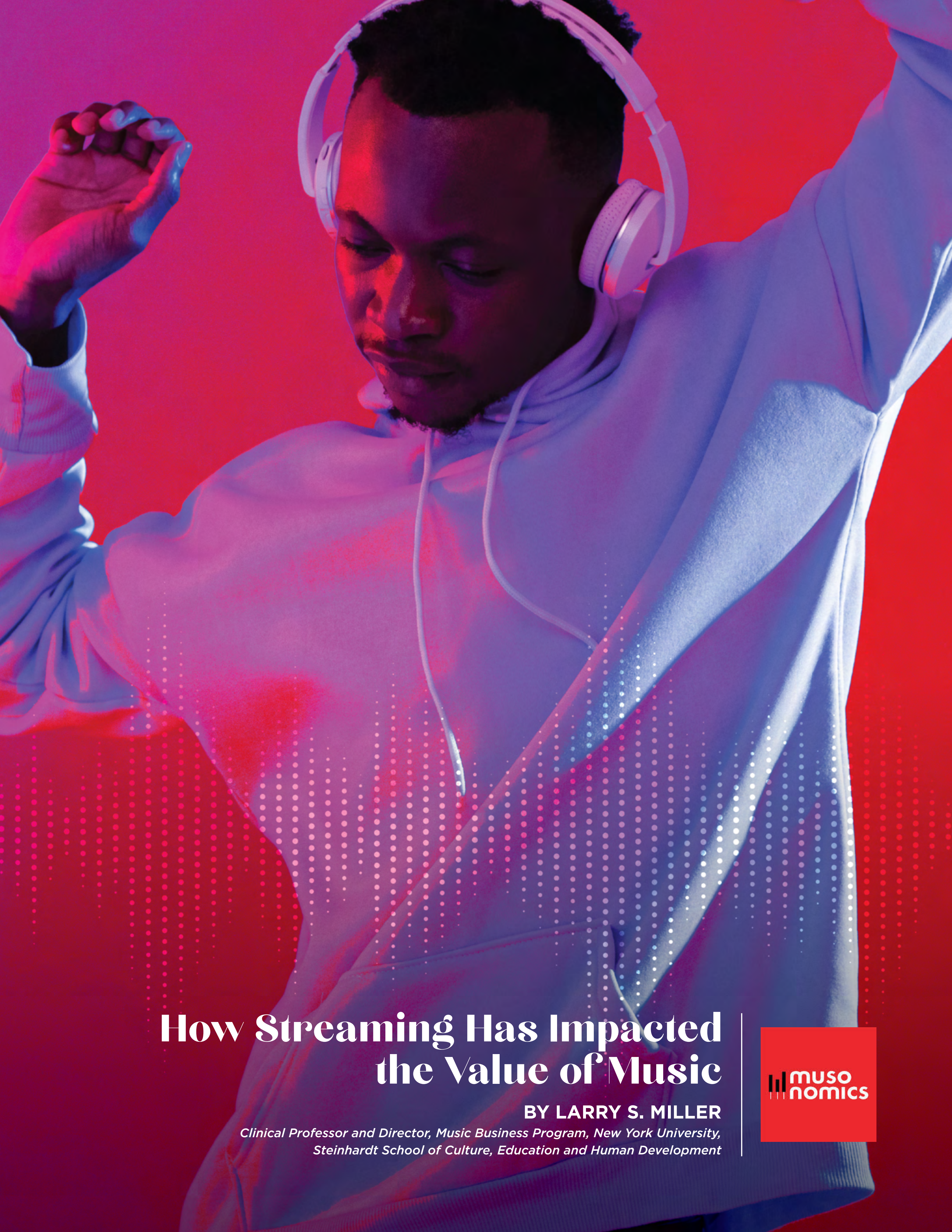

How Streaming Has Impacted the Value of Music

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musonomics

Executive Summary

The transition over the last decade from purchases of CDs, vinyl albums and downloads to subscription and advertising supported streaming has had an enormous economic impact on the music industry.

In this report, we set out to quantify this impact, focusing on:

- The dramatic increase in NPS (net publishers share) multiples paid by purchasers of music copyrights;
- The increased interest in music royalties as an investment opportunity;
- The reduction (and even reversal) of the traditional decay curve for music releases; and
- The increased resiliency of the music industry at large on both a macro and micro level.

We also examine how streaming music services are providing this increased value to the music industry while continuing to operate at lower profit margins than other distribution channels have historically enjoyed, calling into question their ability to continue providing this value over time.

OUR KEY FINDINGS INCLUDE:

Streaming is Responsible for Increasing the Economic Value of Music
Streaming contributed 61.5% to the value of music transactions in 2021. We reached this conclusion by calculating its impact on the rise in NPS multiples paid for music catalogs in recent transactions.

Streaming Economics Attracts Music Industry Investment
The consistent and (to a degree) predictable revenue streams that streaming generates is largely responsible for the increased investment activity around music royalties and catalogs, as well as record labels exploring public markets.

Streaming Has Made the Music Industry More Resilient
The streaming model has helped the music industry withstand disruptions caused by external forces. During the pandemic, when nearly every other meaningful source of music industry revenue fell, streaming revenues (and activity) grew.

Streaming Reduces the Revenue Decay Curve
While it’s normal for revenues to fall following the prime earning window of new releases, revenues derived from streaming tend to fall to a consistent level and maintain as a percentage of overall earnings.

Streaming Has Increased the Longevity of Catalog Music
The top 5.2% of the 500 best-performing albums released in 2018 performed better in their second 18 months following initial release than they did the first 18 months.

Streaming Services Face Both a Dual Mandate & Historically Low Profit Margins
Streaming services face many cost pressures from the cost of licensing the music streamed. These services compete based not on the music catalog (which they all share) but on the quality of user experience.

Introduction

Music is both an art and a business.

As an art form, the music produced and released over the years has naturally evolved into new genres, sounds, and communities. Throughout these evolutions, music's artistic value has remained the same: priceless. No one can put a dollar value on the impact a song can have on any individual listener.

As a business, music has seen similar evolutions as well, with changing formats and adapting models. But unlike the artistic value of music, the value that these evolving business models have provided to the artists and music ecosystem at large has changed dramatically over the years. We've seen highs, and we've seen very deep lows.

There are two intersecting forces driving the economic value of music to renewed highs today— the shift to streaming as the dominant distribution format, and the rise of music catalogs as a mainstream investment asset class.

Investing in music royalties has become a multi-billion dollar business, equally pursued by both multinational investment funds and individual retail investors alike. Catalog valuations have skyrocketed, sales are taking place at historic multiples, and while only the most blockbuster sales make headlines, there are smaller catalog transactions taking place behind the scenes nearly every day.

The proceeds from these sales benefit recording artists, songwriters, and all others in the music royalty value chain in dramatic ways. Their catalogs are no longer just collections of songs they hope will generate income; they have become assets of great value. Demand among investors is so high that artists now have tremendous negotiating power they can leverage in unprecedented ways. The result is one of the biggest shifts in power the music industry has ever seen.

In this paper, we'll examine the market factors behind this asset-class revolution, the role streaming has in it, and the impact it has on the entire industry.

Historical Context

The music business has experienced many format shifts over the years, and with them, notable shifts in revenue, profits, and investment activity.

The most notable format shift in recent memory is the transition from physical to digital distribution. The impact on the economic value of music from this shift was both immediate and staggering. Initially, the technology rapidly got ahead of the business model, resulting in an epidemic of unregulated piracy that generated no income for anyone involved in the creation of music.

It nearly destroyed the industry. But it also revealed the path forward into our digital future.

Digital formats provided fans the ability to discover entire genres of new music quickly and easily with little friction or barriers. But for more art to be created, the economic value of music so easily disseminated needed to be addressed, and fast.

The first pass at monetizing this format took the form of paid downloads at scale and was led by Apple's launch of the iTunes Music Store in 2003. iTunes was a critical first alternative to digital piracy and stabilized an imploding marketplace rocked by illegal peer-to-peer file trading. iTunes and other digital retailers enabled fans to acquire individual tracks as well as entire albums, leading to the creation of custom playlists based on mood, activity and more. Permanent downloads were transferable to portable devices like media players and mobile phones as wireless broadband access would soon spread around the world while the sale of smartphones exploded after the introduction of the original iPhone in 2007.

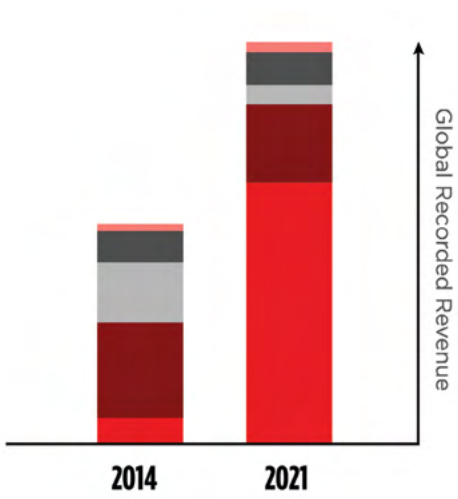
But digital downloads remained a sales-based model, affected by the same highs and lows of the release schedule as physical retail. The format had changed, but the model was largely the same. For investors to see music catalogs as an attractive option, a more stable, recurring revenue business model based on usage was needed.

Legally licensed streaming services emerged to fill this void. They offered the same unfettered access and convenience of early digital services, but delivered access to most of the world's music under a monthly subscription or free, ad-supported model and paid labels and publishers on the basis of consumption – actual listening, not just a one-time sale.

Streaming is now the undisputed revenue driver of the music industry, and today accounts for 83% of U.S. recorded music revenue, according to the RIAA's *2021 Year-End Music Industry Revenue Report*.

On the publishing side, U.S. revenues have increased an average of 15.1% a year since 2015 to over $4.7 billion reported for 2021, according to the NMPA. Performance royalties contributed over 51% of that total, and mechanical royalties over 18.5%, both driven largely by digital streaming activity.

