on the creativity of others. This has been to the detriment of music revenues in Canada, the Canadian economy as a whole and future consumers of music, who will suffer from reduced investment in new music as a result

At this stage then it appears that an evidence-based approach to policy requires strengthening copyright protections to deter unauthorised appropriation, limit market bypass, and instead enhance the extent of market transactions in copyright and therefore the total reward and incentive for creativity to the benefit of the Canadian community in the future.

Before proceeding to our estimation work however it is first important to explore the reasons why Canadian Copyright Board decisions on copyright royalty rates, and CMA provisions on safe harbours are likely to have damaged growth in legitimate markets both for music streaming and for music downloads an in effect caused these outcomes.

The Nature and Role of Copyright Board Set Royalties

The Copyright Board of Canada (The Board) Tariff 8 decision in May 2014 set artist royalty fees for online music streaming services and required commercial webcasters in Canada to compensate recording artists at a royalty rate of only 10.2 cents (Cd $0.102) per 1,000 plays, or 0.0102 cents (Cd $0.000102) per play.[1] This rate is said be at least 90 percent lower than any royalty rate in the world and is subject to appeal in the Canadian Federal Court of Appeal.[2]

By comparison the American royalty rate for example was set at 210 cents (USD $2.10) per thousand plays - or 0.21 cents (US $0.0021) per-play - by the US Copyright Royalty Board

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[1] https://www.ominocity.com/2014/07/11/canada-now-pays-artists-one-of-the-worst-music-streaming-royalty-rates-in-the-world/
[2] Ibid

in 2012. [3] In Canadian currency this translates[4] to around 0.27 cents (Cd$ 0.0026775) per play. This is over *20 times* the Canadian Copyright Board rate. The Copyright Board of Canada however has defended the Canadian Board's decision against criticism regarding the low rate set by Tariff 8 compared to the US. Thus Gilles McDougall, the secretary general of the Copyright Board of Canada claimed "Re:Sound Tariff 8 is setting really just a part of the copyright payment that a webcaster will need to pay." [5] Canada's Copyright Act outlines as many as six exclusive rights associated with streaming music over the Internet. The Tariff 8 decision is only concerned with payments regarding two of them: the equitable remuneration to which performers are entitled when a published sound recording of a musical work is communicated to the public by telecommunication and the same remuneration to which makers are entitled. The Board thus claims one has to add pre-existing Canadian tariffs concerned with other associated rights, some of which are not granted payment by American copyright law.

One way to simply cross check the likely average Canadian total royalty rate is to simply divide
1) the actual total annual recording music industry revenues for online internet radio services (Web radio, net radio, streaming radio, e-radio, online radio and webcasting) by
2) the likely actual total number of online streaming music plays a year in Canada.

Table 1(a) below in row 1 identifies record labels revenues from streaming in 2015. To estimate the likely actual number of total online streaming music plays, we proceed in a number of steps in Table 1a below. In row (2) we start with the size of the population aged 16-64 in Canada in 2015. [6] In row 3 we then estimate the average time spent in Canada listening to streamed music on the internet (Pandora, Spotify etc) each day at 28.42 minutes, using data from an Edison Research survey on time spent listening to music per day in the US released in 2014. [7]

Table 1a: Average Royalty paid in Canadian Music Streaming Market

Row	Year 2015	Canada
1	Sales reported	42,492,576
2.	Total Population aged 16-64 (2)	23,917,009
3.	Minutes per day spent streaming music[8]	28.42
4	Average length of songs on Radio[9]	3.91
5	Average plays per year, per person (3/4)*365	2,653.02
6	Total Plays in Canada per Year (5*2)	63,452,253,059
7	Average Actual Royalty per play (1/8)	0.00067

In row 4 we then estimate the average length of a song as 3.91 minutes[10] which on average implies people listen to around 7.27 songs, or plays per day (28.42/3.91). In column 6 we then identify that this implies that total plays of music on internet radio/Music (Pandora, Spotify

[3] Tom Beedman (2014) "Copyright Board of Canada Defends 'World's Lowest Royalty Rate': "Maybe it's too high. I don't know." Aug 14 2014 Noisey.vice.com https://noisey.vice.com/en_ca/article/6x8eb4/copyright-board-of-canada-tariff-8-interview
[4] At the average USD/Cd exchange rate in 2015 of around 1.275
[5] Gilles McDougall, the secretary general of the Copyright Board of Canada cited in Beedman 2014 Ibid
[6] Population data are from Statistics Canada
http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=0510001&&pattern=&stByVal=1&p1=1&p2=37&tabMode=dataTable&csid = aged 16-64.
[7] Source Eddison Research : http://www.edisonresearch.com/edison-research-conducts-first-ever-share-of-ear-measurement-for-all-forms-of-online-and-offline-audio/ Based on a nationally representative sample of 2096 Americans ages 13+ who completed a 24 hour audio listening diary May 2014. The survey revealed that Americans spend an average of 4 hours and 5 minutes each day consuming audio with 11.6% of that time, or 28.42 minutes, spent on internet radio/Music (Pandora, Spotify etc)
[8] ibid
[9] https://www.wired.com/2014/07/why-are-songs-on-the-radio-about-the-same-length/
[10] https://www.wired.com/2014/07/why-are-songs-on-the-radio-about-the-same-length/

etc) in Canada in a year to be around 63.5 billion a year. This enables us to estimate the royalty payment per play in column 7 at around Cd$0.00067 per play, or 0.067 cents per play.

This estimate suggests that although the actual royalty per play paid for music on internet radio/Music at 0.067 cents may be higher than the Canadian Copyright Board Tarriff 8 decision of 0.0102 cents per play, it still remains considerably lower or around a quarter of the US Copyright Royalty Board rate of Cd 0.027 cents per play.

It is worth noting that in the US despite the US$0.0021 or 0.21 cents per- play set by the US Copyright Royalty Board there is a wide diversity of rates being paid on different platforms, that offer alternative benchmarks that could be used to estimate the value gap created by the low rates in the Canadian market. Thus total royalties paid in the US in 2015 for ad-supported streaming in the USA in 2015 were US$588.5 on 340.5 billion plays implying a royalty rate at around US$0.0017, or 0.17 cents per play. [11] This translates to around CD $0.00216[12] that is over 20 times higher than the Canadian Copyright Board set royalty rate of Cd$ 0.000102. Even higher market royalty rates however are being negotiated in the US for paid streaming. For example analysis of RIAA reports total royalties paid in the US in 2015 of US $670 million for paid streaming or on-demand subscription streaming services (like Spotify premium) showed these revenues were earned from about 85.3 billion plays, which yields an implied average royalty of US $0.0079 per play, or around Cd $ 0.0101 that is nearly 100 times higher than the Canadian Copyright Board set royalty rate of 0.00102.[13]

It thus appears likely that the Canadian Copyright Board may be limiting the royalty rates paid in Canada per play on streaming to below market value rates. Boyer (2015) indeed uses Canadian data to show that the approach of the Canadian Copyright Board (the Board) in setting royalty rates for authorized commercial terrestrial radio industry, and for internet webcasting services in Canada under Tariff 8 outlined above has seriously underestimated the value of royalties payable by authorized providers.

Boyer notes in relation to the new technologies for reselling and distributing music, known as Internet radio (Web radio, net radio, streaming radio, e-radio, online radio and webcasting) that it is clear that Internet radio is already a significant competitor with Canadian terrestrial radio industry noting even that.

