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Goldman Sachs

MUSIC IN THE AIR

PAINT IT BLACK

DOUBLE ALBUM VOL.2

Avoiding the prisoner's dilemma and assessing the risks to music's nascent turnaround

The complicated web of competing interests in the music industry poses a threat to the budding turnaround that we expect to almost double global music revenue over the next 15 years. In this second of a "double album" on the music industry's return to growth, we assess the risks and scenarios that could derail our thesis, from the risk of "windowing" and exclusivity turning off fans to an acceleration in declines for physical CDs and downloads that would come too fast for streaming to fill the void in the near term.

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Paint it black

The music industry finds itself in a prisoner's dilemma: labels need streaming services (for their distribution, data and customer relationship) as much as streaming services need labels (for their vast catalogues). This complicated web of competing interests poses a threat to the nascent turnaround that we expect, a turnaround that should almost double global music revenue over the next 15 years. In part two of our double album, we assess the risks that could derail our central thesis, as presented in the first of the double album, "Stairway to Heaven":

Windowing and exclusivity risk frustrating fans: windowing and exclusivity (i.e. artists releasing their albums or songs exclusively on a platform for a limited period of time or permanently), could derail the growth of streaming services by reducing convenience and frustrating fans, ultimately leading to a return to piracy. Kanye West's The Life of Pablo, which was released exclusively on Tidal, became the most pirated album that TorrentFreak had ever seen on a release day. Major labels' responses, such as UMG's reported move to ban its artists from entering such deals, could help contain those risks in the future.

Reduced attractiveness of streaming services could limit their growth potential: artists and labels' pressure on streaming services to limit the content and functionality of their free tier could be detrimental to the user experience, and thus encourage a return to piracy. Any pressure from labels to charge more for premium offerings could also have an impact on future subscriber growth.

Disintermediation risks for labels rising; artists going direct to streaming services: we see a risk of artists bypassing labels and signing lucrative direct deals with streaming services, although this is likely to be limited to established artists with sufficient clout (and that can be released from their existing contractual obligations). Artists will still need many of the core services currently provided by labels, while going independent does not necessarily save substantially on costs.

Disintermediation risks for labels/publishers; the emergence of alternative service providers: the emergence of alternative labels and publishers offering greater transparency and a higher royalty share to artists and songwriters will likely put pressure on the incumbents to share a larger portion of royalties with artists. We see this more as a risk for publishers than labels, given the more volatile business model and lower margins of the latter.

Pure streaming players' business model yet to be proven: With no streaming services currently profitable, content costs accounting for 70% of revenue and growing competition from large tech players, the sustainability of pure streaming players is yet to be proven. Spotify is reportedly (MBW, August 22, 2016) out of contract with the three major labels and is seeking to renegotiate its royalty payment to labels down to 50% from 55%, compared to the 58% that Apple currently pays. Labels' responses will be a major focus, at a time when Amazon is also reportedly (Recode, August 22, 2016) negotiating to launch its own subscription service.

The decline of ownership models could be faster than we anticipate and offset the growth of streaming in the near term: (1) We see ongoing headwinds from physical formats which account for nearly 40% of the global recorded music market (30% ex Japan and Germany). The evolution of Japan and Germany, the second and fourth largest markets globally which are still largely physical, will be key. However, our analysis suggests that a collapse is unlikely: rather we see a slow, gradual transition towards paid streaming; **(2) the download decline is likely to accelerate** as iTunes users migrate to Apple Music and other streaming platforms, a trend that already became more apparent six months after Apple Music's launch. Along with changing consumption patterns, Apple's strategy regarding iTunes will be decisive in dictating this evolution.

Prelude: What went wrong previously?

The recorded music industry went through a perfect storm of widespread piracy and unbundling, brought on by the development of the internet and technology changes at the end of the 1990s and early 2000s. This led to a halving of the global recorded market in revenue terms about 10 years after Napster launched in 1999.

We believe that the recorded music industry had also been too complacent about the risks posed by piracy, and failed to sufficiently protect digital copyrights and come up with an innovative alternative for the consumer. As piracy proliferated (80 mn people were using Napster in 2000), the labels' main response was to sue illegal platforms (and later the pirate users themselves).

Labels later launched their own streaming platforms in 2002 (Pressplay, a JV between SME and UMG, and MusicNet, a venture between WMG, BMG and EMI), but these failed to gain traction, probably owing to a lack of convenience, incomplete libraries, and the labels' lack of distribution power and direct relationship with end consumers. Based on RIAA data, the US retail recorded music market declined by 19% in value terms between 1999 and 2003 as a result of piracy.

When iTunes launched in 2004, the labels signed a deal with Apple enabling iTunes to offer a complete album for US$9.99 (vs. US$15 for a physical album) and more importantly, a la carte individual songs for US$0.99 (vs. US$5 for a CD single). This led to significant deflation and a drop in unit sales for the recorded industry. Furthermore, it allowed the formation of a monopoly in digital distribution, with Apple controlling 80% of the legal download market in the US in 2005 (according to NPD Group).

While US music sales increased in 2004, and remained flat in 2005, driven by library replacement, a combination of more sophisticated forms of piracy and unbundling led the market to fall by 43% in revenue terms between 2005 and 2010 (RIAA).

Future industry responses will be key to ensuring that the recovery in the music market is sustainable and optimal, but we believe the market is in a completely different setting with:

- an improving regulatory environment for rights holders
- streaming helping to reduce piracy that is already widespread
- fragmenting distribution with the number of online platforms likely to expand in the near future, while the record and publishing industry has become more consolidated

Exclusivity and windowing could lead to a return to piracy

Windowing is the practice of briefly restricting new albums or singles to certain outlets before expanding them to a wider release, as seen in the film industry, with the restriction of new films to cinemas before they are released on DVD.

Exclusivity, in contrast, is indefinitely restricting an album or product to one outlet. Both of these practices are increasingly seen in the music industry, especially on streaming services, in an attempt to make their services more attractive, with Jay-Z's Tidal leading the way and Apple making a more aggressive push recently.

Exclusivity, as intended by Kanye West's 'The Life of Pablo' (see vignette), is relatively unusual, with windowing far more common. Beyoncé's 'Lemonade' is a good example: it was released on Tidal on April 23, 2016, 24 hours before its general release and helped boost subscriber numbers to the service by 1.2 mn in the first week after the release according to NYT (May 13, 2016). Adele windowed her album '25' in the other direction, limiting its release to physical and digital sales, before releasing it to streaming services seven months later.

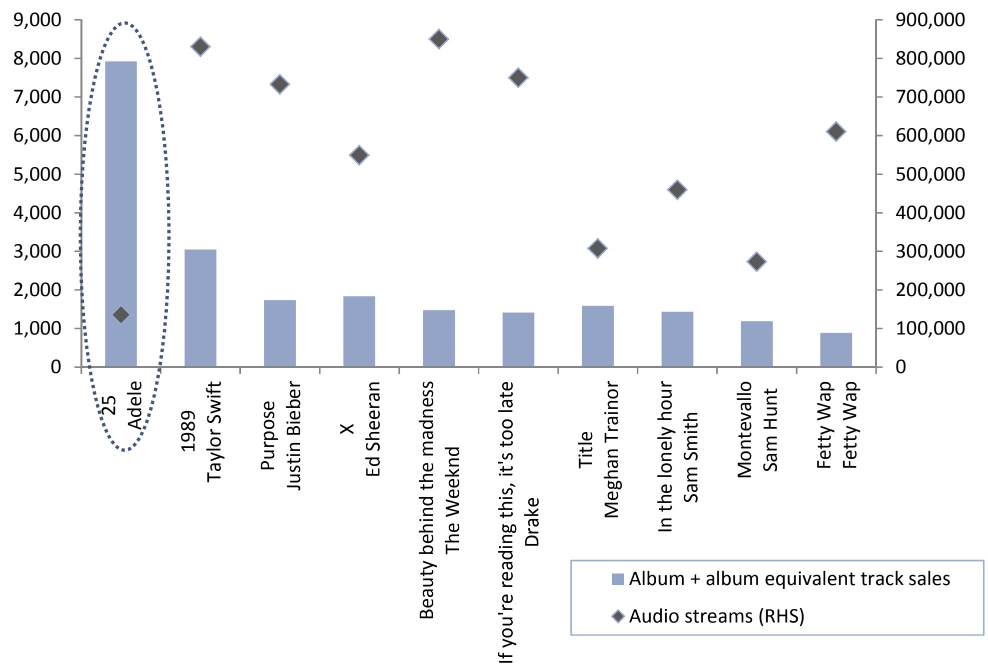
Though windowing can boost the fortunes of an individual artist or streaming service in the short term, it poses considerable risks to the streaming industry as a whole:

- **Encouraging piracy:** 'The Life of Pablo' became the most pirated release ever seen (see vignette). A similar effect was seen with Frank Ocean's 'Blonde' album, released exclusively on Apple Music that was downloaded illegally 754k times in less than a week according to Muso. This figure does not include single track downloads or illegal streaming that would have increased this number further. There is a risk that exclusivity drives people who would ordinarily pay for music to pirate it, especially if they already have a subscription to a rival streaming service.
- **Reduced convenience and utility of streaming services:** By competing amongst each other, streaming services run the risk of driving customers away from their platforms, a trend that would be detrimental to their service, as convenience and choice has been a main driver of streaming uptake.
- **Artists risk alienating their fan base**, both casual music fans who find different services offering different music too inconvenient, and their more dedicated fan base, who view the deals with music streams as a betrayal of fan loyalty by the artist.

Major labels have recently opposed such practices

Just two days after the release of Frank Ocean's 'Blonde' exclusively on iTunes (August 2016), UMG reportedly (MBW, August 25, 2016) became the first label to ban exclusive distribution deals with streaming services for its artists (this does not however apply to artists under joint-ventures). Other labels are expected to follow with similar moves (NY Post, August 24, 2016). There is a risk, however, that mega-artists with a sufficient clout could cut direct deals with streaming platforms.

Exhibit 1: The impact of windowing: Adele's '25'
Album + album equivalent track sales vs. on-demand audio streams ('000) in the US, 2015



Source: Nielsen.

Exhibit 2: Examples of windowing

Sales Only	Tidal	Apple Music	Spotify
Adele's *25* - Released only for purchase, and only available to stream 7 months later	**Beyoncé's *Lemonade*** - Exclusively on Tidal for 24 hours, before being released for sales. Exclusively streams on Tidal	**Drake's *Views From the 6*** - Released exclusively on Apple Music for a week. Now available on all other services and for sale	No current or future exclusives
	Kanye West's *The Life of Pablo* - Declared it would only ever be on Tidal, but later released on all other services and for sale	**Taylor Swift's *1989*** - Exclusively on Apple Music and for sale	*Beyoncé, Coldplay & Taylor Swift (amongst others) have all taken music off the service, or delayed new releases, objecting to Spotify's free tier*
	Rihanna's Anti- Exclusively streamed on Tidal for a week, but also available to buy. Now available on all services	**Chance the Rapper's *Coloring Book*** - Released exclusively on Apple Music for a week. Now available on all other services and for sale	
	Prince- Almost all of Prince's catalogue is exclusively on Tidal, with a few exceptions	**Frank Ocean's *Blonde* & *Endless***- Exclusively on Apple Music	
	Jay Z's Blueprint Trilogy- Only available on Tidal		

Source: Press reports, Goldman Sachs Global Investment Research.