In 2021, streaming revenue alone (in red on the chart below) exceeded total industry revenue in every year from 2009 to 2016, as Spotify pointed out in *Loud & Clear*.



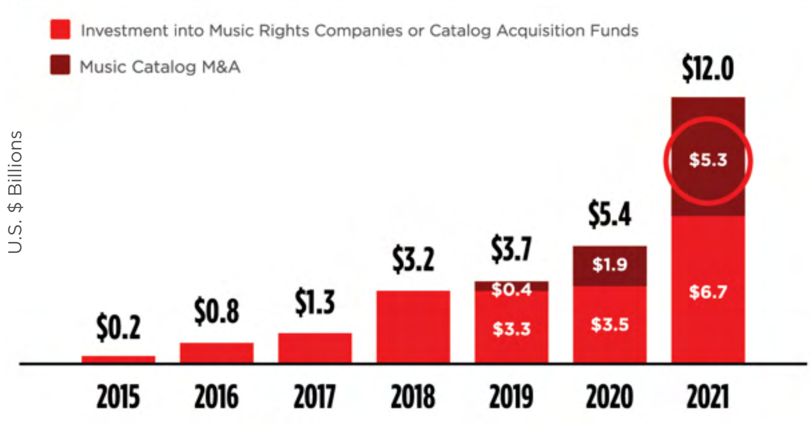
SOURCE: SPOTIFY *LOUD & CLEAR* (2022)

And in the first half of 2022, the trend continued as global on-demand song streams exceeded 1.6 trillion, according to the [Luminate *Midyear Music Report*]. Digital album sales (permanent downloads) declined 19.6% and physical album sales (CD's and vinyl albums) declined 4.7%.

As important as those revenues are to performing artists, songwriters, producers, and all others who participate in the royalties generated by music consumption, revenue growth alone does not tell the full story of music's value. The emergence of music as an investment-grade asset class has added another layer.

"Increased revenue streams have led to significant growth in the value of global music catalog M&A, which reached a record high of $5.3bn in 2021, more than double the value in 2020," according to a Solomon Partners research note.

GLOBAL INVESTMENT IN MUSIC ROYALTIES[C]



SOURCE: SOLOMON PARTNERS, MIDiA RESEARCH

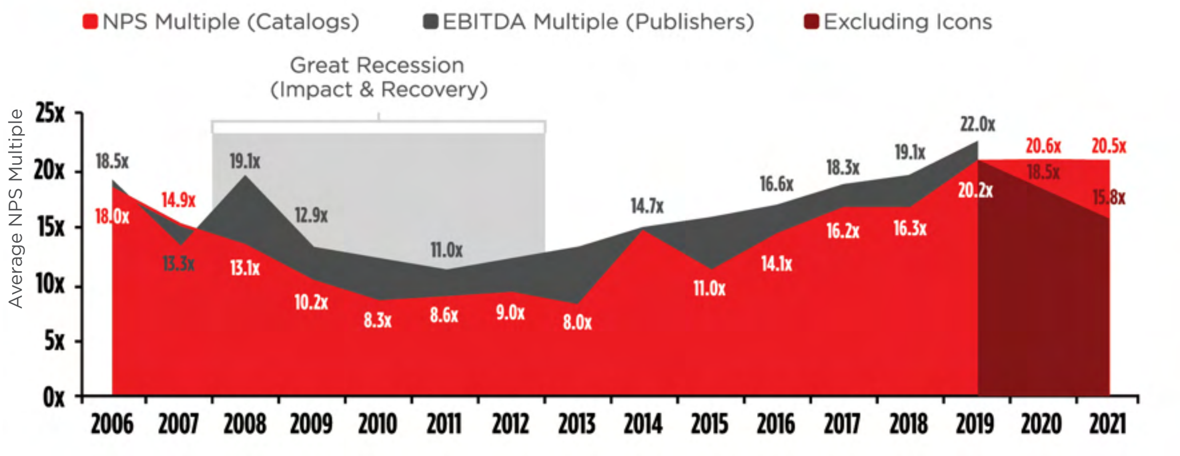
Music as an Asset Class

Music catalogs with a proven history of generating royalties have long been an attractive investment for funds seeking alternative, yield generating assets. Pension funds, endowments, and other entities seeking safe and consistent returns have been known to invest in music catalogs or music royalty generating businesses for some time. David Bowie partnered with Prudential in 1997 to offer the first "Bowie Bonds," a $55 million offering backed by royalties on 25 albums released between 1969 and 1990. Several years later in 2002, Bowie famously told Jon Pareles of the *New York Times*, "Music itself is going to become like running water or electricity." How prescient he was.

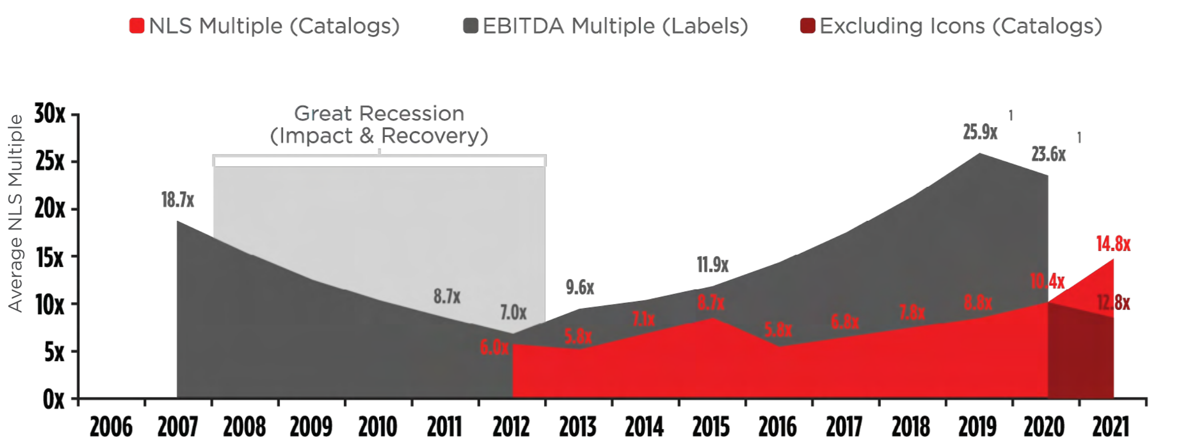
But even as early as 2010, few investors were willing to pay more than 9x the net publisher's share to acquire music publishing assets (NPS = gross revenue less writer royalties and administration costs).

However, it's a new day. Valuations of music publishing assets have more than doubled since 2011—from buyers paying an average of 8.3x the net publisher share to 20.6x by 2019, an increase in average multiples paid of 248%. That trend extends to recorded music as well, with multiples paid for recorded music catalogs also doubling from an average of 6x the net label share in 2012 (NLS = revenue less royalties and marketing and distribution costs) to 12.7x by 2019, an increase of 211%.

MUSIC PUBLISHING — AVERAGE MULTIPLE OF ALL TRANSACTIONS BY YEAR



RECORDED MUSIC — AVERAGE MULTIPLE OF ALL TRANSACTIONS BY YEAR



SOURCE: SHOT TOWER PROPRIETARY DATA, SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (JULY 2022) 1. 2019 AND 2020 EBITDA MULTIPLES COMPRISED OF TENCENT'S STAKES IN UMG (2019 AND 2020) AND WMG (2020). ICONS INCLUDE SIMON, SPRINGSTEEN, STING, BOWIE

We asked Shot Tower Capital Managing Partner David Dunn why the firm showed a trendline on these charts that excluded 'iconic' catalog sales in 2020 and 2021. He told us, "In prior years there were not really any large direct sales by artists of publishing and master recording rights – and then you always have the definitional issue of 'icon.' While we included Neil Young and one undisclosed catalog on purpose, the 'icon' deals were really outside the norm of what we have seen in recent years. It was really five deals that distorted the overall average multiple in 2020 and 2021. Total value of those five deals was approximately $1.75 billion and about $1.425 billion closed in 2021. Based on our data the weighted average multiple for publishing in these deals was 28.1x and for recorded music masters was 22.2x and for those deals with combined rights (Springsteen, Sting and Dylan) the weighted average multiple on those three was 25.5x. Given industry sales of deals of greater than $25 million totaled about $5 billion and about $1.5 billion on the recorded and publishing side combined in 2021 and 2020 respectively – these 'icon' deals really distorted the averages."

But what impact has streaming had on the expansion of multiples recently paid for catalogs?

We spoke with Denise Coletta, Senior Vice President and entertainment team leader at City National Bank, who told us, "A good portion of multiple growth has been driven by streaming. If you're going to pay a multiple on top of investor return, you need to have a source of cash flow, earn out the internal rate of return and be able to pay your shareholders. And the only way you can get comfortable with that is by knowing there's predictability to the cash flow. Streaming has certainly led to much better transparency over the past 10 years, which has helped support the rationale associated with those multiples."

Truist investment banking Managing Director Charles Johnson told us, "Streaming is the driver. But you also have to look at how music is used and consumed. Social media has had a huge impact. Social media – Snap, Instagram, YouTube, TikTok – all of those have had a huge impact in the growth of music. You also have to look at the increase in consumption, demand and production of visual content, whether it's scripted or non-scripted content. Ten years ago, there wasn't a Netflix, or at least not in the form that it exists today, there was not a Hulu, a Paramount+ or a Disney+. Now you have all of these new over-the-top visual content platforms, each creating their own original content, and all of that visual content needs music."

Further fueling this trend is an ever-expanding array of private and public funds having spent an estimated $5 billion acquiring music royalty rights in 2021 alone. Over the last decade, funds like Round Hill and Hipgnosis listed on public exchanges to raise funds to acquire substantial copyright assets. Many of the world's largest asset managers including Blackstone, KKR, Pimco and Apollo have committed billions of dollars in music copyrights, acquiring assets directly or backing acquisition platforms like Tempo, HarbourView, Vine, Catch Point, Primary Wave, Reservoir, Concord and BMG, among many others.