> "As Pandora puts it:
>
> > We compete for listeners with broadcast radio providers, including terrestrial radio providers ... and satellite radio providers "…..Boyer p11

To ensure a level playing field in radio competition therefore Boyer supports the move to require Internet radio services to pay for copyrights in recorded music on a per-play[14] basis that is compatible with that observed in commercial terrestrial radio, rather than as a percentage of revenues. Boyer notes that in fact, the US Copyright Royalty Board has favoured a per-play compensation for rights holders in Internet radio and that the Canadian Copyright Board has moved in that direction in its May 2014 decision on Re:Sound Tarif 8: (Boyer p 12)

Boyer (2015) main findings on the Canadian Copyright Board rulings were:

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[11] Beard et al's (2017)

[12] At the average USD/Cd exchange rate of 1.275 for 2015

[13] Beard et al (2017)

[14] "A play is one piece of recorded music, typically just under four minutes, broadcast to one listener. " Boyer page 10 Footnote 7

- The approach followed by the Copyright Board to determine the competitive value of copyrights in the commercial terrestrial radio industry has deprived rights holders of significant royalty payments.
- Such under-compensation is carried over to Internet radio webcasting since royalty payments in new broadcasting technologies are based in part on the royalty regimes in terrestrial radio broadcasting.
- Failing to take into account the major differences between new broadcasting technologies and over-the-air broadcasting is detrimental to rights holders as well as to the Internet radio industry itself.

Boyer's basic insight which he used to calculate the competitive market value of music "plays" on radio (and therefore streaming) is that in a competitive market a profit maximizing radio operator "would choose a program time allocation" between talk and music "for which the marginal values of music and talk" to the operator "would be the same" Boyer p8. Thus if "at the margin" the operator could make more from allocating a minute of time to music than to talk, they would adjust their time allocation to increase music programming accordingly, until the marginal value of each use of program time was equal. This implies that the share of program time of the two types of programs (music and talk) should be reflected in their revenue contribution - or share of revenues.

Accounting data for terrestrial radio stations indicate that the level of payments for talk content or on-air talent amounts to 18.3 percent of revenues. Boyers was able to use this to estimate the implied value of music, by drawing on work by Audley and Boyer (2007) who disaggregated the typical radio programming day into different parts – music as a percentage of program time, advertising rates and revenues, and payments for on-air talent vary by time of day – and derived a conservative weighted music content percentage of 60 percent, with the complementary 40 percent being talk content. On this basis Boyer computed the competitive market value of recorded music as equal to the 18.3 percent of revenues allocated for talk, multiplied by 1.5, which is the mathematical value of the 60/40 music/talk ratio. The result is that the estimated music competitive market value is 27.5 percent of revenues. This is the implication of the observed behaviour and choices of terrestrial radio station operators in Canada.

On this basis Boyer estimated that given that the Canadian music-format terrestrial radio industry generated revenues of about $1.6 billion in 2012, the competitive market value of recorded music would amount to slightly more than $440 million (27.5 percent of $1.6 billion). This is the market value of recorded music as revealed by the observed behaviour and choices of terrestrial radio operators, and this is the value that royalty payments should be based on. This market value of recorded music of about $440 million, compares to the estimated actual payment of $178 million in 2012, and is thus about 2.5 times higher than the current total royalty payments (11.2 percent of revenues) - before adjustments for repertoire, exemptions, concessions, legal provisions, tiering, etc. [15]

Boyer then estimated that given the total available play-equivalent program time in the Canadian terrestrial radio industry is about 232 billion plays, the 60/40 split translates into some 139.2 billion recorded music plays. The royalty compensation, therefore, should be 0.316 cents per play based on the total competitive value of $440 million from above; i.e., $440 million divided by 139.2 billion. This implies that the competitive market royalty compensation therefore, should be 0.316 cents per play, and has implications for the royalty rates used above to estimate the value gap from streaming.

Boyer thus claims that the per-play rate should be substantially increased

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[15] Prof. Marcel Boyer (2015) The Value of Copyrights in Recorded Music: Terrestrial Radio and Beyond See https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2567446

In Pandora's case, it paid some US$345 million, or 53 percent of its 2013 revenues, to rights holders. Its royalty payments that year represented 2.05 cents per listener-hour or 0.134 cents per-play. I showed above that a fair per-play rate should be in the order of 0.316 cents in terrestrial radio (Canada), a significantly higher rate than Pandora pays, even when accounting for exchange rate differences" Boyer page 12-13

Translated into Internet radio per-play rates, this means an increase from the 0.134 cents per-play rate being paid by Pandora and the 0.21 cents per- play set by the US Copyright Royalty Board toward a 0.316 cents per-play rate. Equal royalty rates, although with a different formula, will ensure a level playing field of competition between terrestrial and Internet radio. Boyer page13

Given the Copyright Board sets a reference point for market rates, or sets the "outside option" of copyright owners in bargaining, the low Copyright Board Rates are likely to have affected the market, and led to lower market royalty rates. This means that **the royalty rate for paid streaming in Canada is unlikely to reflect the true competitive market value of streaming.** In the absence of the distortion by the Copyright Board it appears likely that market royalty rates would be higher.

In later sections we will seek to measure the extent of the value gap this distortion causes, by simulating likely market outcomes if higher royalties were being paid in Canada than those currently. Table 1(b) below summarises the various "benchmark" royalties we will draw on in doing this to measure the value gap. Row 1 in Table 1b identifies Beard et al's estimate of Royalties paid for ad-supported streaming in the USA in 2015, of USD $ 0.0017 per play, which as shown in the last column translated in 2015 to around Cd$0.0022 per play.[16] Row 2 Row 1 in Table 1b then identifies the US Copyright Royalty Board rate of USD $ 0.0021 per play, which as shown in the last column translated in 2015 to around Cd$0.0027 per play.[17] In the last column in row 3 we identify the royalty rate of Cd$ 0.00316 estimated by Professor Boyer based on competitive market behavior in the terrestrial radio market in Canada. In row 4 we finally identify the royalty rate for paid streaming in the US estimated by Beard et al at $US 0.0079, which as shown in the last column of row 4 translated to around Cd$ 0.0101 in 2015.

Table 1(b) Benchmark Royalty Rates for Streaming per play

Row	Benchmark	USD	Cd$
1	Beard et al Estimate for Ad Supported Streaming in US	0.0017	0.0021675
2	US Copyright Royalty Board in US	0.0021	0.0026775
3	Boyer Estimate from Canadian Terrestrial radio		0.00316
4	Beard et al Estimate for Paid Streaming Rate in US	0.0079	0.0100725

The Copyright Modernization Act: Safe Harbours and TPM

A quick review of recent history suggests copyright law in Canada appears to have suffered from two major weaknesses. First it has been slow to adapt to technological change, and

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[16] At the average USD/Cd exchange rate of 1.275 for 2015
[17] At the average USD/Cd exchange rate of 1.275 for 2015

second when legal change finally occurred, it was poorly adapted to the technological change that had occurred, and meanwhile technology continued to evolve. Thus as we show in this section Canadian law has been both very slow to adapt, and then badly adapted to the development first of radio, and now more recently streaming.