Kanye West's 'The Life of Pablo'

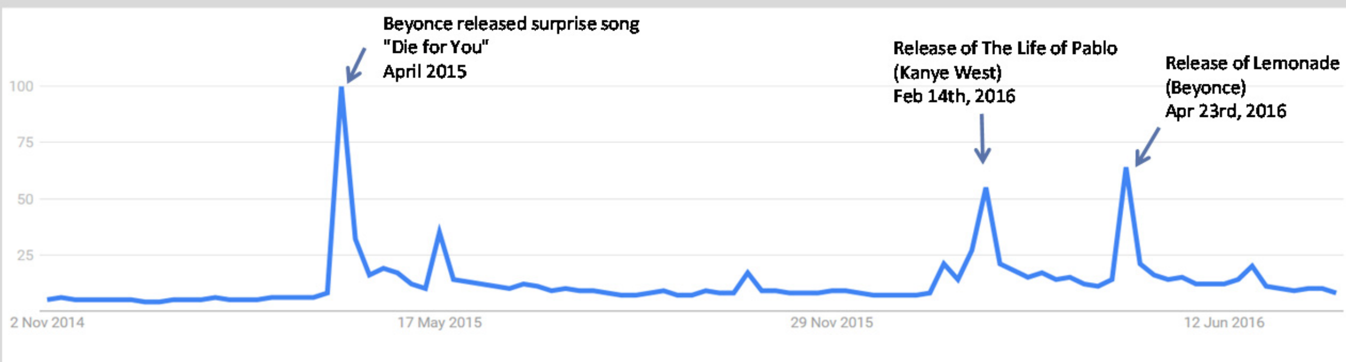
Kanye West's 'The Life of Pablo' was released exclusively on Tidal on February 14, 2016.

Exclusivity/windowing benefits the streaming platform in the short term. 'The Life of Pablo' had an immediate impact on Tidal which saw its number of subscribers more than doubling from 1 mn to 2.5 mn according to TMZ (February 23, 2016). Tidal further went on to report that 'The Life of Pablo' surpassed 250 mn streams in the first 10 days of release.

However, this led to a surge in piracy... On the release of 'The Life of Pablo', TorrentFreak estimated that it had recorded over half a million people illegally downloading the album on the first day alone, making the release the most pirated it had ever seen.

... and frustration of fans. Before the release, the artist had declared that it would never be for sale or on any other platform *"My album will never never be on Apple. And it will never be for sale... You can only get it on Tidal"*. But West later reneged on this declaration on Twitter. Both West and Tidal were subsequently sued for allegedly deceiving fans into subscribing to the streaming service.

Exhibit 3: The impact of (temporary) exclusivity
Interest over time of the word "Tidal" on Google



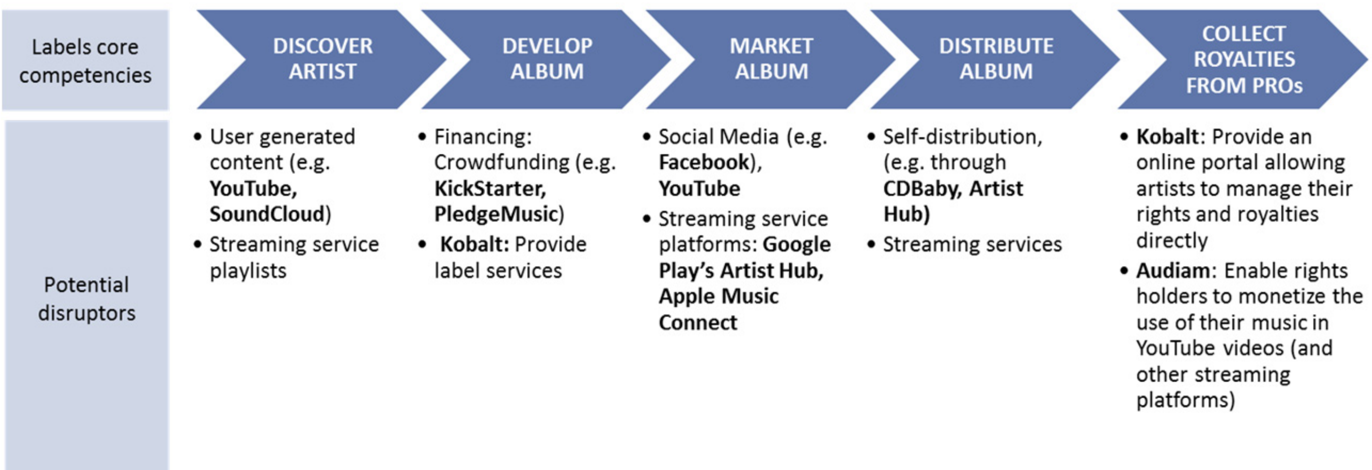
Source: Google Trends.

Artists going direct to platforms

Self-promotion or self-publishing in the music industry is not a new phenomenon. However, it has become increasingly easier for artists to self-promote on social networks or discovery platforms such as SoundCloud and self-publish on streaming services (Google Play's "Artist Hub", Apple Music Connect, etc.), thereby fulfilling the label's traditional role of promotion and distribution.

Another major role of a label is financing, and this can now be done by venture capitalists or crowdfunding platforms such as Kickstarter. This will be a key trend to watch in the future, but examples of successful self-published new artists to date have been rare. We believe this option will be more open to a handful of already established stars with sufficient clout. The most recent example is Frank Ocean, who self-released his latest album 'Blonde' on Apple Music, the day after he fulfilled his contractual obligations with former label Def Jam (owned by UMG) with the release of visual album 'Endless'.

Exhibit 4: Risks of disintermediation across the value chain



Source: Goldman Sachs Global Investment Research.

The emergence of alternative labels and publishers

We believe digital brings opportunities, but also greater disruption risks for the labels and publishers that will need to adapt to a wholly new landscape in terms of music distribution, access to artists and end consumers. This comes at a time when songwriters and artists increasingly complain about the way and amount that they are paid by streaming services, calling for greater transparency in digital rights management, more efficiency in reporting cycles and faster payments. Larger companies have already been active acquiring or investing in start-ups in recent years (Pandora acquired Next Big Sound, Warner Music and Deezer's major shareholder Access Industries invested in Songkick, etc.).

The emergence of new technologies, facilitating the tracking of usage and allowing easier and cheaper access to artists, could force greater transparency in payment streams in favour of artists. New business models have already emerged with technology at the core, such as label services and digital rights services (Kobalt, BMG Rights, Audiam, etc.) which perform the functions of labels and publishers for a fee, but without owning the rights. These businesses claim they can offer much greater transparency and efficiency in online copyright administration, royalty tracking and digital collections for artists and songwriters through the use of their proprietary platforms. For instance, Kobalt said that it can generate 20%-30% more revenue for its clients than the major publishers and around 2-3 years faster. Similarly, Audiam claims that 85% of sound recordings are not being paid, which results in a potential revenue loss of 25%-30%.

However, we see greater disruption potential on the traditional publishing/collecting society side than on the label side, given the more volatile business model and the lower profitability of the latter.

Changing label or publisher is not uncommon and we will likely continue to see artists and songwriters moving from the big majors to independent companies or new alternative labels and publishers (e.g. Kobalt and BMG), and vice versa. We have seen many examples in the past, albeit with mixed success. Madonna ended her 24-year relationship with Warner in 2007, to enter a 10-year contract with concert promoter Live Nation; in 2011 however she signed a 3-year deal with Interscope (UMG). Sir Paul McCartney left his long-standing label EMI (now owned by UMG) in 2010 for independent label Concord Music but rejoined UMG in 2016. Indeed, as the digital world also brings more complexities for artists and songwriters to navigate, we believe traditional labels and publishers are still in the best position to provide fully-fledged services and a coherent marketing plan to break an artist. We highlight the key comparative advantages of the majors:

- Large catalogues which have been built over a long period of time.
- Vast networks and strong relationships with many players such as physical and digital retailers, streaming platforms (in which they often own an equity stake), music collection societies, broadcasters, etc.
- Well-established reputation and expertise in finding and developing artists and songwriters.
- Global and oligopolistic nature of the markets (the top-3 labels/ publishers represent 73%/66% of the global recorded/publishing market)
- Record labels make important up-front payments to artists which are then recouped from the future royalties payable to artists (as do publishers with songwriters).
- Extremely complex copyright legislation and contracts. Labels/publishers usually have the ownership of the artist's work/musical composition for the duration of the copyright. This is less often the case for established artists who tend to grant an exclusive licence for a limited period of time. In the US, the duration of the copyright is: (1) for works made for hire after 1978, the earliest of 95 years from first publication or 120 years from creation; (2) for works that are not made for hire, the life of the

author plus 70 years. In the EU, the duration of the copyright for recordings is 70 years from the date of release while for compositions it is the life of authors plus 70 years.

- The development of 360 degree or expanded rights deals helps strengthen labels' relationships with artists. UMG and Sony Music also boast the advantage of being able to leverage their parent companies' assets in TV, gaming, ticketing and venues to boost artist sync and performance revenues. For more details see *Sync revenues: An additional growth opportunity for rights holders* in *Music In The Air – Stairway To Heaven*.
- Highly diversified nature of the revenue base (in terms of genres, geographies, artists/ songwriters, etc.) also means they are not reliant on any single artist, songwriter or geography. UMG's top 10 artists represent less than c.10% of their revenues for example.

BMG: an alternative publishing/ label business model

BMG Rights Management was founded in 2008 as a 49/51 JV between Bertelsmann and KKR with a focus on licensing and administering music rights soon after Bertelsmann sold the old recording catalog to Sony. BMG became a fully owned subsidiary of Bertelsmann in 2013 and following a series of acquisitions, it has become the world's fourth largest publisher in terms of revenue and the third largest in terms of number of administered song copyrights (2.5 mn). BMG entered label services in 2012 and recently became the fifth largest label in the UK. The company's stated objectives are transparency and fairness for artists and songwriters, as well as greater integration and collaboration between its label and publishing functions which sit under one roof.

What does BMG do? BMG provides the administrative services of a label and publisher for a fee, without owning any copyrights. BMG does not provide any advances to artists and songwriters unlike the majors. This model enables BMG to pay away a higher share of its revenue than a traditional label or publisher. BMG recently reported €182 mn of revenue in 1H2016, up 4.6% yoy, with an operating EBITDA of €32 mn implying a 17.6% margin (which is slightly lower than a traditional publisher's margin of c.28%-30%).