Truist's Charles Johnson put changes in the financing environment in historical context. "When I started our team in 2009 and 2010, institutional investors were mostly private equity firms that looked at music the way they look at any other investment that they would make and had an expectation to get two to three times return on their money in three to five years, and a 25%-plus return. And music publishing just does not offer that level of return. So, the financing deals that were put in place at that time were structured, recognizing that there was going to be a near term liquidity event. Or the investor would double down and continue to invest equity and continue to grow the platform that they were backing, because many of these platforms did not hit the return criteria. We saw it change starting in 2017 and 2018, where the institutional investors took on a different profile with longer dated money with alternative funds -- family offices, sovereign wealth funds. So you went from investors that had a three to five-year outlook to investors that had a 10 plus year outlook. And so, the financings around those deals reflected a longer term view."

This investment frenzy for music royalties created an attractive environment for record labels to again explore public markets, which they did. Both Universal Music Group and Warner Music Group went public in 2021 and 2020 respectively. Universal, the world's largest music company, has traded at a market cap of €38.4 billion to €49.5 billion ($39.4 billion to $50.8 billion on a constant currency basis from September 24, 2021, through July 19, 2022).

It is worth noting that in the first half of 2022 the economic environment has changed from 2018 – 2021. Inflation is at a 40-year high, bond yields have doubled, and there's an increasing likelihood of a recession. But streaming growth is expected to remain strong, and as a result, music should remain an attractive investment option.

That's because streaming music usage is considered uncorrelated with both economic conditions and the broader investing environment. In fact, streaming has become the most dramatic driver of revenue growth for music rightsholders over the past decade and is expected to drive continued worldwide revenue growth through 2030 according to estimates by investment banks now closely following the space.

If there is any doubt about the economic power and resilience of the streaming music format, consider consumer behavior during the recent pandemic. The global lockdowns caused the single largest drop in music industry revenues since the onset of digital piracy. Live events were canceled, radio advertising dried up, restaurants and bars were shuttered, and production on music and TV shows stopped. But subscription streaming continued to grow.

Streaming Proves Resilient During COVID-19

If the music business were still based on physical formats, the effects of the COVID-19 pandemic would have been far worse. The shuttering of live events for nearly a year was catastrophic enough, made worse by the closure of bars, restaurants, and other music-playing venues.

But not streaming. The resilience of streaming music services saved the industry from what could have been the worst year since the Napster era. While nearly every other revenue stream in the music industry saw declines during the pandemic, streaming services saw gains. And while sales of physical formats like vinyl did grow, their overall contribution to music industry revenues remain relatively small by comparison. Vinyl LP sales growth declined to 1% in the first half of 2022, essentially flat on a unit basis.

According to Goldman Sachs, overall music industry revenues fell 25% in 2020, driven by a 75% drop in live music revenue. But streaming revenue increased 5% year over year by the end of that summer, and for the year, the IFPI reported global recorded music revenues increased 7.4%.

When the pandemic lockdowns first started, there were concerns that streaming activity would be affected. After all, with people losing their jobs, would they choose to cancel their streaming music services to adjust?

The answer was a firm no. Although there was a temporary dip in streaming activity in the early stages of the lockdowns, according to a series of Nielsen Music/MRC Data (now known as Luminate) reports, usage quickly surpassed pre-pandemic levels as subscriptions skyrocketed.

Streaming activity briefly fell to a low of 9.4% below average in the last week of March 2020, but quickly rebounded. By the end of May, usage had returned to pre-pandemic levels, and in fact increased 1% above the norm. This suggests that brief downturn was more a result of changing behavior patterns (fans accustomed to streaming during their commutes adjusting to streaming and working from home), than from any lasting cancellation of service. Worldwide premium music subscriptions increased over 118 million to 586 million, the largest single-year increase in the brief history of streaming, according to MIDiA Research.

Before the lockdown, Goldman Sachs reported that fully 40% of daily music consumption took place at work or during a commute. During the lockdown, music streaming on TV and game consoles doubled.

The same report found that 27% of those surveyed had added a music subscription for the first time, while 23% said they had canceled one, resulting in a net gain in overall new subscriptions. What's more, 84% of music fans who just added a new music service within a two week timeframe said they were likely to keep it after the pandemic.

Looking forward, the most recent installment of Goldman Sachs' *Music in the Air* report expects global music business revenues overall will double to $131 billion by 2030, with $92.5 billion of that coming from recorded music and publishing.

Goldman also increased its streaming revenues forecast based on ARPU (average revenue per user) from $42.80 to $45.80 by 2030, even though total subscriber projections for the same timeframe fell to 1.26 billion from 1.27 billion.

In its own forecast, MIDiA Research expects worldwide subscriptions will reach 1.1 billion by 2030, driven by continued growth and price increases in developed markets.

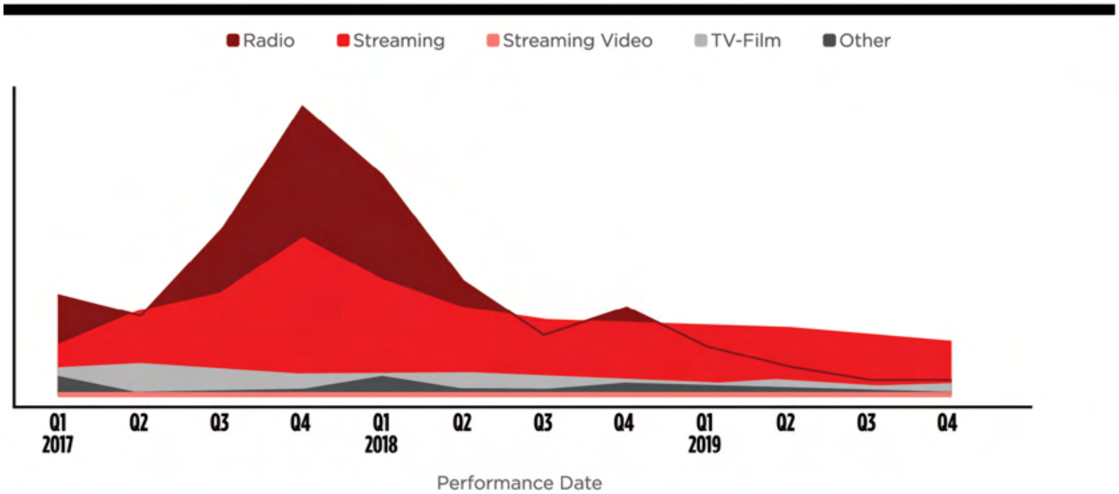
Streaming's Earnings Compared to Other Music Formats

Below is a quarter-by-quarter breakdown of how different formats contribute to a song's earnings in the months and years after release. This data reflects earnings from performing rights organizations ASCAP and BMI for thousands of songs no older than six months old in Q1 2017 submitted to the online royalty marketplace Royalty Exchange for analysis.

While radio and other formats all contribute to overall earnings in the first six quarters after release, all but streaming decline as a song ages. Streaming revenues remain fairly constant in absolute earnings, and dramatically increase as a percentage of overall earnings.

For its part, terrestrial (AM/FM) radio's reliance on current hit music has absolutely declined. "Only 26% of radio spins are new, 53% are gold and that's growing," according to copyright economist Barry Massarsky in written testimony for the House Judiciary Committee earlier this year. New music is being discovered on other platforms -- especially, streaming.

REVENUE SOURCES FOR SONGS THAT WERE LESS THAN 6 MONTHS OLD ON 2017 Q1



Streaming's Slice of the Pie

It's clear that the streaming format is where the vast bulk of music engagement takes place today. It's the format that fans use, and it's the format that now contributes the most royalties over the longest period of time.

But it's also worth noting that the companies providing the streaming service do so at the slimmest of profit margins, particularly when looked at in both historical context and compared to other players in the value chain.

Gross margins refer to the revenue companies keep after paying for the various costs associated with producing the services they provide. Streaming services — also known as Digital Service Providers (DSPs) — have many costs associated with providing their streaming services.

These include the cost of licensing the music they stream. But DSPs also incur the cost of marketing to the listeners who do the streaming and keeping features up to date so listeners will continue to stream. Services compete based on the quality of user experience and are very much stuck in the middle serving two masters, listeners and rightsholders.

An examination of the gross margins earned by the various companies in the music ecosystem over time illustrates this point.

Company	Type of Company	Average Gross Margin*	Status
Spotify (Premium)	DSP	27%	Public
Spotify (Ad Supported)	DSP	10%	Public
Warner Music Group	Label/Publisher	48%	Public
UMG	Label/Publisher	48%	Public
Tower Records	Specialty Retailer	31%	Bankruptcy
Valley Media	Distributor	11%	Bankruptcy

*PUBLIC COMPANY FILING DATA USED IN GROSS MARGIN CALCULATION: SPOTIFY 12/31/20 – 12/31/21; WARNER MUSIC GROUP 9/30/05 – 9/30/21; UMG 12/31/18 – 12/31/20; TOWER RECORDS 7/31/96 – 7/31/02; VALLEY MEDIA 12/21/98, 6/28/99, 6/14/00

Both Warner Music Group and Universal Music Group operate on an average gross margin of 48%. A healthy result, considering the risk undertaken by those companies on behalf of a wide variety of artists--only a few of which pay off into global superstars.

Physical record stores during their heyday (1996 – 2002), didn't have the same two-sided pressure as streaming services. They had plenty of marketing to do as they competed based on selection and price. But once they made a sale, their job was largely done. They didn't have to take steps to encourage fans to continue listening to the albums they purchased. This is reflected in an average gross profit margin of 31% for the largest pure-play retailer of the age — Tower Records — during that timeframe.

Yet in the age of streaming, the DSPs operate at the lowest profit margins of all. Spotify's average gross margin over five years is 27% for its premium service. Deezer's over three years is 16%. Both are notably less than today's record labels and yesterday's physical retailers.