In the early days of radio for example it was not clear the law required the payment of royalties by broadcasters, and broadcasters resisted making payments. [18] It was thus not till 1933 in the UK in the case *Gramophone Company Ltd v. Stephen Cawardine & Co.* ([1934] Ch. 450 (Ch.D.)) that the principle that those involved in creating a sound recording should be paid for the broadcasting and public performance of their work.[19] In Canada however, it was not till much later in 1971 that the record industry was able to first claim the record performing right against strong broadcasters objections, on the basis of the existing Canadian law and the precedent of the Cawardine case. The claim was strongly opposed by the broadcasters, who argued that the right did not exist in Canada. The Copyright Appeal Board found in the record industry's favour. However, three months later in 1971 the government acceded to pressure from Canadian and US broadcasters, and new legislation was proposed, retrospectively abolishing the record performing right in Canada. Influenced by the argument (not true) that most of the record performing right royalties from Canada would go to the USA, the Canadian Parliament adopted the proposal by a strong majority vote.

It was then not till twenty six years later in 1997, sixty four years after the Cawardine case, that the Canadian Parliament re-established the record performing right in relation to radio in Canada by a new law. As with radio, Canadian law has also been slow to respond to first generation issues in the internet economy affecting streaming, so that the Copyright Modernization Act, (CMA or Bill C-11) was not finally passed till November 2012, even though the CMA largely adopts the United States approach of 14 years earlier in the 1998 US Digital Millennium Copyright Act (DMCA), that was followed a little later in the 2000 EU eCommerce Directive which largely followed the US DMCA.[20]

The DMCA and EU eCommerce Directive (on which the CMA is modelled) all sought to implement the WIPO treaties, however in the U.S. technology companies insisted on the enactment of safe harbours from liability in return for implementation of the WIPO Treaties.[21] Both the US and the EU regimes have subsequently been interpreted by the courts[22] in the United States and EU respectively and this provides us with an ability to therefore assess the likely effects of the Canadian CMA from 2012. It turns out, from this case law that these laws leave considerable scope for a major value gap in the newly developing streaming market which we examine in this section - particularly in relation to You Tube.

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[18] A detailed description of the history of the recognition of the record performing right, together with descriptions of the Rome Convention and Australian, Canadian, German and other relevant cases is given in J.A.L Sterling World Copyright Law (3 rd Sweet & Maxwell 2008)

[19] This discussion draws on a short history of establishment and maintenance of the record performing right (covering broadcasting and public performance of sound recordings) found here http://www.ifpi.org/downloads/ifpi-a-short-history-november-2013.pdf Accessed 3 April 2017

[20] The EU eCommerce Directive does not include a provision similar to Section 512(d) of the US Copyright Act.

[21] Barry Sookman (2017) Fix The Value Gap http://www.barrysookman.com/2017/01/09/fix-the-value-gap-a-reply-to-michael-geist/

22 Examples:

Viacom International Inc., Comedy Partners, Country Music Television, Inc., Paramount Pictures Corporation, and Black Entertainment Television LLC v. YouTube, Inc., YouTube, LLC, and Google Inc, 2013. Viacom sued YouTube, alleging that YouTube had engaged in "*brazen*" and "*massive*" copyright infringement by allowing users to upload and view hundreds of thousands of videos owned by Viacom without permission. [1] A motion for summary judgement seeking dismissal was filed by Google and was granted in 2010 on the grounds that the Digital Millennium Copyright Act's safe harbor provisions shielded Google from Viacom's copyright infringement claims. [2] In 2012, on appeal to the United States Court of Appeals for the Second Circuit, it was overturned in part. On April 18 2013, District Judge Stanton again granted summary judgment in favour of the defendant, YouTube. [3] An appeal was begun, but the parties settled in March 2014.

TF1 v YouTube, 2012. The Tribunal dismissed a copyright lawsuit lodged by the French TV channel TF1 against YouTube on the basis that YouTube as a mere host is not responsible *a priori* for the content of the material it hosts; therefore, it is not required to implement on its own motion any preventive measure to guarantee that only content not infringing third party rights can be uploaded into its system.

The Impact of the CMA Safe Harbours

The US DMCA granted limitations to the potential liability of intermediaries in distribution networks on the Internet. These limitations are commonly referred to as 'safe harbours' but can potentially operate like pirate harbours. The safe harbours cover specific activities, such as providing access to the Internet (mere conduits), transient and temporary storage (caching), hosting services, and information location tools/search engine services. Unlike the US regime, the EU framework did not address information location tools/search engine services. Under US, EU and other countries' safe harbour legislation, copyright holders are denied the right to monetary compensation from service providers for harm caused by acts that fall within the safe harbour rules and only the possibility of obtaining injunctive relief remains. The effect of the safe harbour and immunities laws embedded in the DMCA is that they set the sanctions facing internet intermediaries delivering unauthorised copies on their digital platforms at close to, if not in fact zero. To the extent intermediary distributors of copyright works face no legal sanction they are unlikely to make a fair value contribution to creation costs of copyright owners. Economic analysis of law suggests this may be predicted to have adverse economic effects, by reducing the incentive to create, invest in and distribute creative works over time.

The Canadian 2012 amendments include the same categories of safe harbours for network providers, hosting providers and search engines as exist under the DMCA, although the wording and conditions associated with each differ. The US DMCA law impact is therefore relevant to assessing the likely effect of the later 2012 Canadian Act. The Canadian amendments involve the creation of new, broad exceptions, some without precedent anywhere, [23] and so are only likely to have facilitated unauthorized streaming even more.

In the years prior to the adoption of the Canadian law and since, the application of the service providers' safe harbours expanded beyond their original scope. Business models that did not exist in the mid-90's when the DMCA provisions were crafted, and online services that were not foreseen at the time, are claiming protection under safe harbours that were not intended to cover them. The US, EU and now Canadian laws frame the context in which network service operators, content-hosting companies and social networks ('technology intermediaries' or 'intermediaries') operate, limiting their responsibility to copyright owners. They imposed limits to copyright owners' ability to require consent to their works being distributed on the Internet.

This is directly relevant to the potential growth of the value gap due to under-authorised streaming which we seek to estimate. The safe harbour regime were introduced before broadband[24], file sharing[25], social media[26] and apps[27], and at a time when knowledge of what was passing through the network was limited at best. If no statutory safe harbour or immunities had been introduced, and the expected legal sanctions had been left in the law, over time a market in digital rights would have developed that enabled all these technological innovations, while ensuring creators were compensated for their creative works that were the source of most value on the internet. The failure of the law however either to require the consent of rights holders, or to compensate them for the harm caused by such lack of consent, means their incentives to create, invest in and distribute creative works are reduced, and the number of people participating in creative activities have fallen.. This means one would predict that economic growth has been less than it should have been, and that future

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[23] Barry Sookman (2017) Fix The Value Gap http://www.barrysookman.com/2017/01/09/fix-the-value-gap-a-reply-to-michael-geist/

[24] Point Topic, 2013.

[25] While File Transfer Protocol was established in 1985 and the World Wide Web proposed in 1990, peer-to-peer file sharing became popular in 1999 with introduction of Napster.

[26] In 2002 social media really hit its stride with the launch of Friendster. Goble, G. et al, 2012.

[27] Following the launch of the iPhone in January 2007, Apple launched the App Store in July 2008. 60 million apps were sold within the first month.

consumers and society as a whole are worse off than they would have been had creators' full consent for the use of their works on the Internet been required, or had their lack of consent been compensated for.[28] The unintended consequences of the safe harbour legislation have been the distortion of markets and investment, the creation of barriers to entry and the limitation of overall economic growth for the cultural and creative industries, both now and in the future.