- The **publishing segment** aims to increase transparency and efficiency throughout the "back office" services of the music industry like online copyright administration, royalty tracking and digital collections, by leveraging a single integrated technology platform – with no legacy systems. BMG represents 2.5 mn songs. Main clients include Bruno Mars, Steve Mac, Dan Wilson.
- BMG expanded into **label services** in 2012 and provides services such as product management and marketing, planning, promotion and retail & sales marketing. BMG typically pays away more than 70% of its revenue to artists, compared to less than 20% for a traditional label, but it does not provide advances or own the copyrights. BMG has been very active in recent years at acquiring smaller labels. In 2016, BMG signed an exclusive global distribution deal with Warner Music which will cover most of BMG's catalogues. Major labels include Vagrant, Rise, Infectious and S-Curve and major artists include Janet Jackson, Thrice, Jack Savoretti and Bryan Ferry. At the end of 2014, BMG had more than 300k copyrights.

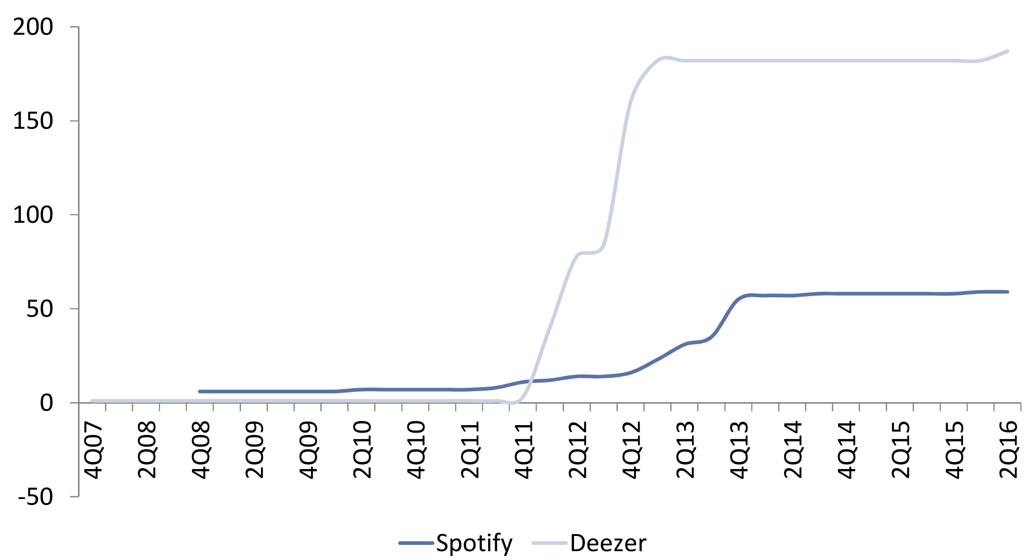
The sustainability of pure streaming players' business model

With no interactive streaming service being currently profitable, and with a typical gross margin of around 15%-20% currently, the economic viability of such business models is yet to be proven.

Streaming services currently redirect around 70% of their revenues to rights owners (70% for Spotify; 71.5% for Apple Music in the US and 73% outside of the US according to Recode), and we estimate they incur another 10%-15% in costs of goods sold. Pandora pays a lower rate of 65%-70% for its interactive streaming service, but in exchange for a slightly higher rate on its ad-funded radio service.

Most services are currently loss making, as they are marketing heavily and expanding into new territories. MBW (September 13, 2016) reports that Tidal posted a net loss of US$28 mn in 2015, compared to a loss of US$10.5 mn in 2014, despite a 30% jump in revenues over the same period. Similarly, Spotify reported a €173 mn loss for 2015, a 7% increase yoy, despite revenues rising 80% yoy (MBW, May 23, 2016).

Exhibit 5: Spotify and Deezer have pursued aggressive international expansion
Number of territories where Spotify and Deezer operate



Source: Spotify/ Deezer.

Producing original videos and other forms of content, pursuing new revenue streams such as ticketing (Spotify recently partnered with Songkick and Pandora acquired Ticketfly), seeking partnerships with telecom operators (to lower customer acquisition cost) and the ongoing improvement in paid user conversion rates could help improve their profitability.

Pandora recently made a major move into on-demand, where it agreed to pay away 65%-70% of its revenue to content owners, despite having a comfortable position already in the non-interactive space, where content costs amounted to c.45% of its online radio subscription revenue in 1H16. We believe this demonstrates a strong confidence in the revenue and profit growth potential of the paid streaming business. Meanwhile, Deezer reported 13% EBITDA margin in France in 1H15, its most mature market. Spotify's UK accounts revealed a 16% operating profit margin in 2013, which fell to 2% in 2014 owing to higher cost of sales and administrative expenses.

Exhibit 6: Spotify P&L

(€ '000)	2012	2013	2014	2015
Revenues	**430,281**	**746,858**	**1,081,720**	**1,945,332**
% growth		74%	45%	80%
Cost of revenues	**-389,579**	**-614,523**	**-876,089**	**-1,623,624**
% growth		58%	43%	85%
% of revenues	91%	82%	81%	83%
Gross profit	**40,702**	**132,336**	**205,631**	**321,709**
% margin	9%	18%	19%	17%
SG&A	**-120,659**	**-223,513**	**-370,721**	**-506,198**
% growth		85%	66%	37%
% of revenues	28%	30%	34%	26%
Operating loss	**-79,957**	**-91,177**	**-165,090**	**-184,489**
Finance costs	-5,829	37,361	6,511	19,726
Loss before tax	**-85,786**	**-53,816**	**-158,579**	**-164,763**
Income tax expense	-932	-2,078	-3,678	-8,333
Net loss attributable to owners of the parent	**-86,718**	**-55,894**	**-162,257**	**-173,096**

Source: Spotify/ MBW.

Exhibit 7: Spotify breakdown of costs

(€ '000)	2013	2014	2015
Royalty, distribution and other costs	602,918	882,463	1,633,289
Streaming content expense	0	0	14,987
Personnel costs	113,969	180,930	243,366
Travel costs	11,573	16,822	21,785
Advertising and public relations	45,642	68,763	87,335
External consulting fees	30,524	38,762	49,136
Facilities fees	15,464	25,016	33,389
Other expenses	8,794	15,067	15,703
Depreciation and amortization	9,152	18,987	30,832
Total	**838,036**	**1,246,810**	**2,129,822**
Royalty, distribution and other costs	81%	82%	84%
Streaming content expense	0%	0%	1%
Personnel costs	15%	17%	13%
Travel costs	2%	2%	1%
Advertising and public relations	6%	6%	4%
External consulting fees	4%	4%	3%
Facilities fees	2%	2%	2%
Other expenses	1%	1%	1%
Depreciation and amortization	1%	2%	2%
Total	**100%**	**100%**	**100%**

Source: Spotify/ MBW.

Exhibit 8: Deezer P&L

(€m)	2012	2013	2014	1H 15
Revenues	**63.6**	**92.8**	**141.9**	**93.2**
% growth		46%	53%	41%
Cost of revenues	**(58.0)**	**(90.6)**	**(119.8)**	**(76.7)**
% growth		56%	32%	35%
% of revenues	91%	98%	84%	82%
Gross profit	**5.6**	**2.2**	**22.1**	**16.5**
% margin	9%	2%	16%	18%
SG&A	**(16.7)**	**(40.7)**	**(43.1)**	**(27.5)**
% growth		144%	6%	35%
% of revenues	26%	44%	30%	30%
EBITDA	**(11.1)**	**(38.5)**	**(21.0)**	**(11.0)**
D&A	(18.0)	16.0	(6.0)	(1.2)
EBIT	**(29.1)**	**(22.5)**	**(27.0)**	**(12.2)**
Operating Profit	**(29.1)**	**(22.5)**	**(27.0)**	**(12.2)**
Financing Costs	0.3	0.8	0.2	3.4
PBT	**(28.8)**	**(21.7)**	**(26.8)**	**(8.8)**
Income Tax	0	(0.3)	(0.4)	(0.2)
Net Income	**(28.8)**	**(22.0)**	**(27.2)**	**(9.0)**

Source: Deezer company data.

Exhibit 9: Deezer generated a 13% EBITDA margin in 1H15 in France

€m	2012	2013	2014	1H 15
Total Revenues	**63.6**	**92.8**	**141.9**	**93.2**
France	56.5	60.8	74.2	43.8
Europe	6.2	22.3	40.8	31.4
Latin America	0.1	5.2	21.5	14.0
United States	-	-	0.2	1.7
Rest of World	0.8	4.5	5.3	2.3
Margin Contribution				
France				
Margin contribution	8.2	7.6	11.7	8.5
EBITDA	5	4	7	6
EBITDA margin	**9%**	**6%**	**9%**	**13%**
Europe				
Margin contribution	(5.8)	(11.4)	(5.2)	(3.0)
EBITDA	(8.9)	(15.2)	(9.9)	(5.9)
Latin America				
Margin contribution	(0.1)	(9.1)	(0.9)	(2.1)
EBITDA	(3.1)	(13.0)	(5.6)	(2.0)
US				
Margin contribution	-	(0.2)	(2.9)	(2.8)
EBITDA	-	(4.1)	(7.6)	(5.7)
RoW				
Margin contribution	(1.2)	(6.1)	(0.2)	0.0
EBITDA	(4.3)	(9.9)	(4.9)	(2.9)
Total segment contribution to EBITDA before corporate expenses	**1.1**	**(19.3)**	**2.4**	**3.7**
Corporate expenses	(12.2)	(19.2)	(23.4)	(14.7)
Group EBITDA	**(11.1)**	**(38.5)**	**(21.0)**	**(11.0)**

Source: Deezer company data.

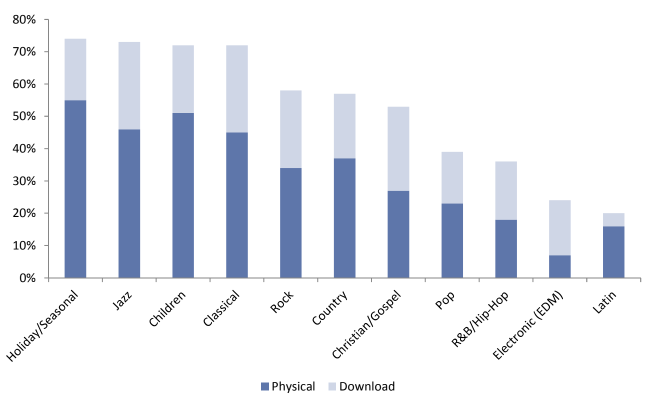
There is a risk that excessively restricting the content and functionality of the free tier could slow adoption of such services and lead to a return to piracy. Internet radio or online streaming platforms are still trying to find the right balance between freemium and subscription revenues to fund growing royalty payments and, in the case of interactive services, minimum guarantees. Recent developments point to a greater emphasis on the paid model, given growing artists' complaints about the free window (Taylor Swift's decision to remove her entire back catalogue from Spotify in 2014). Most new services now offer only a paid tier such as Apple Music and Deezer in the US, with Pandora launching its paid on-demand service in 2H16 and Amazon reportedly following a similar move (Recode, August 22, 2016). Spotify is also said to be introducing its premium-only music window later this year (MBW, September 5, 2016). While royalty rates are indeed smaller on the free window, we see merit in maintaining a relatively attractive free tier to reach a much wider pool of customers, of whom, a certain portion will be willing to convert to the paid tier, while also helping reduce piracy. We also see an opportunity to grow revenues on the free tier through higher advertising revenue (see section *Ad funded streaming to eat into radio* in the accompanying report *Music In The Air – Stairway To Heaven*).