To put gross margin in perspective, consider Warren Buffett, the most storied investor of our age, who considers 40% to be a threshold gross margin for firms generating durable competitive advantage while firms generating lower than 20% gross margin have little sustainable competitive advantage. It is an open question whether the DSPs' low margins can sustain continued operations over the long term.

Streaming and the Value of Music Copyrights

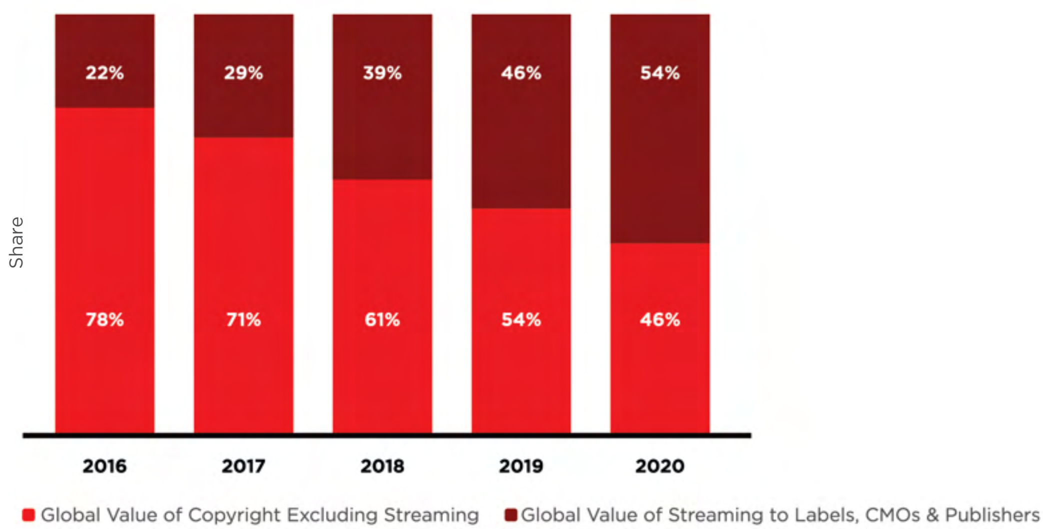
The global value of music copyrights increased 2.7% in 2020 for a total of $32.5 billion, driven almost exclusively by streaming activity, according to former Spotify chief economist Will Page.

That increase occurred during a year marked by pandemic lockdowns that had a negative impact on nearly every other form of copyright value, specifically in live music performances.

This summary is based on an analysis of the annual reports from labels, publishers, and collection societies.

"The driver of these changes is streaming: its contribution to labels, publishers, and their CMOs has risen, from 22% in 2016 to 54% in 2020. Streaming now accounts for the majority of copyright's value. Fifteen years ago, streaming revenue didn't even exist in the IFPI report."

SHIFT IN GLOBAL MUSIC COPYRIGHT REVENUES BY SOURCE 2016-2020



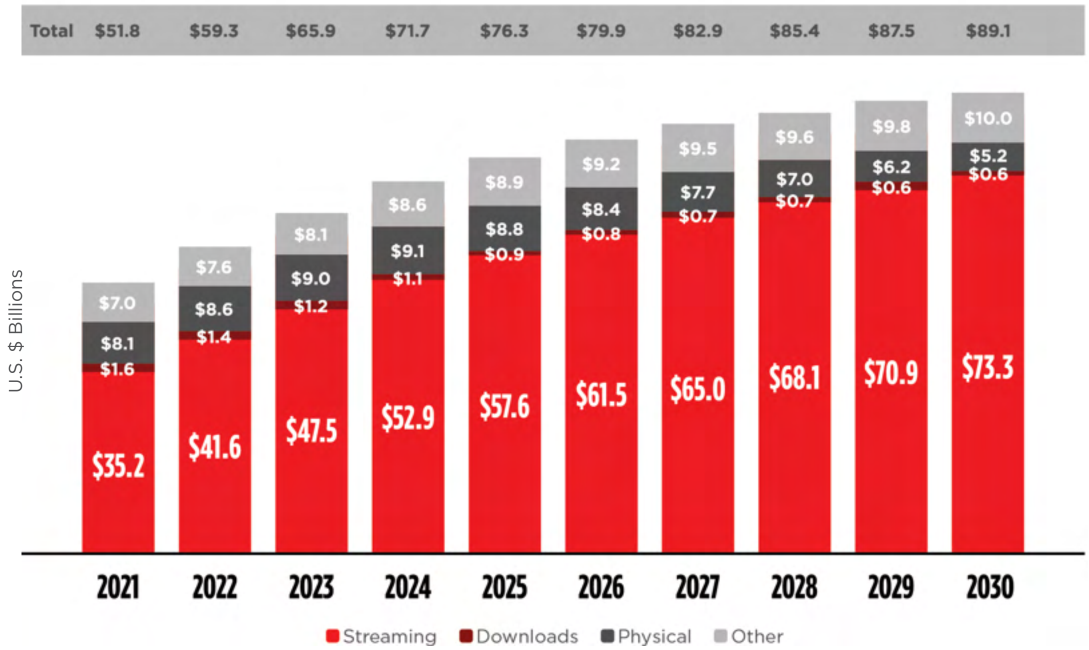
SOURCE: IFPI *GLOBAL MUSIC REPORT*, CISAC *GLOBAL COLLECTIONS REPORT*, "GLOBAL VALUE OF MUSIC COPYRIGHT IS BIGGER NOW THAN IT'S EVER BEEN," *TARZAN ECONOMICS*

The report asserts that streaming will continue to have an outsized contribution to music industry revenues despite concerns that subscriber growth will slow and ARPU will decline as a result of slowing growth in developed markets and rapid growth in emerging markets.

Page wrote, "Saturation – the point where subscription businesses run out of room to grow – resembles the story of the boy who cried wolf. Every year, we fear subscriber growth will peak, yet this never seems to come to pass."

In fact, the number of music subscriptions and related revenues continued to grow in 2021. As mentioned earlier, MIDiA Research estimates worldwide music subscriptions grew by 118.8 million to 586 million in 2021, the largest single-year increase ever and generating $35.2 billion in retail value. Looking ahead, MIDiA forecasts subscriptions to hit 1.1 billion by 2030 generating $73.3 billion, an increase of 108.4% over 2021 revenues, driven by increased ARPU in developed markets (presumably as a result of price increases), subscriber growth in developing markets and increased use of streaming on social, fitness and gaming apps creating new licensing opportunities.

RECORDED MUSIC REVENUES, RETAIL VALUES 2021-2030, GLOBAL



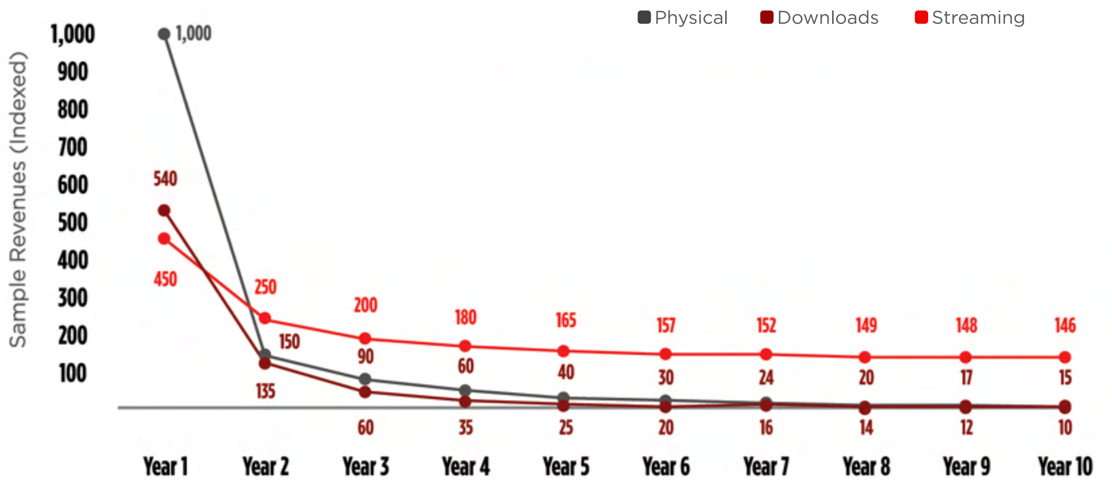
SOURCE: MIDiA RESEARCH STREAMING MODEL (JUNE 2022)

What's Driving Investor Demand?

Much has been written about the growing demand for music rights and catalog from hedge funds, sovereign wealth funds, private equity firms and individual investors. Nearly every week brings a headline about another blockbuster deal involving a legendary artist selling all or part of their catalog to a different entity for sometimes hundreds of millions of dollars. They include iconic artists like Bob Dylan, Bruce Springsteen, Stevie Nicks, Neil Young and Sting, along with more recent hitmakers like John Legend, Justin Timberlake, Skrillex and many others.

Investors study decay curves when analyzing historic revenue and forecasting future revenue from music catalogs under consideration for acquisition. Revenues typically peak in the first two years after release and "decay" until they reach a steady-state of revenue production, typically 5 – 7 years after release for a top-performing catalog. Physical, permanent download and streaming revenues are shown separately on the illustrative chart on the next page:

REVENUE DECAY CURVES BY CHANNEL (ILLUSTRATIVE)



Physical revenues may reflect a large source of Year 1 revenues but exhibit the steepest decay in Year 2. Permanent downloads decay similarly to physical revenues with a steep decline between years 1 and 2. Streaming revenues exhibit a flatter rate of decay than physical and download revenues, and last much longer. And investors value predictability and data transparency.

FTI Consulting Senior Managing Director Brad Sharp told us why. “In our experience, over the last several years catalog valuations have been driven by a number of underlying factors including (1) improved statement data (which is supplemented by more robust artist and song level engagement data), (2) improved frequency of payment to catalog owners, (3) increased investment demand for uncorrelated cash flow yielding assets, (4) favorable regulatory changes in the industry, (5) a strong growth story around streaming and (6) more favorable administration rates available to catalog owners. The combined impact of all these forces has been observed in increased catalog transaction volume, an upward trend in multiples and more niche assets trading with higher frequency – for example younger vintages and less popular genres.”