You Tube as a Case Study

To test the above prediction that the DMCA safe harbours limit royalty rates, it is useful to pay specific attention in particular to You Tube for two related main reasons. First a key issue with You Tube is the low payments made to artists. This results largely due to the fact that YouTube claims immunity from liability for User Generated Content (UGC) uploads under the Safe Harbour provisions of the US Digital Millennium Copyright Act (DMCA) and under fair use laws in the US. A protracted court case to challenge You Tube's claimed immunity was brought by Viacom (MTV's parent), the record labels and other copyright based industries, but a court settlement following Google's acquisition of YouTube left the fundamental issue of the Safe Harbour and fair use liabilities unresolved. It now re-emerges because You Tube's claimed immunity prevents rights holders from exercising the sort of control over YouTube that they enjoy over standard licensed services like Spotify. On Spotify the labels can clearly turn off the tap if negotiations go south. On YouTube it cannot.

The second reason for focusing on You Tube is that it is one of the most widely used streaming services on the planet and the music platform of choice for Millennials and Gen Z. It is thus likely to be a key source of the value gap estimated earlier due to the low rates it pays.[29] For example an Edison Research survey on time spent listening to music per day in the US released in 2014 showed that more than a third or 34% of the total time spent listening to music online across all ages is being spent on You Tube music videos.[30] The table below further shows the breakdown of Edison Research survey for other means of online music listening indicating that You Tube in the US is nearly as big as Pandora at 7.2% of time spent listening to music on average.

Individual Internet services (share out of total)						
Pandora	iHeartRadio	iHeartRadio - AMFM	iHeartRadio - Internet	iTunes Radio	Spotify	Other Internet
7.2%	1.4%	0.4%	1.0%	0.7%	2.1%	1.3%

As a result of the protection offered You Tube by the DMCA and fair use laws in the US, one would predict the royalties paid by You Tube for copyright music would be well below those we discussed earlier. Consistent with this a recent economic analysis by Beard et al (2017) suggests that You Tube paid royalties of only US$0.001 per play in 2015. This is based on You Tube's total royalty payments of $741 million while listeners across the globe consumed 750 billion songs using the service in 2015.[31] By comparison the rate paid for paid streaming

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[28] Stan Liebowitz, in his review of the academic literature on the effect of unauthorised file sharing on music sales, notes that while it is well known that most studies have concluded that unauthorised file-sharing has decreased record sales, *"What has not been noted is that most estimates indicate that the file-sharing has caused the entire enormous decline in record sales that has occurred over the last decade... the estimates from a majority of studies imply that that file-sharing has caused the entire decline in sound recording sales that has occurred since the ascendance of Napster."* ibid. Liebowitz, 2011.

[29] Mulligan, M. 2016 "Growing Tensions as Worldviews Collide"
https://www.midiaresearch.com/downloads/state-of-the-youtube-music-economy-growing-tensions-as-worldviews-collide/

[30] Source Eddison Research : 19% of total household music listening time is spent listening to music online (including You Tube), while 6.4% of the total time spent listening to music is spent on music videos on You Tube. (6.3%/19% =34%)
http://www.edisonresearch.com/edison-research-conducts-first-ever-share-of-ear-measurement-for-all-forms-of-online-and-offline-audio/

[31] M. Mulligan (2016), "State of the You Tube Economy" MIDiA (June 2016) (available at:
https://www.midiaresearch.com/blog/the-state-of-the-youtube-music-economy).

or on-demand subscription streaming services estimated by Beard et al and mentioned earlier was US$0.0079 per play, which is over 7 times more than the You Tube royalty. Given You Tube offers audio visual experience or music videos one might have expected You Tube's royalty rate to be higher than paid streaming rate.

In what follows therefore we shall give specific attention to estimating the value gap contribution of You Tube as the difference in industry revenues that results from You Tube not paying higher rates outlined earlier that might be expected in a competitive market. Given that YouTube is an audio-visual on demand streaming service, it seems reasonable that a market based royalty rate for YouTube would be higher than those outlined earlier for an audio only on demand streaming service.

The anti-circumvention prohibitions

Another part of the Canadian legislative package designed to address first generation digital age and internet issues included new provisions for the protection of technological measures that applied to works in digital form. Copyright owners' rights to control, authorise and prohibit the use of their digital works through technological protection measures (TPM) were supported by legal sanctions attached to the circumvention of such measures. The anti-circumvention prohibitions in the new Canadian copyright law for TPMs while comparable are less protective than the laws in many other countries, including the Member States of the European Union. Under EU law, Member States must prohibit the circumvention of *access and copy* control TPMs. Canadian law only prohibits circumvention of *access* control TPMs. Thus, it is permissible in Canada to circumvent a copy control TPM for fair dealing purposes. [32] Canadian law also provides two safeguards unique in international law. First, it permits the government to establish exceptions by regulation where a TPM could adversely affect the use of a work including where a TPM could adversely affect a fair dealing. Second, the government has the power by regulation to require the owner of a copyright to provide access to a work to a person who is entitled to the benefit of an exception where the copyright owner is not making it possible to exercise the exception. These powers are broader and more flexible than what exists anywhere else in the world. [33]

In any event as the digital market continued to evolve in the years prior to the adoption of the Canadian law, due to the practical difficulties there were in enforcing anti-circumvention provisions in law and the ease with which such measures could be circumvented, the use of technological protection measures by copyright owners in the music sector gradually ceased to be applied. Effectively, rights holders in the music industry lost their ability to control and authorise the use of their digital content which meant the music "back catalogue" was "out of the bag" and into the public domain. This in turn has also no doubt limited the market royalties paid for online streaming in Canada.

Estimating the Value Gap in Streaming in Canada

The value gap in online streaming will be measured as the difference between

    i.   on the one hand, current total royalty revenues in streaming (TR1), generated by current royalty rates per play (R1), *times* the number of current plays (Q1); and

    ii.   on the other hand, the total royalty revenue that would be paid in a fully consensual competitive market (TR2), based on estimates of competitive market royalty rates per

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[32] Barry Sookman (2017) Fix The Value Gap http://www.barrysookman.com/2017/01/09/fix-the-value-gap-a-reply-to-michael-geist/
[33] Barry Sookman (2017) Fix The Value Gap http://www.barrysookman.com/2017/01/09/fix-the-value-gap-a-reply-to-michael-geist/

play (R2), *times* the number of plays (Q2) that would be observed at the estimated market value royalty rate.

Mathematically this can be expressed as follows:

$$\Delta TR = TR2 - TR1$$

$$= R2 * Q2 - R1 * Q1$$

Where
ΔTR = The difference in total royalties (the value gap)
TR1 = Total royalties at the current royalty rates per play
TR2 = Total royalties estimated in a fully consensual competitive market
R1 = The current royalty rates per play
R2 = The estimated competitive market, or "market" royalty rates per play,
Q1 = The original quantity of plays associated with the current royalty rates (R1)
Q2 = The new quantity of plays associated with the estimated market royalty rate (R2)

In this paper in short we shall seek to estimate current total royalty revenues (TR1), current royalty rates (R1), and the number of current plays (Q1) for online streaming, and then estimate (TR2), based on a number of alternative possible estimates of the competitive market royalty rate (R2), and the number of plays (Q2) that would be observed at these alternative royalty rates. This will then enable us to estimate a reasonable value gap range, or a range for ΔTR.

The analysis focuses in the first instance on identifying the current copyright royalty rates per play being paid for streaming music (R1). Attention then turns to estimates of the full market royalty rate per play (R2). In what follows we rely on two economic methods to identify R2 or a benchmark market value for the copyright being used in streaming services.