Near-term pains: the decline of ownership models

CDs/downloads still serve a need and should persist

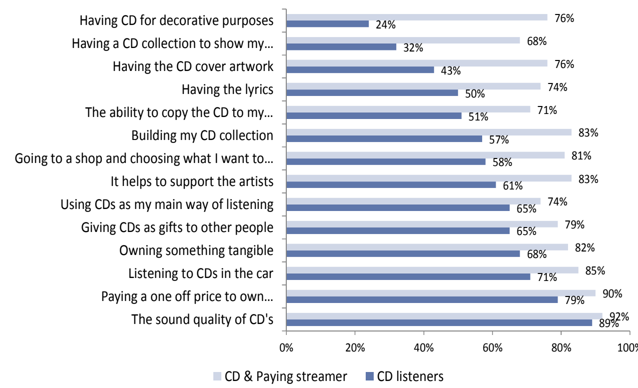
We expect CD sales and downloads to continue to decline, as consumer preference shifts towards access. However, we believe those formats will continue to cater to a group of users who want to own their music, offer it as a gift, or look for superior sound quality or collectability. Certain music genres remain highly skewed towards physical and download formats, such as holiday/seasonal (suitable for gifts) and jazz/ classical music (suitable for collectability/ superior sound quality).

Exhibit 10: Seasonal/jazz/children/classical genres still heavily skewed towards physical/downloads
Share of physical and download sales by music genre in the US



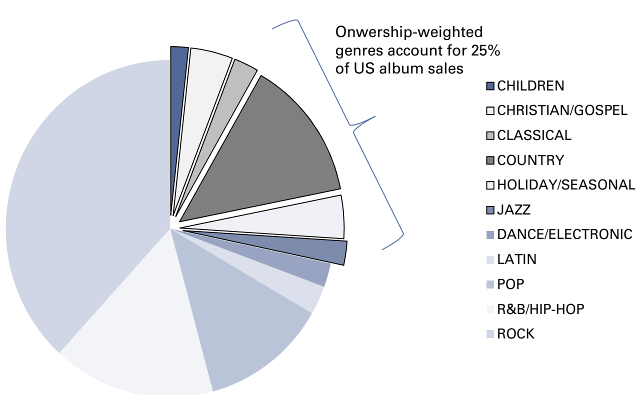
Source: Nielsen Music 2015.

Exhibit 11: People who buy CDs look for sound quality/ ownership of the music
Online survey of 1,000 music consumers (November 2015)



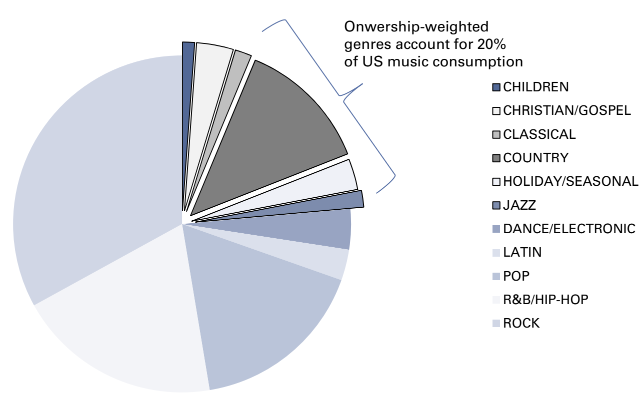
Source: BPI/AudienceNet.

Exhibit 12: Ownership-weighted genres accounted for 25% of US album sales in 2015…
Share of physical and download sales by music genre



Source: Nielsen Music 2015.

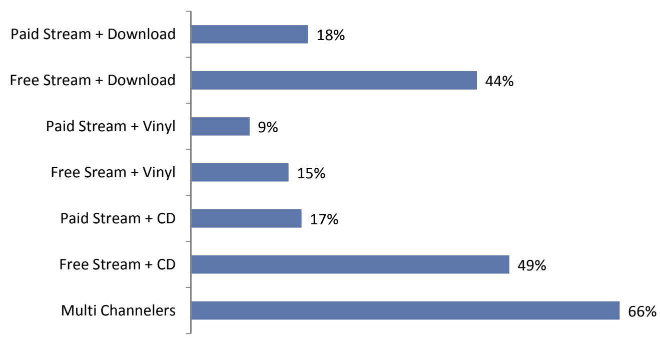
Exhibit 13: … and 20% of US consumption
Share of physical and download sales by music genre



Source: Nielsen Music 2015.

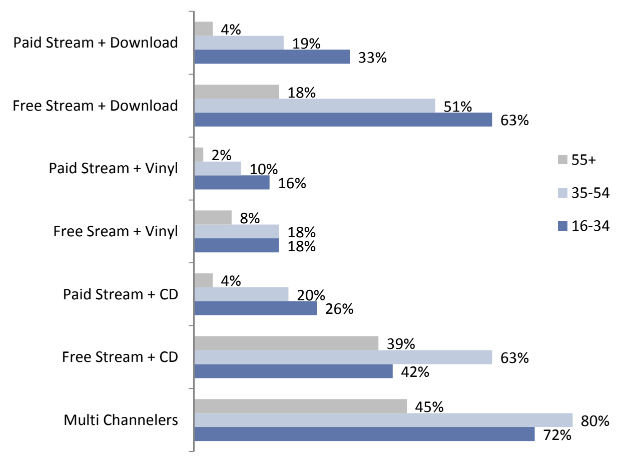
A survey from BPI/ AudienceNet found that streaming, while becoming mainstream, could also help promote physical formats. The experience and enjoyment of owning and collecting CDs/vinyls from favourite artists (even for decorative purpose) complements the convenience and interactivity of streaming services. Indeed, a survey from ICM Group conducted in April 2014 in the UK found that 15% of buyers of CDs, vinyls or cassette tapes had no intention of listening to them. This could partly explain the resurgence of vinyl sales in recent years, especially among younger demographics. In the US, based on RIAA data, the number of vinyls and LP/EPs sold jumped from a trough of 1.9 mn in 2007 to 17.4 mn in 2015, the highest level in 25 years, while the prices of LP/EPs increased at a 4% CAGR in the US. We believe those trends could continue in the future, although they will remain marginal.

Exhibit 14: People consume music across different formats
Online survey of 1,000 music consumers in the UK (November, 2015)



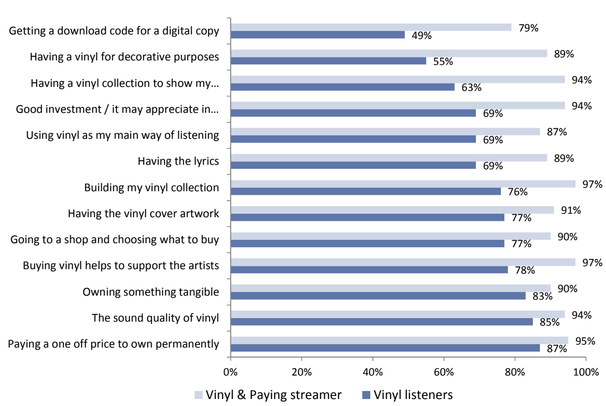
Source: BPI/AudienceNet.

Exhibit 15: Younger demographics are more inclined to embrace multi-channel
Online survey of 1,000 music consumers in the UK (November, 2015)



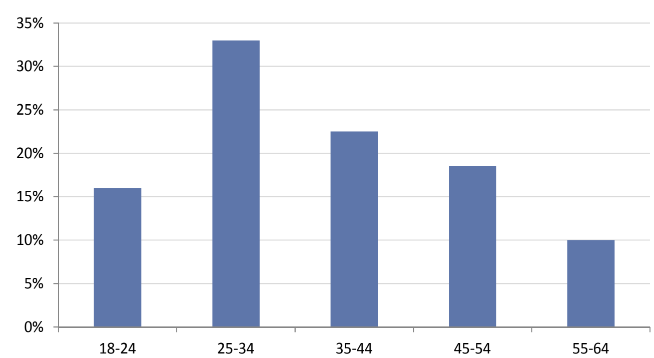
Source: BPI/AudienceNet.

Exhibit 16: Reasons why people buy vinyls
Online survey of 1,000 music consumers (November, 2015)



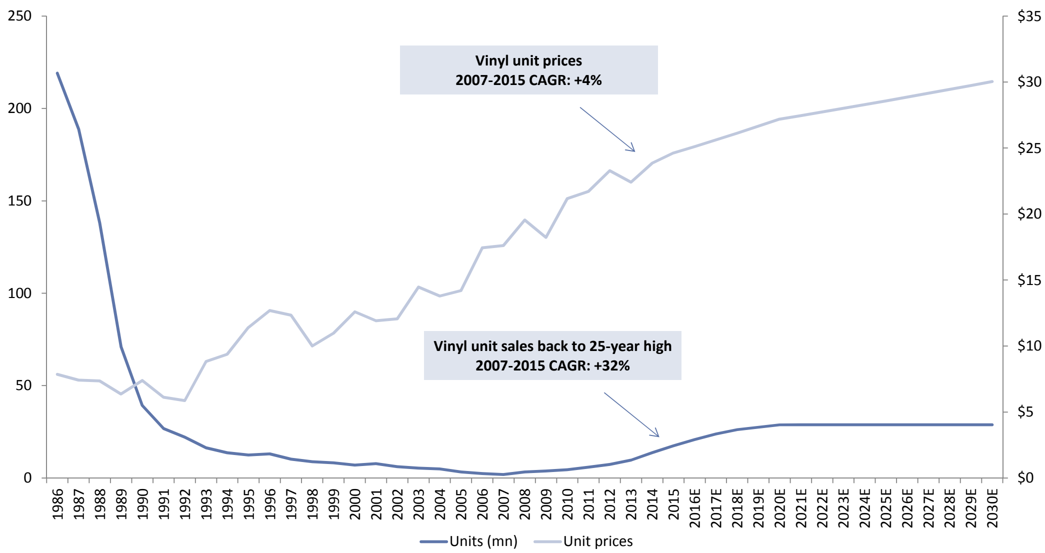
Source: BPI/AudienceNet.

Exhibit 17: Vinyl buyers are more skewed towards younger age groups
Breakdown of vinyl buyers by age group



Source: ICM Unlimited.

Exhibit 18: Vinyl unit sales are at a 25-year high in the US



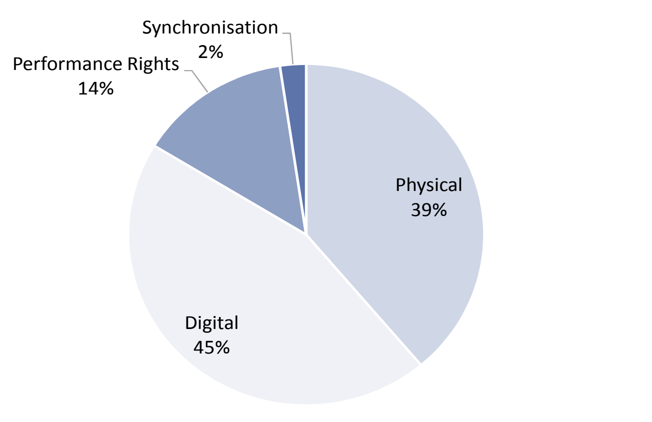
Source: RIAA, Goldman Sachs Global Investment Research.