With each high-profile catalog sale comes the inevitable question — “Are these catalogs worth that much?”

“Worth” of course is a subjective qualifier. The value of a music catalog is dependent on a variety of factors. First of course is the music itself — not in the sense of musical taste, but in terms of lasting relevance. Music that has proven the ability to stand the test of time is considered a safer investment.

Investors like to put their money into assets that can generate income without requiring any additional capital investment. They then take that passive income, and either reinvest it or spend it — as long as a capable administrator (or music publisher) continues to look after the catalog, find new licensees, issue new licenses and collect revenue of behalf of the owner.

Few want their money tied up in investments that do not deliver any value until they’re sold. As such, this isn’t the rationale behind buying music catalogs. While some recorded music and music publishing catalogs have the potential for capital appreciation, most are viewed as depreciating assets acquired for their ability to generate income, not for their ability to grow in value. However, high performing music publishers find a way to enhance the value of acquired assets.

Yield is how much passive income an investment can deliver, generally calculated annually. If you invest $100,000 in an asset that generates $10,000 a year in income, that investment is generating a 10% yield.

Yield in today's investing environment is increasingly difficult to achieve, particularly low-risk yield. Interest rates have risen above their historic lows (the 10-Year U.S. Treasury Bond yield rose from 1.5% to a high of 3.5% over the course of the first half of this year). And the Federal Reserve has signaled additional rate hikes are likely to head off the likelihood of a recession. But inflation is rising faster, reaching a 40-year high of 9.1% in June, 2022.

Many investors turn to the stock market as one of the few places where they can receive meaningful yield for their invested capital. However, the stock market can be risky and fluctuates wildly based on various unpredictable and uncontrollable factors. At this writing, the S&P 500 has lost 20.6% of its value through the first half of 2022; it's worst half-year performance since 1970.

But music royalties are viewed as an uncorrelated asset class. The yields they generate are insulated from the vagaries of public markets or political risk. If the stock market falls 10%, the royalty rates due for music licensing do not change since rates are negotiated for multiyear terms. If a politician makes a statement that gyrates public markets, royalty rates and music consumption are unaffected. The supply and demand of music consumption operate independently of political or market risk.

While investing in music—particularly new music—is risky, it is a different kind of risk than the risks of investing in the stock market. There are several factors unique to music royalties that mitigate this risk:

- Royalties are paid based on use and are not dependent on record label profits or board room dividend decisions. This "cut off the top" puts the owners of royalties closer to the revenue.
- Copyright law protects royalty assets for a long time compared to alternatives; typically, 70 years after the life of the last surviving co-writer for compositions created after January 1, 1978.
- Royalty earnings are relatively stable, consistent, and persistent over time so long as the music is used. The shift to streaming music consumption generates royalties every time a song is played, not just when a physical permanent record or download is bought.
- The overwhelming majority of recent catalog acquisitions are of copyrights long past the initial release peak and inevitable decay of early revenues, having achieved a steady state of predictable earnings at least five to seven years after initial release.

Many of these unique characteristics are almost taken for granted by music creators and industry executives. But to institutional investors, these qualities provide annuity-like returns not unlike well-understood asset classes in alternative investments like real estate, equipment leases, corporate bonds, private equity and venture capital.

Streaming Impacts Catalog Consumption

In early 2022, Luminate (formerly Nielsen/MRC Data) issued a report which stated that catalog music (defined as music older than 18 months) comprised fully 69.8% of music consumption in 2021, up from 65.1% in 2020. In 2014, catalog music comprised only 35.8% of music consumption.

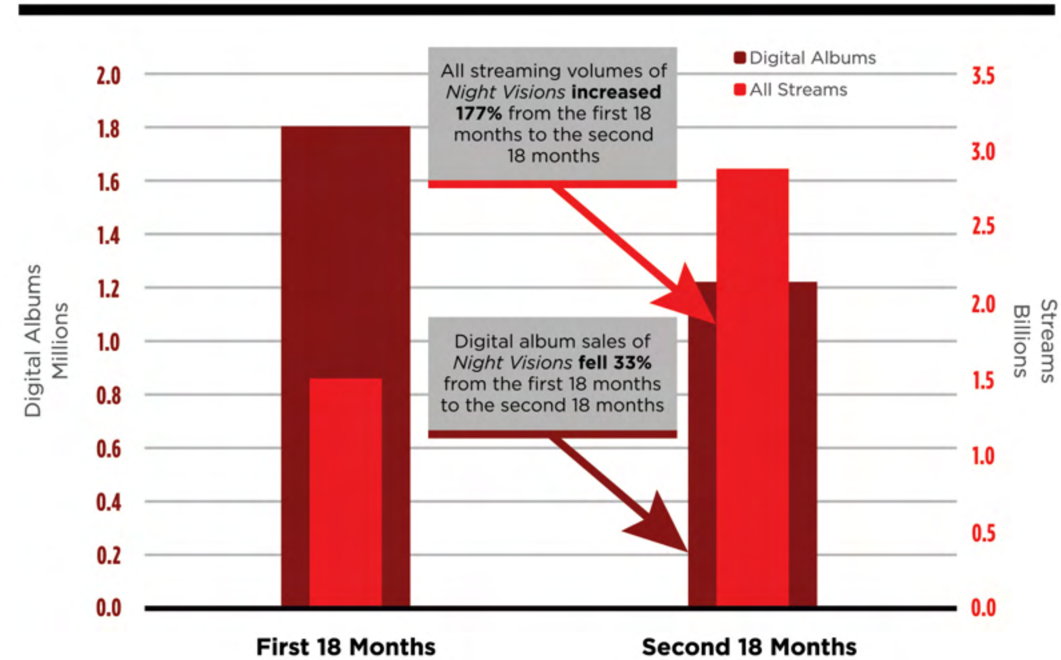
Most of this shift has been driven by on-demand audio streaming, where catalog accounted for 70.2% of consumption in the US in 2021. According to a *Billboard* analysis of 2021 Luminate data, tracks released over the previous 12 years drove nearly 79% of all on-demand streaming activity in the U.S. And the age of those listeners who are streaming that catalog is getting younger. Simply put, streaming (and the popularity of playlists) is causing recent hits to stay popular, longer.

AllianceBernstein Vice President Dan Weisman told us that before he went into private wealth management, he managed a band that today has five million monthly listeners on Spotify and generates $25,000 a month in streaming income. "If they were still living in the download era, there's no way they'd be selling $25,000 worth of downloads per month ten years after their song became a hit. Streaming creates a recurring annuity for artists that was just not available in the physical or download era."

Will Page wrote in 2017 how the definition of what constitutes music catalog was in need of an upgrade in the streaming era, as streaming formats offer the potential for not only longevity, but growth in ways that defy traditional music industry wisdom.

For instance, the 2012 Imagine Dragons album *Night Visions* was a then-rare example of a release that generated more consumption 18 months after its initial street date due to a nascent model of music discovery and listening – streaming. Streams increased 177% in the second 18 months over the first.

IMAGINE DRAGONS' *NIGHT VISIONS* — GLOBAL DEMAND: SALES & STREAMS

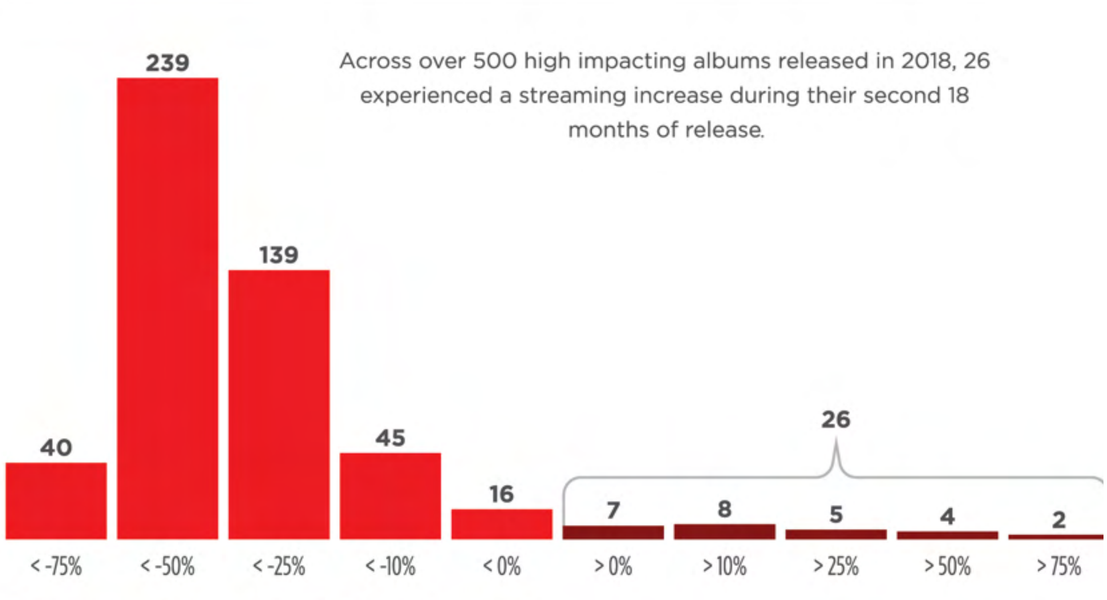


SOURCE: "DOES THE MUSIC INDUSTRY'S DEFINITION OF 'CATALOGUE' NEED AN UPGRADE?" *MUSIC BUSINESS WORLDWIDE*

But this is no longer an isolated story. We examined the trajectory of 500 high performing albums released in 2018 using Luminate data and observed 28 albums, or the top 5.2%, performed better in the second 18 months of release than the first 18 months.