First we use what can be called a *comparable actual market* (CAM) price method. This seeks to identify comparable market prices to current copyright royalty rates per play being paid for streaming music (R1) and then examine the impact on market value and revenues if these alternative prices (R2) were used in the transactions being examined rather than those observed - for example in You Tube. Economic theory predicts that in a voluntary market involving "willing" but not anxious sellers and buyers, parties will only enter exchange if the value they derive from the exchange exceeds their opportunity cost – or the value of their next best alternative. If the property transacted, or any close substitute, can be readily bought and sold on a market, then the going actual market price for the property or the close substitute determines both the willing seller and willing buyers opportunity cost – or next best alternative - in any given transaction. The going actual market price is what the seller could obtain from others for the property, and what the buyer could have acquired the property (or a substitute) at from others. Opportunity cost as determined by market value then is the litmus test of a "willing seller" and "willing buyer.

Relevant comparable actual market prices then are those obtained in markets involving the actual property or its close substitutes. The comparable prices may thus be set in markets that may appear different geographically (in the USA rather than Canada), or in product type (terrestrial radio rather than internet streaming) but they are nevertheless comparable because of the degree of substitution on the demand side and/poor supply side between the markets. Thus the comparable actual market prices we shall focus on are the royalty rates that were summarised in the earlier table 1(b) including those observed in the US streaming market (as

estimated by Beard et al), and those observed in Canada in the terrestrial radio market (as estimated by Boyer).

The second method we shall use to estimate the value gap is the *resale price minus (RPM) method*. This method focuses on what a willing but not anxious buyer would have been willing to pay for the copyright goods, given the prospect of being able to *resell the copyright goods*; and what a willing but not anxious seller of copyright might have sold at given the opportunity to bypass intermediaries and on-sell to final consumers direct. In this case then the method would start with the re-sale, on-sale price that might have actually been paid for streaming music. In this regard we can readily observe the prices at which streamed music is on-sold to independent parties in retail markets. For example Spotify resells music under a paid subscription model for a subscription payment of around US 9.99 per month. This re-sale price is then a good place to start in determining the royalty value of copyright in streamed music. In short copyright music is regularly traded in a market - at least downstream. Having obtained or identified the resale price for the property, under the resale price method one would then subtract a reasonable amount for the cost of reselling. For example one might look at comparable resale price margins (gross margins) earned for reselling the property. If one then deducted these comparable costs of reselling, or comparable gross margins from the observed resale price, one might reasonably then claim to have determined the likely market consideration or the consideration that might reasonably be expected to have been given or agreed to be given in respect of the acquisition if the copyright in the first place.

Using either the CAM or RPM methods one has to recognise that prices to be comparable requires that

    a) none of the differences (if any) in the nature of the actual market sales being compared, could materially affect the comparables price: or that
    b) Reasonably accurate adjustments can be made to the comparables price to eliminate the effect of any such differences.

On the first point available market data may differ from the original being considered (e.g You Tube) due to material differences in the characteristics of:

    1) The property transacted;
    2) The contractual arrangements under which the property is transferred (e.g. the relative functions, assets, liabilities and risks of the respective parties under the agreement); and
    3) The market conditions (for example in relation to time or geographic dimension)

Thus for example while the price copyright sells at around the world is relevant, considerations need to be given to different market conditions and the scope for reshipping and arbitrage. If a copyright owner or buyer is a profit maximiser, then theoretically it will set prices in different regional markets such that the net marginal revenue from each market is the same – but not necessarily the price. Since marginal revenue is inversely related to price elasticity of demand, price will be set lower where demand is more elastic. This is intuitive because as a rule, more competitive markets tend to be more price elastic (due to more alternatives consumers have), therefore price is lower. So if the US market is more competitive than Canada, then price would be lower in the US, "ceteris paribus", or, all else being equal.

Consideration may thus need to be given to what adjustments are required to achieve greater comparability in prices. The key point to note here however is that differences in property, contracts and market conditions are not the key problem, rather it is whether adjustments can be made to correct for any material differences. Thus the need for adjustments per se is not a

problem – it is the quality of the measure that results that is the issue. The key point is that the data once reviewed may provide us with a range within which prices might be expected to sell in a market. If the current royalty is within the range, there will be no value gap.

If the current royalty rate is outside a reasonable range, even after any adjustments might be made to comparables, then we can estimate the value gap as a range, or a range for ΔTR. In accordance with the above formulae the value gap range would identify the outer extremes of the difference between: total full market value revenues (TR2) that would be earned using alternative estimates for the full market value royalty rates times total plays (R2 * Q2); and current revenues (TR2) earned on current royalty rates per play times current number of plays (R1 * Q1).

A key issue in this analysis is that differences in the royalty rate per play (R) may affect total plays (Q). In particular if the royalty rate per play for streaming (R) is increased, this may be passed through as an increase in retail prices for streaming (P), which in turn may reduce total demand for streamed music or total plays (Q). A change of policy to support higher royalty rates may thus limit demand, and therefore limit the value gain (loss) from higher (lower) royalties.

In our analysis that follows we therefore proceed in two stages to address this problem. We first try to estimate the value gap (ΔTR) assuming that any royalty increase would not have an offsetting effect in reducing plays (Q). We then at the end turn to assess the extent of any possible offsetting effect of royalty increases on reducing the number of plays.

Comparable Actual Market Royalties

Table 2(a) below identifies the data presented earlier including in row 1 reported record industry sales from streamed music, in row 2 our estimate of the total number of plays of streamed music that support these revenues, and in row 3 the implied current average royalty per play being earned in the Canadian market. This is the estimated value of current royalty per play in the Canadian streaming market (R1) we shall use to estimate value gap in this section.

Table 2(a) Value Gap Using Comparable Actual Market Royalty Values	
Year 2015	Canada
1. Reported record industry sales from streamed music	42,492,576
2. Total Plays of streamed music in Canada per Year	63,452,253,059
3. Average Royalty per play (1/2)	0.00067

Using the CAM method in this section we shall estimate the full market Royalty rate (R2) using the royalty rates identified in the table below that replicates the earlier table 1(b).

Table 2(b) Benchmark Royalty Rates for Streaming per play

Row	Benchmark	USD	Cd$
1	US - Ad Supported Streaming Royalty	0.0017	0.0021675
2	US - Copyright Royalty Board Royalty	0.0021	0.0026775
3	Canada - Terrestrial radio		0.00316
4	US - Paid Streaming Rate	0.0079	0.0100725

In Table 2c below we estimate the value gap in the last column, based on a number of different alternative royalty rates shown in the second column, which in turn generate different implied total revenues, assuming the total quantity of plays of streamed music in Canada per Year remains constant at 63,452,253,059 per annum . Thus as shown in the last column the value gap ranges from Cd$ 95 million if one uses the US Ad Streaming Royalty of US$0.0017, up to nearly Cd$600 million if one uses the US paid streaming royalty of US$0.0079. This estimate excludes the value gap associated with You Tube which we trun to next

Table 2(c) Value Gap Using Comparable Actual Market Royalty Values

	Royalty CD$	Sales CD$	"Value Gap"
Canada - Current	0.0006700	42,492,576	-
US - Ad Supported Streaming Royalty	0.0021675	137,532,759	95,040,183
US - Copyright Royalty Board Royalty	0.0026775	169,893,408	127,400,832
Canada - Terrestrial radio	0.0031600	200,509,120	158,016,544
US - Paid Streaming Rate	0.0100725	639,122,819	596,630,243

The table 2(d) below identifies the data presented earlier on You Tube, including in row 1 the average royalty per play on You Tube, in row 2 our estimate of the total number of plays of streamed music on You Tube, and in row 3 the implied total You Tube royalty revenues in Canada. This is the estimated current total royalty revenue value we shall use to estimate value gap in this section.