Ongoing headwinds from physical formats

We see ongoing headwinds from the decline in physical sales, with physical accounting for 39% of the market today, and 28% if we exclude Japan and Germany, the second and fourth largest markets globally which are still largely physical. The key investor concern will understandably be the evolution of the physical markets in Japan and Germany as streaming services expand.

Exhibit 19: Physical accounts for 39% of the recorded music market

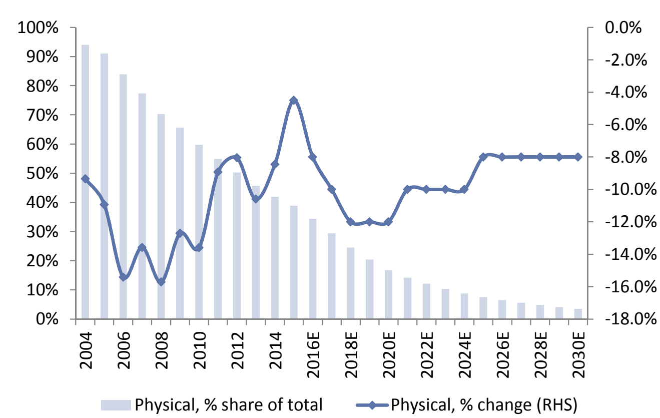
Global recorded music revenues breakdown, (2015, trade value)



Source: IFPI.

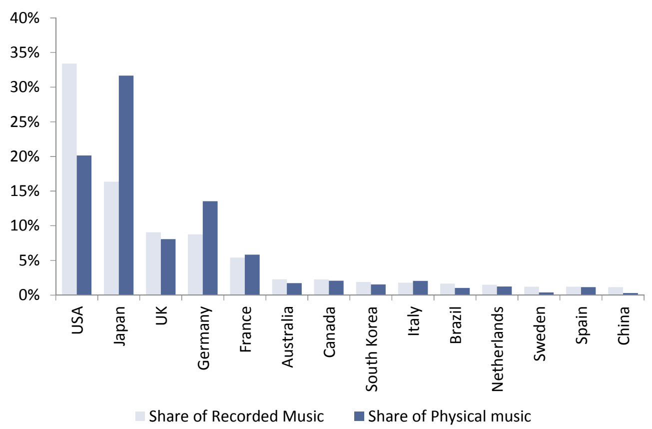
Exhibit 20: We expect physical to continue to decline and account for less than 20% of the market by 2020; less than 5% by 2030

Global physical music revenues: % share of total revenues and % yoy change (RHS)



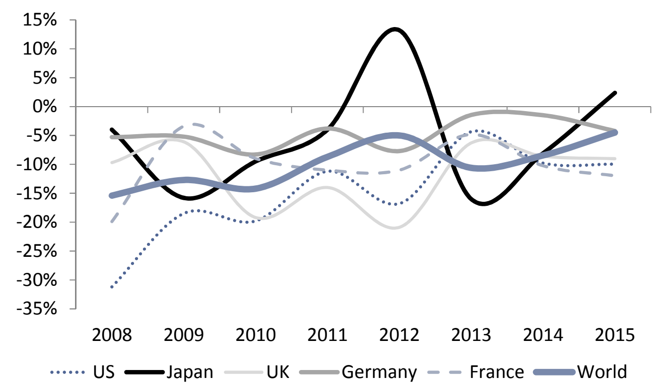
Source: IFPI, Goldman Sachs Global Investment Research.

Exhibit 21: Japan and Germany accounted for 45% of the global physical market and 25% of the total recorded market
Share of global recorded music vs. share of global physical market in 2015



Source: IFPI.

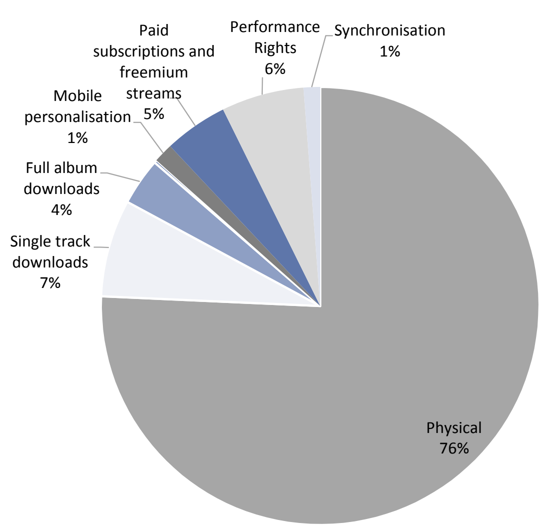
Exhibit 22: Physical markets in Japan and Germany have been more resilient than rest of the world
Top 5 markets: global physical market growth



Source: IFPI.

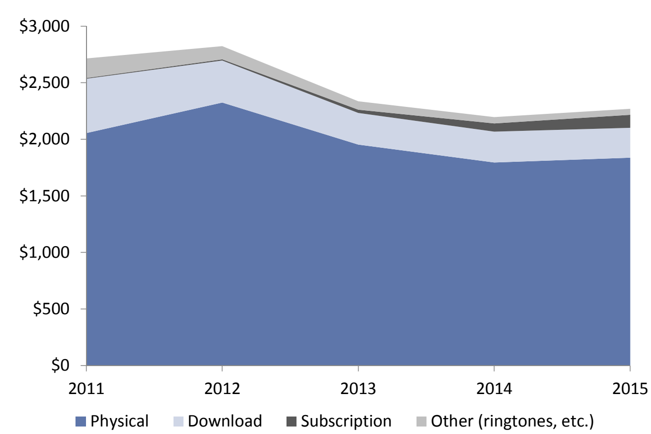
Japan case study: Physical evolving to better connect fans with artists.
Japan remains a peculiar market in a global context, accounting for 16% of the global recorded music market but 32% of the physical market in 2015. Physical CD sales (still 76% of the Japanese market in 2015) have been declining at a slower pace than in other markets, by 5% per year on average over the last eight years. Meanwhile, digital sales have been up only since 2014 as nascent paid streaming services began to compensate for the decline in downloads and ringtone sales. We note that the streaming market in Japan is paid-only and dominated by a handful of players (NTT docomo, AWA, Line, Apple Music and Google Play Music), most of which launched during 2015.

Exhibit 23: Physical sales still account for 76% of the Japanese recorded music market
Recorded music revenues, Japan, 2015



Source: IFPI.

Exhibit 24: Physical sales have been declining at a slower pace than in other markets by 5% per year on average over the last eight years
Recorded music revenues breakdown, Japan, 2011-2015



Source: IFPI.

We would expect this transition from physical to streaming to continue as awareness of streaming services grows and more services launch. However, we do not foresee a significant collapse in the near term for a number of reasons:

- We believe that the resilience of physical is attributable to the unique way in which the **Japanese record industry has managed to preserve the value of the CD for consumers.** Over the last decade, record companies have partnered with artist management companies to **turn a simple record sale into a merchandising experience and connection with artists.** Various extras were packaged with CDs including access to special concerts, “handshake” events, and voting cards to elect the most popular member within a particular band.

The ultimate rewards programme: AKB Group

AKB Group is Japan's most popular girl idol group, selling more than 41 mn records over the past 10 years. Its unique concept (called "idol you can meet") is to **keep an artist in proximity to their fans** through daily live performances at the AKB theatre, regular "handshake" events where fans can take pictures and shake hands with artists, and regular TV shows and commercials. This is made possible by the large roster of rotating members (around 140 – a world record) who are split into different teams, thus helping them to have as wide an audience as possible. Annual elections are also held so that fans can vote for their favourite artist and decide who will take part in the next single. A number of sister groups have been launched across Japan, and also in China and Indonesia. AKB Group also uses **various tactics to boost CD sales such as including voting cards, handshake tickets and exclusive pictures that lead fans to buy multiple copies of the same CD** – an extreme fan bought around US$300,000 worth of CDs to show his support to one of the artists.

Exhibit 25: Various extras are packaged with CDs in order to boost sales
Extras packaged with AKB48's top selling single

	Basic edition (¥1,646)	Theater limited edition (¥1,500)	First edition (¥1,646)
Handshake ticket One ticket = a handshake (10 seconds for the theatre limited edition, 3 seconds for the first edition) during handshake events.	No	Yes	Yes
Multiple CD versions Several versions of a CD (type A, B, sometimes C, D) with distinct covers, coupling songs and DVD bonus content (No DVD for the theater limited edition)	Yes	No	Yes
Exclusive pictures One exclusive picture of a band member (out of c.50) per CD which varies depending on the retail store	Yes	Yes	Yes
Voting ticket One ballot per CD enabling you to vote for your favourite band member during annual elections.	Yes	Yes	Yes

Source: Goldman Sachs Global Investment Research.

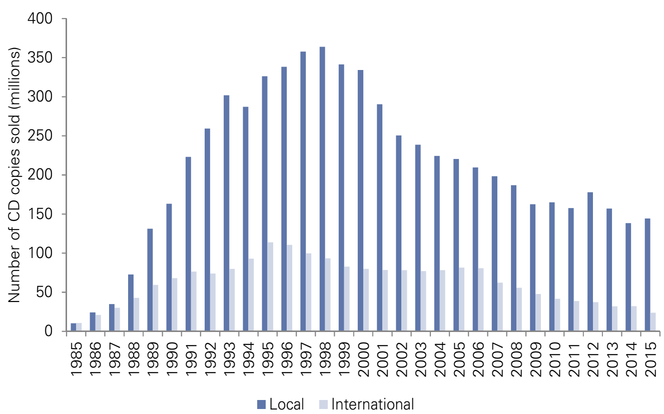
Exhibit 26: AKB Group generated 15 out of the top 25 singles in 2015
Top 25 selling CD singles by units

Band/ Agency	Artist	Single	Record label	Units sold
AKB Group	AKB48	Bokutachi-ha Tatakawanai	King Record	1,782,707
AKB Group	AKB48	Halloween Night	King Record	1,328,411
AKB Group	AKB48	Green Flash	King Record	1,045,492
AKB Group	AKB48	Kuchibiruni My Baby	King Record	905,490
AKB Group	SKE48	Koketish Juaichu	Avex Trax	702,299
AKB Group	Nogizaka 46	Ima Hanashitai Darekagairu	Sony Music Records	686,539
AKB Group	Nogizaka 46	Taiyo Knock	Sony Music Records	678,481
AKB Group	Nogizaka 46	Inochi ha Utsukushi	Sony Music Records	620,555
Johnny's	Arashi	Aozorano shita Kimino tonari	J Storm	571,597
AKB Group	NMB48	Don't look back!	Yoshimoto R&C	530,830
Johnny's	Arashi	Sakura	J Storm	521,067
Johnny's	Arashi	Aiwo Sakebe	J Storm	519,330
Johnny's	Kis-My-Ft2	Thank you jan	Avex Trax	475,048
AKB Group	SKE48	Maenomeri	Avex Trax	459,769
EXILE	Sandaime J Soul Brothers from EXILE TRIBE	Starting Over	Rhythm Zone	456,179
AKB Group	SKE48	12 gatsuno Kangaroo	Avex Trax	452,543
AKB Group	NMB48	Durian Shonen	Yoshimoto R&C	449,148
AKB Group	NMB48	Must be now	Yoshimoto R&C	386,320
Johnny's	Kis-My-Ft2	Kiss Damashi	Avex Trax	384,383
AKB Group	HKT48	12 seconds	Universal Music	337,237
Johnny's	Kanjani 8	Maemuki Scream	Infinity Records	315,682
AKB Group	HKT48 Feat Kishidan	Shekarashika	Universal Music	292,670
EXILE	Sandaime J Soul Brothers from EXILE TRIBE	O.R.I.O.N.	Rhythm Zone	237,295
EXILE	Sandaime J Soul Brothers from EXILE TRIBE	Summer Madness	Rhythm Zone	234,022
Johnny's	Hey! Say! JUMP	Kimiattraction	J Storm	226,602

Source: Oricon.