Ninety-seven of the 500 high impacting albums declined less than 25% and nearly half decreased less than 50% in their second 18 months of release, demonstrating further moderation of consumption decay in the second 18 months after release.

CHANGE IN SECOND 18 MONTHS OF RELEASE OF HIGH PERFORMING ALBUMS RELEASED IN 2018



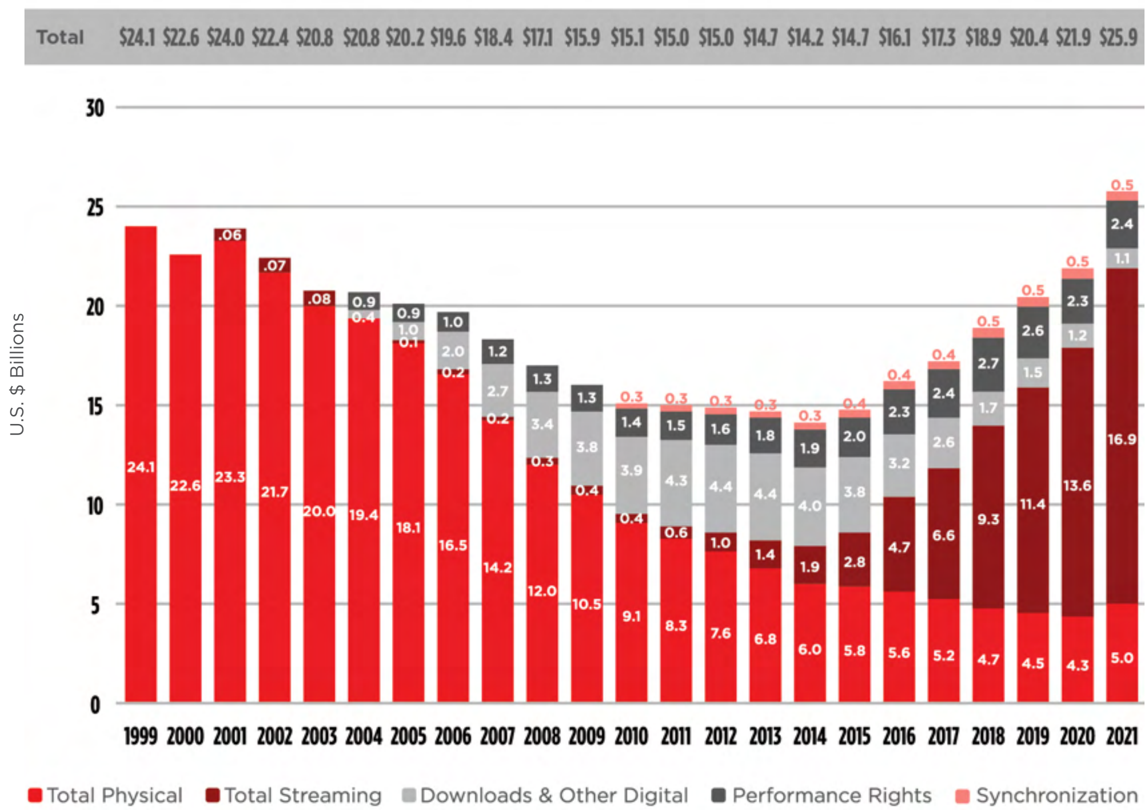
SOURCE: MRC DATA *MUSIC CONNECT TREND REPORT* AND *BILLBOARD* TOP 200 WEEK 1 2018 - WEEK 46 2018

An Estimate of Streaming's Contribution to Catalog Value

We already know the growing contribution of streaming to recorded music and music publishing *revenues*. But the industry has lacked an estimate for the contribution of music streaming to the *increase in the average market multiples* paid to acquire music catalogs over the last ten years.

As noted, according to IFPI's *Global Music Report 2022*, streaming is now the dominant source of revenues in recorded music, having grown from negligible impact before Spotify's entry to the US market in 2012.

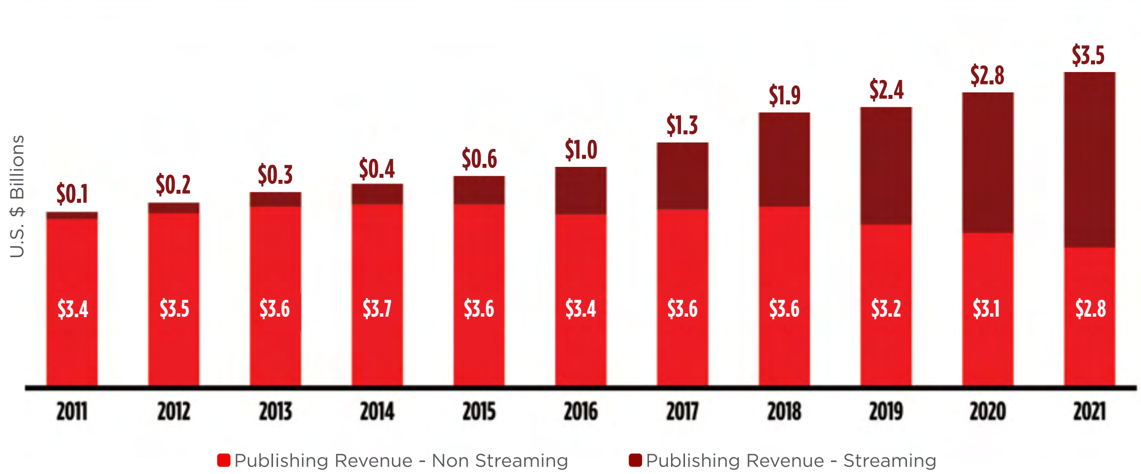
GLOBAL RECORDED INDUSTRY REVENUES 1999-2021



SOURCE: IFPI *GLOBAL MUSIC REPORT 2022*

Streaming is also forming a larger component of global music publishing revenues:

GLOBAL PUBLISHING REVENUES 2011-2021

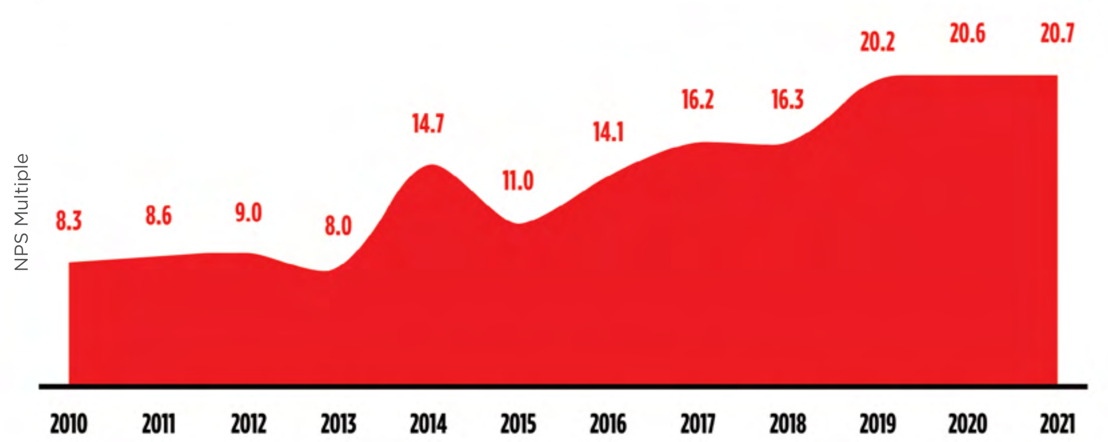


SOURCE: MUSONOMICS ANALYSIS OF MUSIC PUBLISHING REVENUE WORLDWIDE FROM 2016 TO 2021 - STATISTA, IFPI *GLOBAL MUSIC REPORT 2013, 2014, 2015, 2021, AND 2022* AND SPOTIFY'S *LOUD & CLEAR* REPORT

Clearly, the long lifespan of music copyrights combined with low volatility, high expected growth, robust downside protection and as previously stated, non-correlation to public markets, have drawn investors to music catalogs. As such the volume and value of catalog acquisitions have increased as well. Multiples paid on catalog transactions have skyrocketed.

Here is the evolution of NPS Multiples weighted average over the last 10 years:

NPS MULTIPLE EVOLUTION



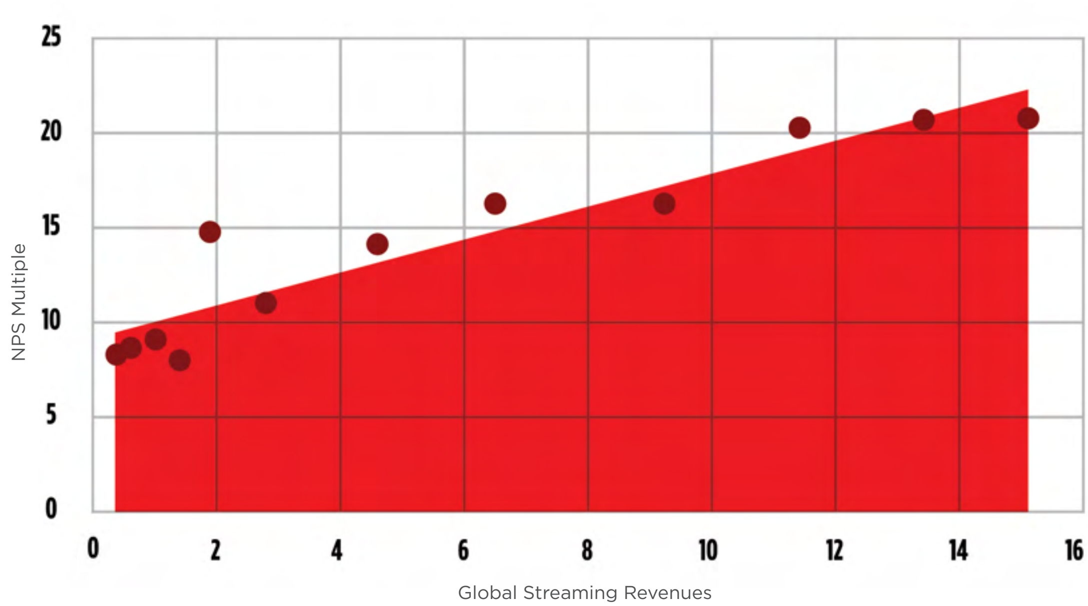
SOURCE: SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022)

Streaming is now the dominant source of revenue for music royalties both on an absolute and relative basis, so it stands to reason that streaming is in large part driving multiples upward.