Table 2(d) Value Gap Using Comparable Actual Market Royalty Values in Cd$	
Canada	
1. Average Royalty per play in Canadian Dollars (US$0.0010)	0.00128
2. Total Plays of Music on You Tube in Canada per Year	29,764,956,259
3. Implied Total You Tube Royalty revenues in Canada	37,950,319.23

In Table 2e below we estimate the value gap with You Tube in the last column, based on the same different alternative royalty rates shown in the second column as used above, which in turn generate different implied total revenues, assuming the total quantity of plays of streamed music on You Tube in Canada per year remains constant at 29,764,956,259 per annum . Thus as shown in the last column the value gap ranges from Cd$ 26.5 million if one uses the US Ad Streaming Royalty of US$0.0017, up to nearly Cd$262 million if one uses the US paid streaming royalty of US$0.0079.

Table 2(e) Value Gap in You Tube Using Comparable Actual Market Royalty Values

You Tube	Royalty CD$	Sales CD$	"Value Gap"
Canada – You Tube Current	0.00128	37,950,319	-
US - Ad Supported Streaming Royalty	0.0021675	64,515,543	26,565,223
US - Copyright Royalty Board Royalty	0.0026775	79,695,670	41,745,351
Canada - Terrestrial radio	0.00316	94,057,262	56,106,943

US - Paid Streaming Rate	0.0100725	299,807,522	261,857,203

In Table 2e below we estimate the total value gap including You Tube in the last column, This is obtained simply by summing the value gap estimated in tables 2c and 2 e, above and is based on the different alternative royalty rates shown in the second column as used above across all streaming platforms, which in turn generate different implied total revenues across all streaming platforms. Thus as shown in the last column the value gap ranges from Cd$ 121.6 million if one uses the US Ad Streaming Royalty of US$0.0017 up to nearly Cd$858 million if one uses the US paid streaming royalty of US$0.0079.

Table 2(e) Total Value Gap including You Tube

Total including You Tube	Royalty CD$	Sales CD$	"Value Gap"
Canada – Total		80,442,895	-
US - Ad Supported Streaming Royalty	0.0021675	202,048,301	121,605,406
US - Copyright Royalty Board Royalty	0.0026775	249,589,078	169,146,183
Canada - Terrestrial radio	0.00316	294,566,381	214,123,486
US - Paid Streaming Rate	0.0100725	938,930,341	858,487,446

Resale Price Minus

In this section we estimate the value gap using a resale price minus (RPM) method. This method starts with the re-sale, on-sale price that might have actually been paid by final consumers for music streaming. Having obtained or identified the resale price for the property, under the resale price method one would then subtract a reasonable amount for the cost of reselling. For example one might look at comparable resale price margins (gross margins) earned for reselling the property. If one then deducted these comparable costs of reselling, or comparable gross margins from the observed resale price, one might reasonably then claim to have determined the likely market consideration or the consideration that might reasonably be expected to have been given or agreed to be given in respect of the acquisition if the copyright in the first place.

In this regard we can readily observe the prices at which streamed music is on-sold to independent parties in retail markets. For example Spotify resells music under a paid subscription model for a subscription payment of around US 9.99 per month This re-sale price is then a good place to start in determining the royalty value of copyright in streamed music. In short copyright music is regularly traded in a market - at least downstream. We then estimate that after deducting the services' share, authors' copyright royalties and taxes (minus), the record labels' share of the consumer price of the subscription is an estimated 48%, implying the resale minus price calculated market royalty would be approximately 4.80 per month per subscription (9.99 * 0.48 = 4.79520). Record labels' share of 48% is estimated on the basis of public information regarding the revenue distribution between right holders and subscription streaming services, and the splitting of the remaining revenues between music publishers and record companies (record companies then make further distributions to performers, but performers' share is included in the reported industry revenues). [34]

If we estimate the total number of people streaming in Canada then we can work out the value gap in music industry revenues, by comparing current revenues to that which would have been earned if everyone streaming had paid Spotify's premium monthly subscription rate and

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[34] IFPI Music Statistics <http://www.ifpi.org/global-statistics.php> accessed 25 April 2016.

the recording music industry had received 48% of that.

To estimate the total number of people streaming in Canada we start our analysis by estimating the size of the population of internet users aged 16-64 in Canada in 2015. This is done in Table 1a below in the last row (C) that estimates the number of internet users in Canada, based on the size of the population aged 16-64 in Canada in the second row (A) in Table 1a [35] and the percentage of internet users in the third row (B) in Table 1a. [36]

Table 1a: Internet Users Canada, Australia and the United States

Row	Year 2015	Canada
1.	Total Population aged 16-64 (A)	23,917,009
2	% of Internet Users (B)	88.47
3	No. of Internet Users (C) = (A)*(B)/100	21,159,378

Having identified the number of internet users in Canada in 2015 at around 21.16 million, we now draw on a 2015 'IPSOS-Mori' survey which established what percentage of these internet users in Canada engaged in streaming. This enables us to then estimate the potential value of the streaming market in 2015, if all those engaged in streaming in Canada had paid Spotify's premium monthly subscription rate and the recording music industry had received 48% of that.

In 2015 'IPSOS-Mori' conducted an online survey of digital music consumers on behalf of IFPI in Canada that included a question enabling one to identify the percentage of internet users using legal music streaming [audio or music video] in the preceding 6 months.[37] The definition of 'using' legal streaming was anyone using any of the following in the past 6 months:

- Stream music for free on digital music services - such as Spotify or Deezer[38]
- Stream music by paying a monthly subscription for digital music services - such as Spotify, Tidal, Deezer, Apple Music or Google Play for music
- Stream music videos/ music for free from video services - such as YouTube or Vevo

The 'IPSOS-Mori' survey result was that 62% of internet users in Canada engage in the above forms of streaming. This figure includes anyone using any of the streaming services in the past 6 months. All users could also have been using other music services.

Table 1(b) below uses the results of the 'IPSOS-Mori' survey to derive an estimate of the potential value of the streaming market in Canada. In row 1 we in Table 1(b) we first copy the estimate of the number internet users in Canada from the last row of Table 1(a) above. In row 2 of Table 1(b) we present the 'IPSOS-Mori' survey estimate that 62% of internet users are engaged in streaming. Row 3 then identifies the estimated number of people streaming by multiplying row 1 by row 2.

Table 1b: The Size of the Potential Streaming Market in Canada

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[35] Population data are from Statistics Canada
http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=0510001&&pattern=&stByVal=1&p1=1&p2=37&tabMode=dataTable&csid = aged 16-64.
[36] The % of internet users data was obtained from ITU:
http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx
[37] For the January 2015 consumer study commissioned by IFPI and carried out by IPSOS across 13 of the world's leading music markets (Australia, Brazil, Canada, France, Germany, Great Britain, Italy, Japan, Mexico, South Korea, Spain, Sweden, United States) see http://www.ifpi.org/downloads/Digital-Music-Report-2015.pdf
[38] Note: examples varied by market to reflect main local services

Row	Item	Canada
1.	No. of Internet Users	21,159,378
2	% Streaming	62%
3	Number Streaming (3) =(1)*(2)	13,118,814
4	Spotify per Month	9.99
5	Size Potential Market (5) = (3)*(4)*12	1,572,683,465

In row 4 we include an estimate of the going market rate for streaming music per month using the price of a Spotify Premium account which allows unlimited, ad-free streaming of Spotify's content. The price was Cd$9.99 in Canada and has remained unchanged since 2008. We then are able to identify the size of the potential market in row, if the total number of people streaming in Canada in row 3 had all paid the Spotify Premium account price in each of the 12 months of the year. The total shown in column 5 is around 1.6 billion dollars per annum.