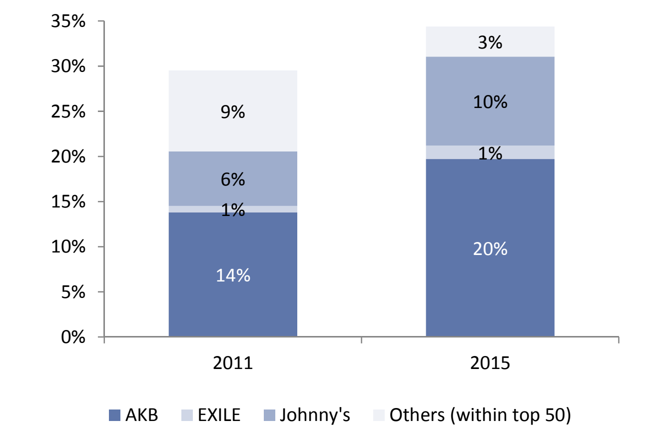
- The Japanese physical market is **dominated by a local repertoire** (in particular girl/boy bands) which accounted for 86% of overall CD sales in 2015. Most notably, the three main idol groups (AKB Group, Johnny & Associate and EXILE) were responsible for the top 25 singles sold in 2015 and their share of total CD shipments went to 31% in 2015 from 21% in 2011. This also makes the Japanese music market highly dependent on these bands and hits (it dropped 17% yoy in 2013, reflecting a lack of major releases).

Exhibit 27: Japanese physical market is dominated by local music
Japan CD sales by repertoire nationality



Source: RIAJ.

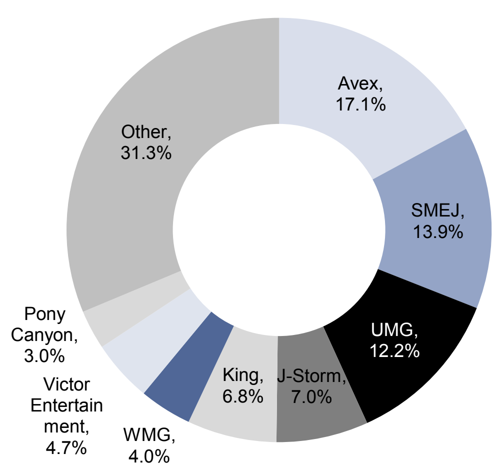
Exhibit 28: The top 50 singles accounted for 34% of total shipments in 2015 from 30% in 2011; the top 3 idol groups (AKB, EXILE, Johnny's) in particular increased their share to 31% in 2015 from 21% in 2011
Share of total shipments



Source: RIAJ.

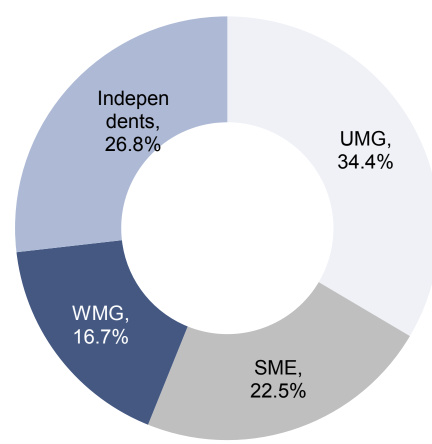
- The Japanese music industry is **extremely fragmented** with the three majors only accounting for 30% of the market, vs. 73% globally, which makes the negotiation of licensing rights with the record companies (a pre-requisite to launch any new streaming service) more complicated and time consuming than elsewhere.

Exhibit 29: The three majors (SMEJ, UMG, WMG) had 30% market share in Japan…
Japan recorded music market share, 2014



Source: Oricon.

Exhibit 30: … against 73% globally
Global recorded music market share, 2015

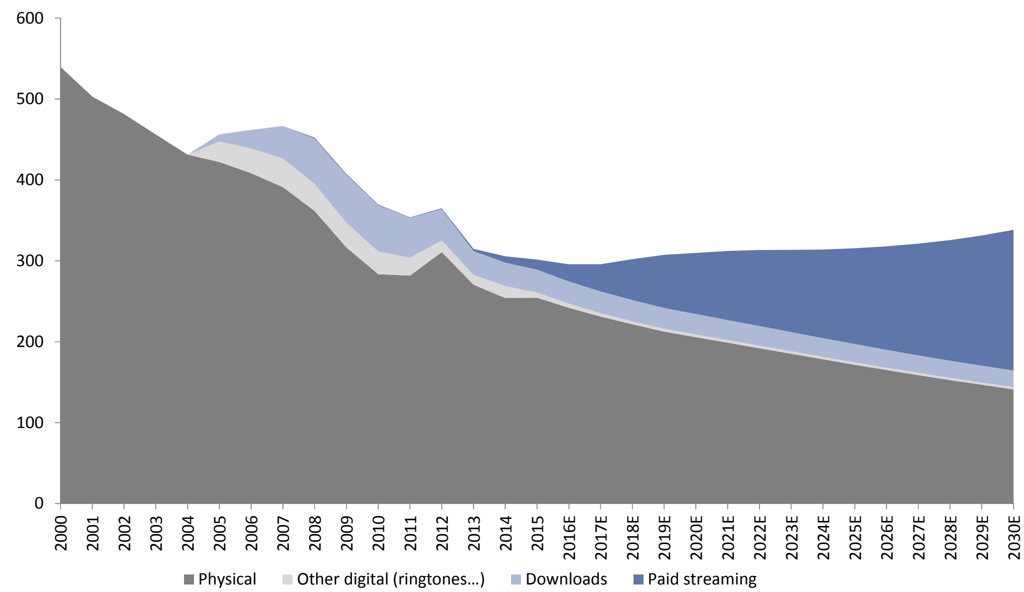


Source: Music & Copyright.

- **The price of CDs is set by record labels** under the resale price maintenance system with a full album costing ¥2,500-3,000, about double the average price of a CD in the US. The limited editions and perks included in the CD also help justify the higher price. There are still 6,000 physical retail stores in Japan (and another 2,304 CD rental shops) according to the Recording Industry Association of Japan (RIAJ), compared to 1,900 in the US or 700 in Germany, according to IFPI.

  As such, we expect the overall Japanese physical market to decline by around 4% pa over the next 15 years. This should be more than compensated by the growth of streaming, which should return the overall recorded market to growth in 2017E.

Exhibit 31: We expect the overall Japanese recorded market to inflect in 2017 as physical continues to decline moderately and streaming picks up
Japanese recorded music market (JPY bn)

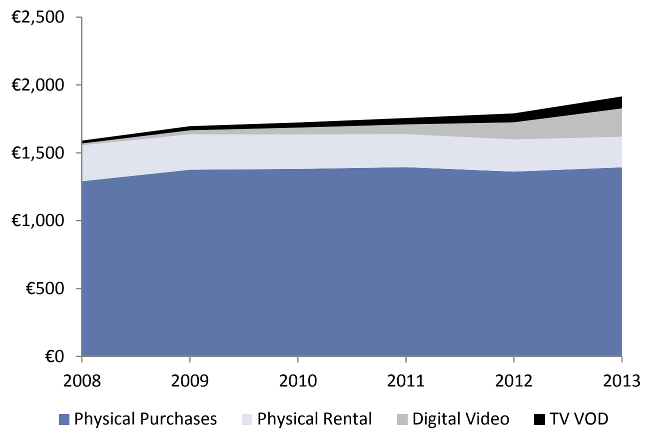


Source: RIAJ, Goldman Sachs Investment Research.

Germany case study: streaming making inroads, preference for ownership remains

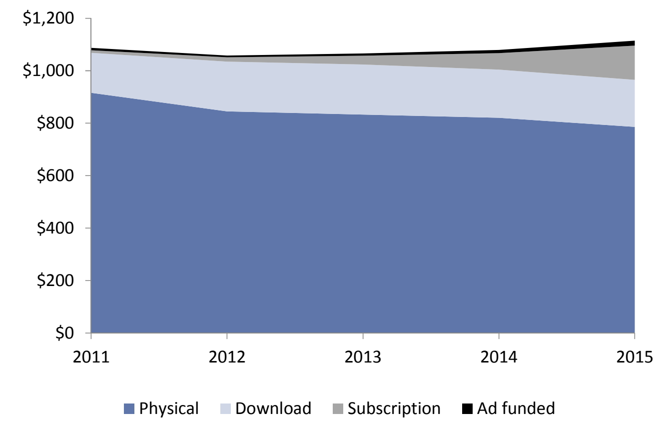
Our analysis of German media consumption patterns indicates a strong preference for ownership and local content, be it news, TV content or music. The video segment remains 85% physical, according to IVF (International Video Federation), and physical sales continued to grow (1.6% CAGR) through 2008-13, with digital and video on demand proving more incremental to the market. The penetration of subscription video on demand services, despite the presence of over 50 over the top (OTT) services, stands at around 9% of German households, compared to 30% in the UK and 48% in the US. Similarly, the music market is 60% physical with download accounting for another 14%. Despite this high exposure to ownership models, the German music market has grown at a 1.3% CAGR over 2011-2015, with streaming more than offsetting the 4% CAGR decline in physical. In 1H16, BVMI (Bundesverbandes Musikindustrie) reported a 9.6% drop in CD sales, which was more than offset by an 88% jump in streaming, bringing the overall German market growth to 3.6%.

Exhibit 32: The German video market remains 85% physical and physical purchases grew at a 1.6% CAGR in 2008-2013
German home video market (€ mn)



Source: IVF.

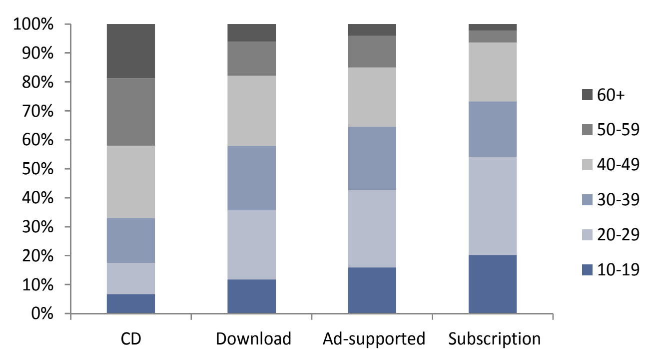
Exhibit 33: The German recorded music market continued to grow (1.3% CAGR) through 2011-15 despite 60% physical share
German recorded music market (US$ mn)



Source: IFPI.