But in order to measure the impact of streaming's contribution to the increase of multiples, it is necessary to study its *correlation* with the increase of multiples.

First, we correlated streaming revenue with NPS multiples. The variables present very high correlation at 93.9%:

NPS MULTIPLE VS STREAMING REVENUE CORRELATION



SOURCE: SOURCE: SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022), IFPI *GLOBAL MUSIC REPORT 2022*, MUSONOMICS ANALYSIS

Next, we evaluated the correlation of NPS multiples with global music publishing revenues:

NPS MULTIPLE VS GLOBAL MUSIC PUBLISHING REVENUES CORRELATION

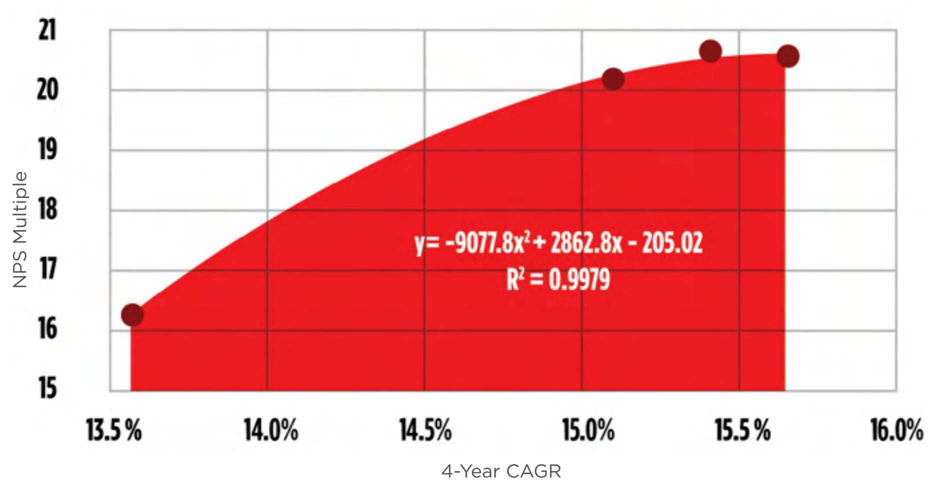
SOURCE: SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022), IFPI *GLOBAL MUSIC REPORT 2022*, MUSIC PUBLISHING REVENUE WORLDWIDE FROM 2016 TO 2021 - STATISTA, MUSONOMICS ANALYSIS

To get a fuller picture, though, we thought it insufficient to simply look back. To be quantitatively rigorous, we looked ahead from the point in the past when the transactions occurred and incorporated expectations of future growth that played into the expansion of multiples reportedly paid by buyers of music catalogs. MIDiA Research shared with us their models for 2018-2021 which forecasted streaming revenues for the next year. **With this, we calculated the 4-year CAGR for each model:**

MODEL	4-YEAR CAGR	NPS MULT.
2018	13.6%	16.3
2019	15.1%	20.2
2020	15.7%	20.6
2021	15.4%	20.7

SOURCE: SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022) AND MIDiA RESEARCH STREAMING USERS, MUSONOMICS ANALYSIS

STREAMING REVENUE 4-YEAR CAGR AND NPS MULTIPLE CORRELATION 2018-2021



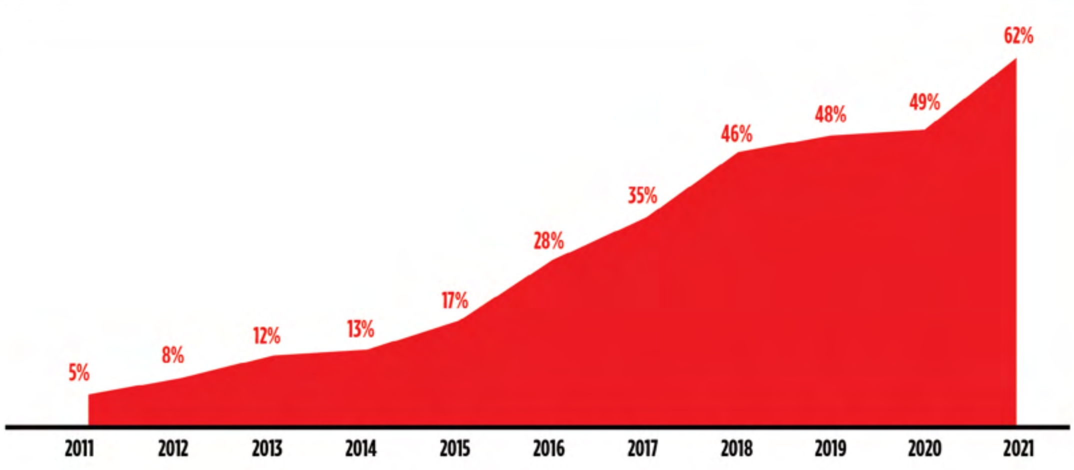
SOURCE: SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022) AND MIDiA RESEARCH STREAMING USERS, MUSONOMICS ANALYSIS

The 4-year CAGR captures the expectations from investors, which are then reflected in the NPS multiple. This is made clear in the strong correlation between the two variables. But there is only so far that multiples can continue to increase based on streaming revenue CAGR expectation. What's more, this trend may start to correct itself towards lower levels if discount rates change to reflect uncertainty on interest rates.

We applied a linear regression model with multiple factors and variables. They included global publishing revenues to reflect streaming revenues, streaming subscribers, PRO revenue and streaming CAGR, as well as U.S. Treasury Bonds Interest Rates. See appendix for the full methodology.

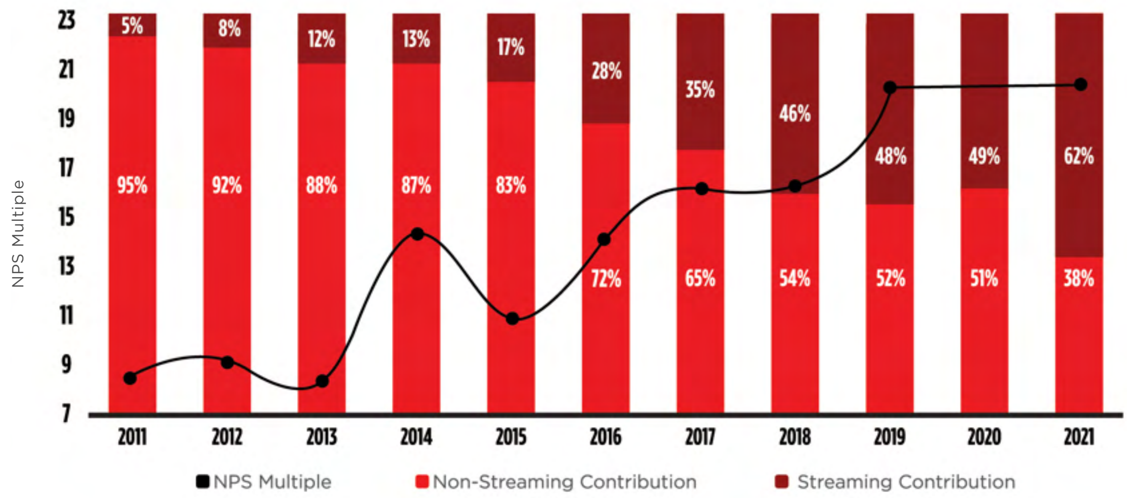
We found that as the contribution of streaming began representing a larger percentage of global publishing revenue, it has also had an increasing effect on NPS multiples. For the year 2021, **61.5% of the value of the NPS multiple is attributable to publishing revenues from music streaming**, while 38.5% is attributable to publishing revenues from other sources and the effect of the macroeconomic context.

STREAMING CONTRIBUTION TO NPS MULTIPLE



SOURCE: MUSONOMICS ANALYSIS BASED ON REGRESSION ANALYSIS, USING GOVERNMENT BOND DATA AGGREGATED BY STATISTA, IFPI *GLOBAL MUSIC REPORTS 2011-2022,* AND SPOTIFY *LOUD & CLEAR* (2022)

EVOLUTION OF NPS MULTIPLES, WITH ITS NON-STREAMING AND STREAMING CONTRIBUTIONS, RESPECTIVELY



SOURCE: MUSONOMICS ANALYSIS BASED ON REGRESSION ANALYSIS, USING GOVERNMENT BOND DATA AGGREGATED BY STATISTA, IFPI *GLOBAL MUSIC REPORTS 2011-2022*, SPOTIFY *LOUD & CLEAR* (2022), AND SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022)

Conclusion

So, to what degree has streaming impacted the value of music?

Clearly, streaming has transformed how music is discovered, consumed, and monetized over the past decade since Spotify entered the U.S. market. But its most significant impact must be how streaming has made the music industry more resilient.

This resiliency helped the music business withstand such unanticipated disruptions as a global pandemic while all other revenue streams were severely impacted.

Streaming has provided resilience to the effects of time, both elongating the earning potential of timeless classics and extending the income-producing window of new releases. In doing so, streaming has broadened the potential fanbase of catalog music to new generations.

And perhaps most significantly, streaming has sparked a sea change in the investment climate of music as an asset class, enabling rightsholders to leverage their creative efforts for greater diversification and financial reward.

Through this investment lens we can estimate the effect streaming has on the value of music by calculating its impact on the rise in NPS multiples paid for music catalogs in recent transactions. That number is 61.5% for transactions closed in 2021.

Any discussion of music's value is a fine line to parse between art and commerce. It is the delicate balance between the sacred and the profane. No catalog valuation or revenue model can ever quantify the value of a song to the fan who needs to hear it most.