In order to estimate the value gap or how much of this potential market revenue has been realised, Table 1(c) below in row 1 identifies record labels revenues from streaming in 2015. This can then be compared to the revenues record labels might have expected based on the markets potential value outlined above and copied into row 2 in the table below. Row 3 identifies the usual share of the market received by record labels. Record labels' share of the consumer price of the subscription is an estimated 48%, after taxes, the services' share and authors' copyright royalties. Record labels' share of 48% is estimated on the basis of public information regarding the revenue distribution between right holders and subscription streaming services, and the splitting of the remaining revenues between music publishers and record companies (record companies then make further distributions to performers, but performers' share is included in the reported industry revenues). [39]

Table 1c:

Row	Item	Canada
1	Sales reported	42,492,576
2	Size Potential Market	1,572,683,465
3	Record Labels %	48%
4	Record Labels Share (4) = (3)*(2)	754,888,063
5	Sales lost music streaming (5) = (4) - (1)	712,395,487

The above analysis suggests that Record labels revenues would have been higher by over $700 million if all those streaming music in Canada had paid for their streaming at market rates observed for Spotify's premium service.

Pass Through and Substitution Effects

The above analysis can be understood to provide an estimate of the maximum "value gap" assuming the quantity sold (either plays or monthly subscriptions) does not change as royalty payments increase. We have thus only estimated the maximum "value gap" that could be eliminated if royalty payments were set using comparable market prices, or a resale price minus methods so long as:

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[39] IFPI Music Statistics <http://www.ifpi.org/global-statistics.php> accessed 25 April 2016.

i) the law could deter unauthorised streaming, and that
ii) there was no pass through of any of the increase in royalty paid for streaming to retail prices; or
iii) all those engaged in streaming would continue to stream and pay at the new retail price associated with the royalty such as the Spotify premium rate.

Even if i) the law could be changed, or implemented better and in a way that established the higher royalty payments outlined above, it is ii) likely there will be pass through of the increased royalty payments to final consumers, and iii) that not all streamers would maintain a constant level of streaming, some may simply not use streaming services at all, or switch to other close substitutes means of listening to music.

Adjusted CAM Method with Online Streaming - Demand Substitution Effects

Earlier we estimated the value gap relative to total revenues implied using comparable actual market (CAM) royalties instead of current actual royalties in Canada, however we assumed the quantity or number of plays did not change. What we estimate now under various scenarios is how many plays there would be after any royalty increases, or how the quantity of plays might change ($\Delta Q = Q2-Q1$) as royalties increase, reducing the increase in revenues and our estimate of the value gap accordingly.

 Economics identifies two key steps required to estimate the revised value gap, or the revised change in total royalties (ΔTR), that would result under any alternative royalty rate increase.

1) The rate of pass through (θ) of any royalty change (ΔR) to final price (P) paid by consumers of streaming. The rate of pass through (θ) measures the change in final price paid by consumers as a result of any change in royalties, i.e. $\theta = \Delta P/\Delta R$, where R is the per-unit royalty rate on the service and θ is a pass-through parameter, with full pass through occurring where $\theta = 1$.
2) The price elasticity of final demand for streaming services, or how the demand for streamed plays changes in response to changes in the price of streaming music. If there is pass through of any royalty increase to final prices for streaming facing consumers, then this may lead to a fall in final demand for streaming, or a fall in total plays (ΔQ) and thereby limit any royalty revenue growth (ΔTR).

On the rate of pass through (θ), we shall use some empirical evidence on firm pass-through elasticities to estimate the pass through rate.[40] This includes a study by Hellerstein and Villas-Boas (2010) that found an elasticity of price to cost changes averaging around 0.13, meaning a 10% increase in cost leads to a 1.3% increase in price. Similarly, an empirical study by Ashenfelter, et al. (1998) found a pass-through elasticity of 0.15 while Gron and Swenson (2000) and Peltzman (2000) find similar pass-through elasticities at the level of the firm. On this basis we consider a few pass-through elasticities of 0, 0.10, and 0.20, and set θ to produce these pass-through elasticities.[41]

The elasticity of demand for streaming, ($\varepsilon s = (\Delta Q_i/Q_{i1}) / (\Delta P_i/P_{i1})$) measures how the demand for streamed plays changes in response to changes in the price of streaming music. Making the demand more elastic increases overall consumer sensitivity to prices. We will consider

[40] Cited by cited by Beard et al (2017)
[41] As Beard (2017) et al note "The parameter is not an elasticity, so we set to produce the target elasticity. The elasticity depends on the size of the price change, so we calibrate to produce the target elasticity for the largest royalty increase (to $0.0079), resulting in values of 0.0, 0.12 and 0.25. " page 16

two scenario's. The first case involves an elasticity assumption of εs = -1.1, the second scenario involves one of -1.5, in which the substitution effects will be much larger.

In what follows we re-examine what happens to the value gap estimated above using the CAM method once one introduce these demand substitution effects into the analysis first for online streaming in total and then for You Tube alone.

We focus our analysis on a scenario where the average royalty rate for online services increases to the estimated market value rate suggested by Professor Boyer of Cd$ 0.00316 per play, from its current average rate at Cd $ 0.00067 per play for online streaming services, and Cd $0.001275 per play for You Tube.

- Online Streaming Services

Based on the royalty rate for online streaming services increasing from Cd $ 0.00067 per play to Cd$ 0.00316 per play, the table below identifies the likely increase in royalty revenues in online services under four scenarios determined by the nature of assumptions made as to i) pass through elasticities (by last two rows in the table, and ii) final demand price elasticities (by last two columns). As shown in the last two rows we assume two different pass through elasticities, 0.10 and 0.20. Turning to demand elasticities (εs) we assume εs = -1.1, and εs = -1.5 as shown in the last two columns of Table 4(a) implying substitution away from subscription streaming services increases or gets more elastic (εs < -1) or becomes more responsive to price changes.

Table 4(a) Total Royalty Revenue increase: Online Streaming Services Canada.

Royalty rise:		(ii) Final demand elasticities (εs)	
Cd$0.00067 to Cd 0.00316 per play		-1.1	-1.5
(i) Pass -Through Elasticities	0.10	118,650,834	104,343,461
	0.20	79,305,558	50,690,812

- You Tube

Similarly Table 4(b) below identifies the likely increase in royalty revenues for You Tube under the same four scenarios as to assumptions on i) pass through elasticities, and ii) final demand price elasticities, however using You Tube data, and in particular the assumption that the average royalty rate for You Tube increases from its current average rate at Cd $0.001275 per play to the suggested market value royalty rate estimated by Professor Boyer of Cd$ 0.00316 per play.

Table 4(b) Total Royalty Revenue increase: You Tube Services Canada

Royalty rise:		(ii) Final demand elasticities (εs)	
Cd $0.001275 to Cd0.00316 per play		-1.1	-1.5
(i) Pass -Through Elasticities	0.10	52,920,215	51,761,405
	0.20	49,733,487	47,415,867

As can be seen the royalty revenue increase and value gap is still quite high even with demand substitution effects, with the range being between about CD$47 million and CD$53 million dollars. This illustrates the potential impact of demand substitution effects as we previously estimated the value gap at around CD$56 million in total in the absence of substitution effects using the target market value royalty rate estimated by Professor Boyer of Cd$ 0.00316 per play

- Total

Finally Table 4 (c) below identifies the likely increase in total royalty revenues across all online streaming services (including You Tube) combining the above two results in table 4a) and 4 b) under the same four scenarios as to assumptions, using the target market value royalty rate estimated by Professor Boyer of Cd$ 0.00316 per play.