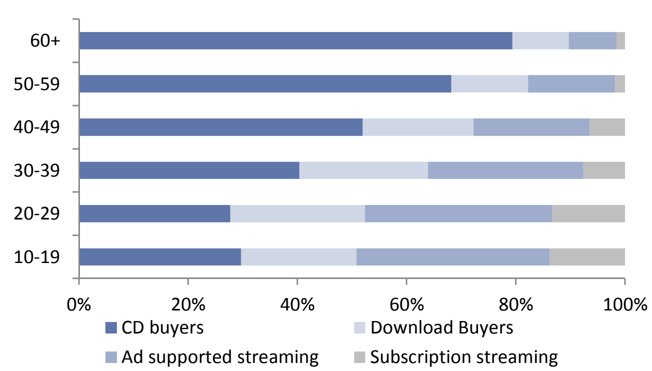
Demographic data from BVMI shows, however, that **behaviours are beginning to change, with younger cohorts more inclined to shift to subscription streaming**. The >40 year-old age cohorts account for 67% of the total CD buying population, while the under 40 year-olds account for 58%/62% of the download/ ad funded streaming population, and more interestingly, 73% of the subscription streaming population.

Exhibit 34: The over 40s age cohorts account for 67% of CD buyers while the under 40s account for 73% of subscriptions…
German music consumption breakdown by age



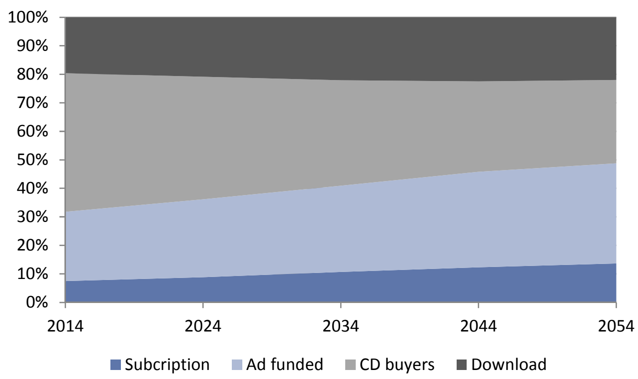
Source: BVMI.

Exhibit 35: …although the younger age groups still allocate half of their music spend on ownership formats
German music consumption breakdown by format



Source: BVMI.

Exhibit 36: Rolling over 2014 consumption patterns by age group to 2054 would imply that CD+download would account for 50% of total consumption, from 69% today
German music consumption breakdown



Source: BVMI, Goldman Sachs Global Investment Research.

Exhibit 37: Nine of the top-10 songs were international while eight of the top-10 albums were local
Top 2015 songs and albums in Germany

Top Songs 2015	Artist	Title	Company
1	OMI	Cheerleader (Felix Jaehn Remix)	Sony Music
2	Lost Frequencies	Are You With Me	Edel/Kontor
3	Felix Jaehn feat. Jasmine Thompson	Ain't Nobody (Loves Me Better)	Universal Music
4	Ellie Goulding	Love Me Like You Do	Universal Music
5	Major Lazer feat. DJ Snake & MØ	Lean On	Warner Music
6	Sido feat. Andreas Bourani	Astronaut	Universal Music
7	Adele	Hello	XL Recordings
8	Robin Schulz feat. Francesco Yates	Sugar	Warner Music
9	Wiz Khalifa feat. Charlie Puth	See You Again	Warner Music
10	Kygo feat. Conrad Sewell	Firestone	Sony Music

Top Albums 2015	Artist	Title	Company
1	Helene Fischer	Weihnachten	Universal Music
2	Adele	25	XL Recordings
3	Sarah Connor	Muttersprache	Universal Music
4	Helene Fischer	Farbenspiel	Universal Music
5	Xavier Naidoo	Sing meinen Song - Das Tauschkonzert, Vol.2	Tonpool
6	Santiano	Von Liebe, Tod und Freiheit	Universal Music
7	Frei.Wild	Opposition	Soulfood
8	Andreas Bourani	Hey	Universal Music
9	Ed Sheeran	X	Warner Music
10	Kollegah	Zuhältertape Vol. 4	Universal Music

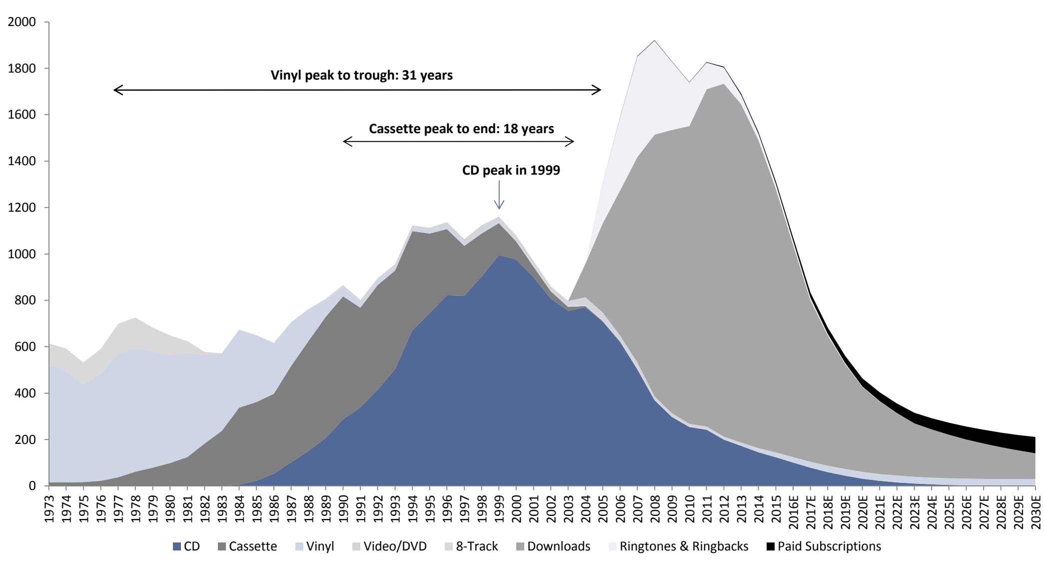
Source: IFPI.

Other markets: expect ongoing decline in physical sales

In the markets outside Japan and Germany, we forecast physical sales to decline at a faster rate of 13% over the next five years (compared to -9% in the past three years) and to decline by 16% pa thereafter. Physical would account for 1% of the total market ex Japan and Germany by 2030E. This scenario could be extreme, as some part of the population should continue to want to own music for the reasons mentioned above.

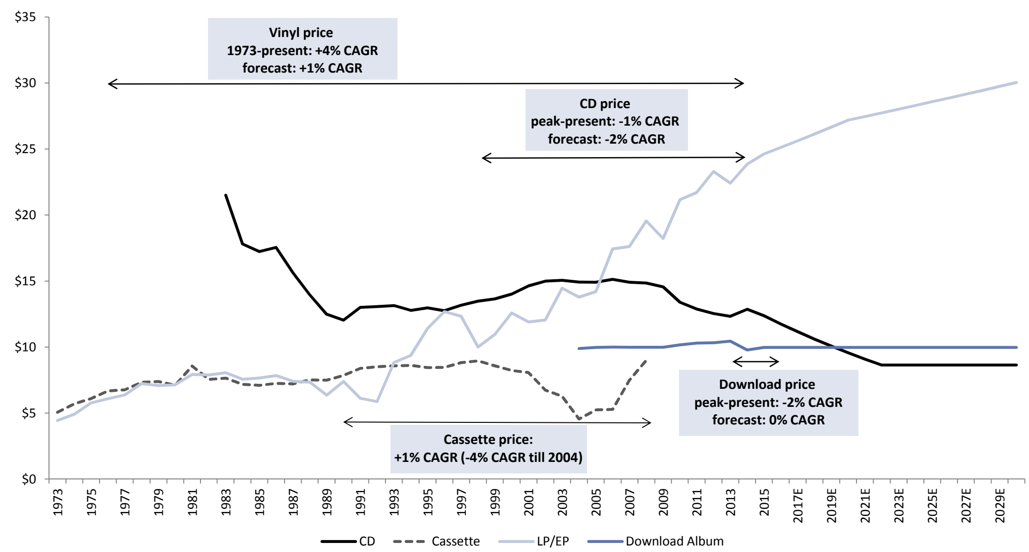
In the US, we note that it took 18 years from the peak in 1990 for cassettes to disappear, and 31 years for vinyls/ LP-EP to fall from peak to trough. We assume CDs will become insignificant (<10 mn units) to the recorded music market in 10 years' time, which is about 25 years from their peak in 1999. After this, we would expect the US physical market to stabilize thanks to the ongoing resilience of vinyl sales.

Exhibit 38: We expect CDs to become insignificant in about 10 years' time in the US
Unit sales (mn)



Source: RIAA, Goldman Sachs Global Investment Research.

Exhibit 39: We forecast the price of CD albums to decline 2% pa, while vinyl should rise at a 1% CAGR
Unit prices (US$)



Source: RIAA, Goldman Sachs Global Investment Research.

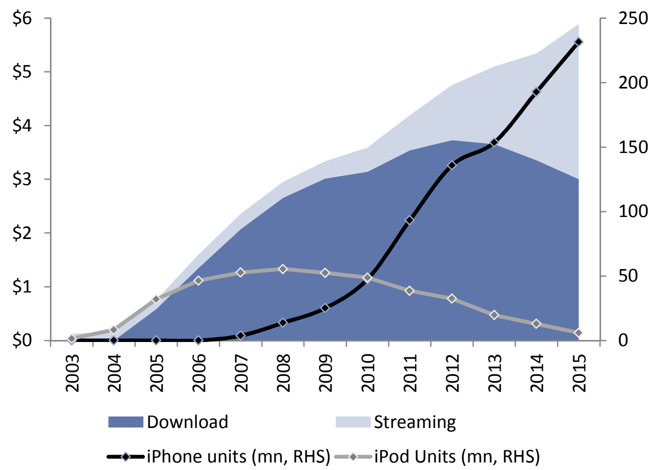
From download to streaming: lower ARPU but higher volumes

Streaming has begun to eat into downloads

We believe downloads will be increasingly cannibalized by streaming as consumers move to access. After significant growth (30% CAGR, 2004-2012) driven by the migration from physical to digital formats and increased iPod/ iPhone adoption, the download market peaked at US$3.7 bn in 2012. This was about four years after major streaming services launched, but about the same time that the streaming market really began to pick up. The download decline has been deteriorating ever since, down 2% in 2013, 8% in 2014 and 10% in 2015. Cannibalization has become more apparent in the last six months, with download revenues for UMG dropping by 29% in 1H16 after -13% in 2015 and the US download market falling by 17% in 1H16 after a 10% decline in 2015 according to RIAA. This coincides with the 6-12 month period after Apple Music's launch at the end of June 2015.