But a focus on the value created by new methods of discovery and consumption may help smooth the pathway of delivering music from the mind of the creator to the ear of the fan in ways that ensure a sustainable environment for new music to thrive well into the future.

How Streaming Has Impacted the Value of Music

BY LARRY S. MILLER

Clinical Professor and Director, Music Business Program, New York University, Steinhardt School of Culture, Education and Human Development

Appendix

Because we do not count enough data on CAGR models to propose a multivariate polynomial regression, we do not use the streaming 4-year CAGR as an explanatory variable. However, we consider it relevant to keep in mind the relationship shown between such variables and the growth of recent NPS multiples.

In order to achieve our research goal – to estimate the contribution of streaming growth to the growth of NPS multiples, we needed to create a model that links these variables with statistical robustness, in order to pinpoint the exact contribution streaming had. For this, we propose the use of a linear regression model with the following structure:

$$NPS\ Mult. = \alpha + \beta_1 \times Global\_Music\_Publishing\_Revenue + \beta_2 \times Other\_Variables + \mu$$

WHERE:

- α is the intercept of the equation, in other words the value of NPS when all variables are zero.
- Global Music Publishing Revenue is the vector of variables with the data regarding global music publishing revenues in billions of dollars.
- Other Variables is a matrix of other possible explanatory variables to be included in the analysis.
- $\beta 1$ and $\beta 2$ are the coefficients that reflect the effect of the explanatory variables in the model, for the Global Music Publishing Revenue and Other Variables, respectively.
- μ is a vector of observed stochastic errors.

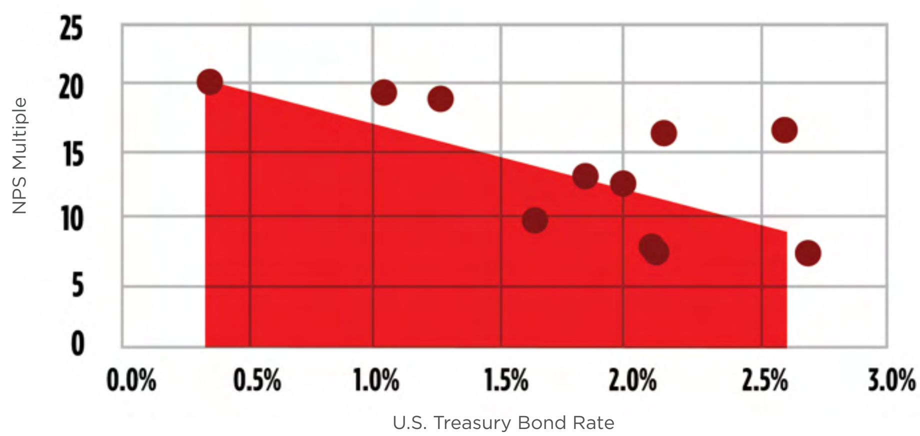
The Ordinary Least Squares (OLS) regression model requires that the explanatory variables are not correlated between one another. For this reason, we had to carefully pick the additional variables that would be included in the matrix Other Variables.

Initially, we considered using streaming revenue, streaming subscribers, PRO revenue and streaming CAGR as predictive variables, however, those were discarded considering they are heavily correlated to the variable Global Music Publishing Revenue.

In the quest for variables for the regression, we observed different variables that may be correlated to the NPS multiples. We considered variables that reflect the state of the financial market in those years, so we analyzed (1) U.S. Treasury Bond interest rates for 5-year maturity, (2) REITs 3-year forward revenue annual growth and (3) oil, gas & mineral trusts 3-year forward revenue annual growth.

These variables had correlations of: (1) -67.0% (2) 87.1% and (3) 78.2%. However, when included in the OLS regression model, only the U.S. Treasury Bonds interest rates were statistically significant (p-value lower than 5%). For this reason, we only considered one additional variable as a predictor in our model: U.S. Treasury Bonds interest rates.

NPS MULTIPLE VS U.S. TREASURY BONDS RATES CORRELATION



In case there is only one more additional variable in Other Variables, $\beta 2$ is a single coefficient. In case there is more than one variable, $\beta 2$ is a vector of coefficients.

SOURCE: MUSONOMICS ANALYSIS BASED ON SHOT TOWER CAPITAL *MAKING SENSE OF MUSIC VALUATIONS* (2022) AND 5-YEAR TREASURY RATE - MACROTRENDS

With this the final equation for our OLS regression model is the following:

$$NPS\ Mult. = \alpha + \beta_1 \times Global\_Music\_Publishing\_Revenue + \beta_2 \times Interest\_Rates + \mu$$

After several iterations, the intercept showed high levels of p-value, meaning that we do not reject the null hypothesis that the intercept is zero. In other words, the most likely and best result for our model is to assume that it is equal to zero, which is consistent with the logic of the equation.

These are the results of the model:

Regression Statistics	
R^2	0.99108044
Adjusted R^2	0.87897827
Standard Error	1.58781079
Observations	11

	Coefficients	*Standard Error*	*t statistic*	*p-value*
Global Publishing Revenue	3.81169253	0.221728154	17.1908369	0.00%
Interest Rates	-194.039059	56.23456233	3.45053026	0.73%

The p-values of the variables' coefficients ($\beta 1$ and $\beta 2$) indicate that the variables are statistically significant at 95% confidence. **With this we can fulfill our equation and estimate the modelled or estimated values for the NPS Multiple:**

TABLE 1

Year	Global Publishing Revenue Contribution (a)	Interest Rates Contribution (b)	Estimated NPS Multiple (a)+(b)
2011	13.3	-3.8	9.4
2012	14.0	-3.8	10.2
2013	14.9	-5.3	9.5
2014	15.4	-3.5	12.0
2015	16.1	-3.4	12.7
2016	16.8	-3.7	13.1
2017	18.7	-3.9	14.8
2018	21.0	-5.0	15.9
2019	21.3	-2.7	18.7
2020	22.5	-0.8	21.7
2021	24.0	-2.3	21.7

Posteriorly, we estimate how much of the Global Publishing Revenue Contribution (a), comes from streaming revenues. **For this, first we observed the % of global music publishing revenues that come from streaming:**

TABLE 2

Year	Global Publishing Revenue Total	Publishing Revenue from Streaming	Publishing Revenue Non-Streaming	% of Publishing Revenue from Streaming
2011	3.5	0.1	3.4	3.6%
2012	3.7	0.2	3.5	5.6%
2013	3.9	0.3	3.6	7.4%
2014	4.1	0.4	3.7	9.7%
2015	4.2	0.6	3.6	13.7%
2016	4.4	1.0	3.4	21.7%
2017	4.9	1.3	3.6	27.5%
2018	5.5	1.9	3.6	34.6%
2019	5.6	2.4	3.2	42.2%
2020	5.9	2.8	3.1	47.7%
2021	6.3	3.5	2.8	55.6%

Using these percentages, we estimated what is streaming's proportion of the column global publishing revenue contribution (a), from the previous table. With this data, we subtract from (a) the percentage contributed by streaming as shown in Table 3. This allows us to calculate the estimated NPS multiple, if streaming revenue had not existed in music publishing (c):

TABLE 3

Year	Estimated NPS Multiple with Streaming (a)+(b)	Estimated NPS Multiple without Streaming (c)	Difference (Streaming Contribution) (a)+(b)-(c)	% of Contribution of Streaming to NPS Multiple Estimate
2011	9.4	8.9	0.5	5.0%
2012	10.2	9.4	0.8	7.7%
2013	9.5	8.4	1.1	11.6%
2014	12.0	10.5	1.5	12.5%
2015	12.7	10.5	2.2	17.4%
2016	13.1	9.4	3.6	27.8%
2017	14.8	9.6	5.1	34.7%
2018	15.9	8.7	7.3	45.6%
2019	18.7	9.7	9.0	48.2%
2020	21.7	11.0	10.7	49.4%
2021	21.7	8.3	13.3	61.5%

In other words, as the contribution of streaming began representing a larger percentage of global publishing revenue, it has also had an increasing effect on NPS multiples. For the year 2021, 61.5% of the value of the NPS Multiple is attributable to publishing revenues that come from music streaming, while 38.5% is attributable to publishing revenues from other sources and the effect of the macroeconomic context.

Disclaimer: *The OLS regression assumes a linear relationship between variables. But as we saw, the relation follows an asymptotic converging pattern towards a maximum level. In that regard, we should specify that this model is not best suited for prediction, instead, it is useful to have a grasp of what has happened, and to account for streaming's impact and contribution to the evolution of multiples in the catalog valuation deals for the period examined.*

Additionally, it is important to point out that this effect is isolated on the multiples; we did not take into account the effect streaming has had on the NPS calculation for each one of the deals taken into the average used in this database.

MUSIC BUSINESS REVENUES BY REGION & TYPE

Global Wholesale Recorded Music Revenues (Source: IFPI)

Type	2015	2016	2017	2018	2019	2020	2021
Total Revenues	$14.8B	$16.2B	$17.4B	$19.1B	$20.2B	$21.6B	$25.9B
Streaming Revenues	$2.8B	$4.6B	$6.5B	$9.2B	$11.2B	$13.4B	$16.9B
Streaming Percent of Total	19%	29%	38.4%	47%	56.1%	62.1%	65%

U.S. Recorded Music Revenues (Source: RIAA)

Type	2015	2016	2017	2018	2019	2020	2021
Total Revenues	$6.868B	$7.485B	$8.722B	$9.846B	$11.1B	$12.2B	$15B
Streaming Revenues	$2.3B	$4B	$5.7B	$7.366B	$8.8B	$10.1B	$12.2B
Streaming Percent of Total	33%	51%	65%	75%	79%	83%	83%

U.S. Publishing Revenues (Source: NMPA)

2015	2016	2017	2018	2019	2020	2021
$2.5B	$2.652B	$2.957B	$3.335B	$3.72B	$4.07B	$4.7B

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