Table 4(c) Total Royalty Revenue Increase: All Online Streaming Services incl. You Tube

Royalty rise to Cd0.00316 per play		(ii) Final demand elasticities (εs)	
		-1.1	-1.5
(i) Pass -Through Elasticities	0.10	171,571,049	156,104,866
	0.20	129,039,045	98,106,679

As can be seen the royalty revenue increase and value gap is still quite high even with demand substitution effects, with the range being between about 100 and 170 million dollars. This illustrates the potential impact of demand substitution effects as we previously estimated the value gap at CD$214 million in total in the absence of substitution effects using the target market value royalty rate estimated by Professor Boyer of Cd$ 0.00316 per play.

Resale Price Minus Method Adjustment

Our earlier analysis using a simplified resale minus price method based on the Spotify premium service charge of $9.99 per month, suggested that record labels revenues would have been higher by over $700 million if all those streaming music in Canada had paid for their streaming at market rates observed for Spotify's premium service.

This however analysis can be understood to provide an estimate of the maximum "value gap" that could be eliminated only if

    i)   the law could deter unauthorised streaming, and that

    ii)   all those engaged in streaming would continue to stream and pay at the price of a Spotify Premium account.

It is likely however that not all streamers would switch to authorized services at market rates.

In a survey of unauthorized downloading commissioned by Industry Canada for example 29% of downloaders said they would _not_ replace any of the unauthorized music they had downloaded illegally with authorized services if they had to pay market rates. All the same, this implies 71% said they _would_ replace at least some of the unauthorized music they had illegally downloaded with authorized services. Indeed the survey revealed that on average 71% said they would on average replace 48% of the unauthorised services they used with authorized services at market rates if unauthorised services were unavailable.

In the absence of an equivalent survey of streamers stated behavior, we shall use the results above from unauthorised downloading study, and assume that if royalty rates were raised to market rates for streaming, 71% of those engaged in streaming below full market rates would on average substitute 48% of their use from below market rates to authorized services at market rates.

Table 1(d) below can be used to estimate the value gap that would be eliminated if 71% of unauthorized streamers switched to pay on average 48% of the annual market price for 12 months streaming services. To do this we first need to first estimate the size of the unauthorized streaming population. One can do this if one starts with the size of the total revenues received by the labels from authorized streaming. This is shown in row 1 of Table 1(d) below – taken from row 3 of Table 1(c) above - at around $50 million. We know the labels revenues constitute around 48% of total authorized streaming revenue, as shown in row 2 of Table 1(d) below, which implies total streaming revenues of around $100 million as shown in row 3 of Table 1(d). If one assumes these $100 million revenues are generated by people who pay Spotify's market rate of 9.99 a month, as shown in row 4 of Table 1(d), then this implies the total number of paying streamers must be around 855,543 as shown in row 5 of Table 1(d). Given we know the estimated number of streamers in the population is around 13.1 million as shown in row 6 of Table 1(d), this implies the number of non-paying streamers must be around 12.3 million as shown in row 7 of Table 1(d).

Table 1(d) Revised Estimate of Value Gap

Row	Item	Canada
1	Reported Labels Sales	49,230,000
2	Labels Share of Total Streaming revenues	48%
3	Implied Total Streaming Revenues (3) = (1) / (2)	102,562,500
4	Spotify per Month	9.99
5	Estimated Number of Paying Streamers (5) = (3) / [(4)*12]	855,543
6	Total Number Streaming (Row 3 Table 1(b))	13,118,814
7	Estimated Number of Non-Paying Streamers	12,263,271
8	% who would replace	71%
9	Estimated Number of Replacement Streamers 9 =7*8	8,658,696
10	% of Use Replaced	48%
11	Estimated Effective Full Time Total Use Replaced 11=9*10	4,183,342
12	% of Non-Paying Streamers use replaced 12= 8*10	34%
13	Estimated Total Replacement Value 13 = 11*4*12	501,499,018
14	Label Only Additional Revenues 14 = 13*2	240,719,528

At this point then we have an estimate of the number of streamers using unauthorized services in row 7 of the above table. We can then use our estimate that 71% of this group of around 12.3 million unauthorized users would replace their use of unauthorised services with authorized services if the law deterred unauthorized use to derive the estimated number of streamers who would replace unauthorized services to be around 8.7 million as shown in row 9 of Table 1(d). If we assume these 8.7 million unauthorized streamers switched to pay on average 48% of the annual market price for 12 months streaming services at Spotify's market rates then there would be around 4.2 million effective full year users of authorized services as shown in row 11 of Table 1(d).

This implies total value gap of around $501 million as shown in row 13 of Table 1(d), and a value gap in labels revenues of around $241 million as shown in row 11 of Table 1(d).

Conclusion

This paper identifies and examines the nature and consequences of two recent developments in Canadian Copyright law:

a) First the copyright royalties set by the Copyright Board of Canada for the distribution of online music streaming in Tariff 8;

b) Second the Copyright Modernization Act, (CMA) Bill C-11 adopted in November 2012, that offers a number of copyright exceptions, safe harbours and limitations on the liabilities for internet intermediaries.

The analysis in this paper suggests these two components of Canadian law create a situation in the online music market where rights holders are prevented from giving full consent for use of their copyright works. This is predicted to damage growth in legitimate markets both for music streaming and for music downloads.

In this paper we shall seek to identify the extent of the consequent "value loss" or "value gap".

We estimate the value gap in the online music market ranges from Cd$ 121.6 million up to nearly Cd$858 million due to economic distortions created by Canadian Copyright law.

Our analysis thus suggests that relative to their true market value record industry revenues are highly depressed due to distortions in Canadian law.

Our analysis suggests that in 2015 recorded music revenues for streaming in Canada, that currently total around 42 million, would be four to twenty times higher if Canadian Copyright law causing distortions were removed and market based royalties were paid.

The results and analysis in this paper complement earlier economic analysis of the negative effect that unauthorised online downloading of music, or piracy, had on industry revenues (see Barker 2012, and Barker and Maloney 2015). These studies showed that the loss in music industry revenues due to unauthorised online downloading of music or piracy, had reached around C$1.3 billion by 2005 alone. (Barker 2012 p76).

The current work on unauthorised online streaming together with earlier work on unauthorised downloading thus suggest that, in total, by 2015 the value gap due to both unauthorised downloads and online streaming together might be over Cd$2 billion per annum.

It further appears this value gap has been caused by a failure of Canadian law to appropriately and adequately deter unauthorised downloads and unauthorised streaming.

The data thus seems to show that the failure to respond appropriately to the advent of digital technologies and the spread of the internet by strengthening copyright law has led to lower effective copyright protection and greater free-riding on the creativity of others. This has been to the detriment of music revenues in Canada, the Canadian economy as a whole and future consumers of music, who will suffer from reduced investment in new music as a result.

At this stage then it appears that an evidence-based approach to policy requires strengthening copyright protections to deter unauthorised appropriation, limit market bypass, and instead enhance the extent of market transactions in copyright and therefore the total reward and incentive for creativity to the benefit of the Canadian community in the future.

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