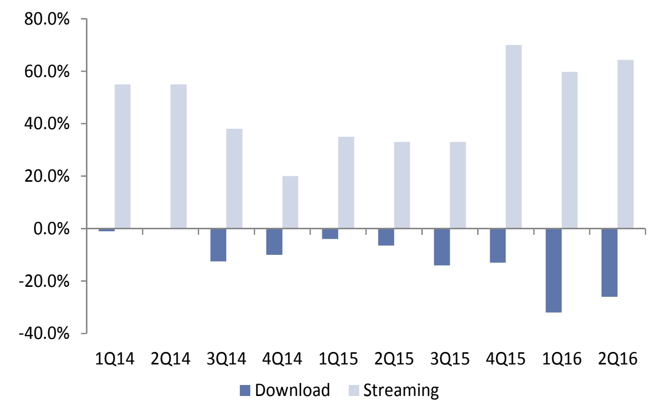
The download market now accounts for 20% of revenue globally, with the heaviest download markets in terms of penetration being Australia and Canada at 37%, and the US at 33% in 2015. The US is by far the largest market, accounting for 55% of global download revenue, and trends have been broadly similar to those seen globally, with a decline of 2% in 2013, 7% in 2014 and 12.5% in 2015. However, Canada has been much more resilient, showing an increase of 4% in 2013 and declines of 8% and 5% in 2014 and 2015 respectively, despite the launch of Spotify in September 2014 and Apple Music in June 2015.

Exhibit 40: Streaming has been eating into downloads
Download and paid streaming global revenues (US$ bn, LHS) vs. iPhone / iPod units sold (mn, RHS)



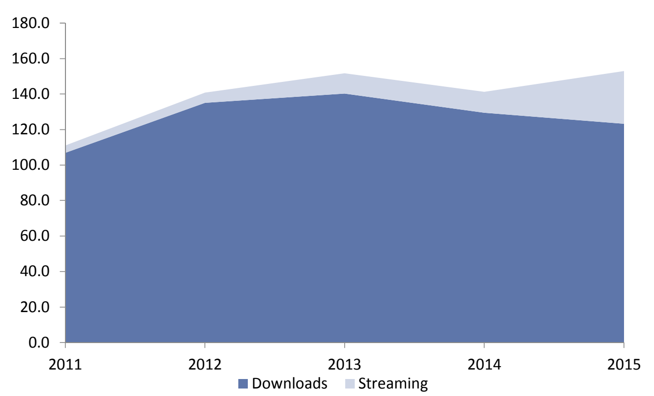
Source: Apple company data, IFPI.

Exhibit 41: Downloads deteriorated significantly for UMG in 1H2016 after 2015 held up better than expected
UMG's download and streaming revenue growth rates



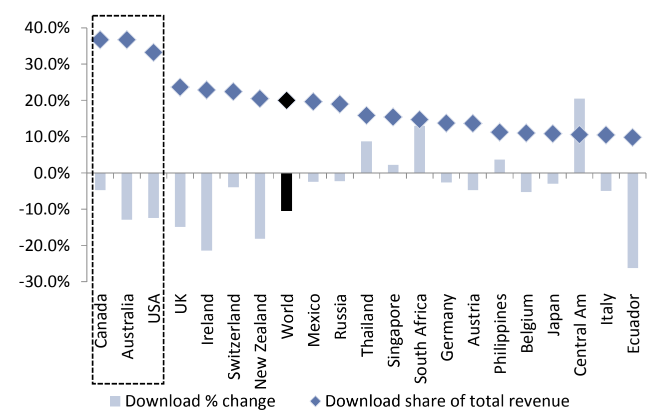
Source: Company data.

Exhibit 42: The download market in Canada, the top download market worldwide, has been resilient despite the growth of streaming
Download and paid streaming revenue (US$ bn)



Source: IFPI

Exhibit 43: The top download markets were down more than the global average in 2015 with the exception of Canada and Switzerland
Download revenues: % share of total revenues and % yoy change, 2015

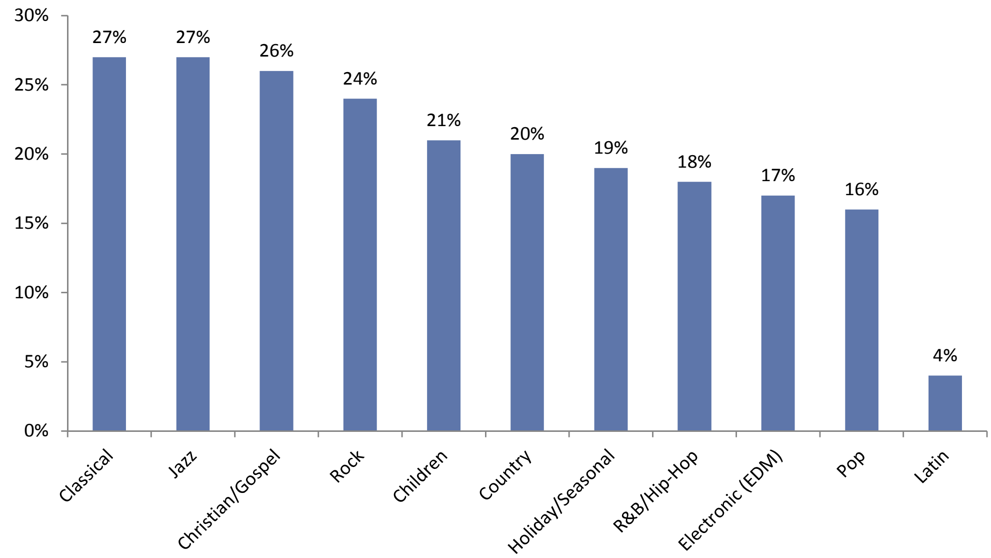


Source: IFPI.

Downloads still cater to specific needs

We believe that the format will continue to subsist for a portion of the population who prefers ownership. We also believe downloads will continue to play a role in specific genres, including classical/jazz/religious music, as streaming services tend to amplify the loudest voices (a function of how their algorithms work). The fate of the download business will also very much depend on the intentions of Apple for its iTunes business, which accounts for the majority of the global paid download market.

Exhibit 44: Classical/jazz/religious/rock genres continue to perform well in downloads in the US
Share of album download sales by music genre



Source: Nielsen Music 2015.

Move from download to streaming is negative from a royalty rate point of view

A legitimate pushback is the significant deflation experienced when moving from download to streaming. Indeed, we calculate that labels receive US$0.56 per song downloaded on iTunes in the US (average retail price of US$0.99 minus average sales tax of 5.4%, less the labels' share of 60%). By comparison, we calculate that a streaming platform (audio and video) pays away on average US$0.0034 in royalties per stream, of which labels typically get a 90% share (i.e. US$0.0031). As such, 161 streams of one song are needed to match the revenue from one download. BPI in the UK uses a formula of 1,000 audio streams to one physical or digital album sale (or 100 streams to one track sale) to enable the comparison between the different formats, giving a standard music industry metric called "Album Equivalent Sales".

This however masks the significantly higher number of streams consumed in a year compared to the number of downloads

In 2015 in the US, Nielsen data implied that there were 317 bn streams, compared to 2 bn downloads, or 159 streams per download. This is double the 76 streams per download observed in 2014. We expect this ratio to increase further (1H16 streams were up another 59% yoy following +94% in 2015), given the exponential growth in consumption.

Our sensitivity analysis shows that a 20% pa decline over 2016-20E in the number of downloads would require 12% growth pa over the same period in the number of streams to provide an offset, assuming the blended royalty rate stays constant at US$0.003 per stream. A severe scenario of a 50% decline pa on average in the number of downloads would require 16% growth pa in the number of streams. Our base case assumes a 20% compounded decline in downloads and a 28% CAGR in streams. While revenues do not mechanically match the increase in consumption (Spotify's subscription revenue is based on the number of subscribers, not the amount of streams they consume, although advertising revenues are more dependent on consumption), we see this increase in on-demand music streams, together with an improved mix of paid vs. free users (see accompanying report Stairway to Heaven - Regulation Sets the Stage) as positive for rights owners.

Exhibit 45: We calculate that 161 streams are required to match the revenue from one download in the US

Stream vs download economics	
Retail price of 1 digital track	**0.99**
Pay away to label	**0.56**
Blended royalty per stream - pay away to label	**0.003**
Audio royalty per stream - pay away to label	*0.0065*
Video royalty per stream - pay away to label	*0.0010*
# streams to match 1 download	**161**

Source: Goldman Sachs Global Investment Research.

Exhibit 46: Evolution of on-demand streams vs. number of downloads in the US
Streaming and download volumes (bn of units)

	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
Streams (bn)	106	164	317	476	633	791	950	1101
% growth		54%	94%	50%	33%	25%	20%	16%
Audio	49	79	145	217	289	361	434	503
% growth		60%	84%	50%	33%	25%	20%	16%
Video	57	85	172	259	344	430	516	598
% growth		49%	102%	50%	33%	25%	20%	16%
Downloads (bn)	2.4	2.2	2.0	1.6	1.3	1.0	0.8	0.6
% growth		-11%	-8%	-21%	-20%	-20%	-20%	-20%
Digital track sales	1.3	1.1	1.0	0.8	0.6	0.5	0.5	0.5
% growth		-12%	-12%	-18%	-18%	-20%	0%	0%
Digital albums converted into tracks	1.2	1.1	1.0	0.8	0.6	0.5	0.3	0.1
% growth		-10%	-3%	-24%	-22%	-20%	-41%	-56%
# streams compared to # downloads		76	159	301	501	783	1174	1703

Source: Nielsen, Goldman Sachs Global Investment Research.

Exhibit 47: Annual growth in streams needed to offset the decline in downloads based on a range of blended royalties per stream
Downloads 2016-20E annual decline vs. blended royalty per stream – sensitivity analysis

	Decline in downloads per year 2016-20E								
Blended royalty per stream	**0%**	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**	**40%**	**50%**
0.001	12%	18%	22%	25%	28%	30%	31%	33%	34%
0.002	7%	10%	13%	15%	17%	18%	19%	21%	22%
0.003	5%	7%	9%	11%	12%	14%	14%	16%	16%
0.004	3%	6%	7%	9%	10%	11%	11%	12%	13%
0.005	3%	5%	6%	7%	8%	9%	9%	10%	11%
0.006	2%	4%	5%	6%	7%	8%	8%	9%	9%
0.007	2%	3%	4%	5%	6%	7%	7%	8%	8%
0.008	2%	3%	4%	5%	5%	6%	6%	7%	7%

Source: Goldman Sachs Global Investment Research.

We believe Apple will manage the transition from downloads to streaming

With Apple's iTunes accounting for the majority of the global download market, Apple's strategy regarding its download and streaming businesses will be an important factor dictating the future evolution of the downloads market.

The decline in downloads turned out to be far less pronounced than anticipated in 2015, the year of the launch of Apple Music, we believe in part due to the relatively soft launch of the service and a few big releases that were not initially made available on streaming services (e.g. Adele's *25*). Downloads have deteriorated more sharply this year, with US download sales showing a 17% yoy drop in 1H16 according to RIAA following -10% in 2015 as Apple Music gains momentum, adding another 5 mn paying subscribers in 1H16 after 10 mn in 2H15.

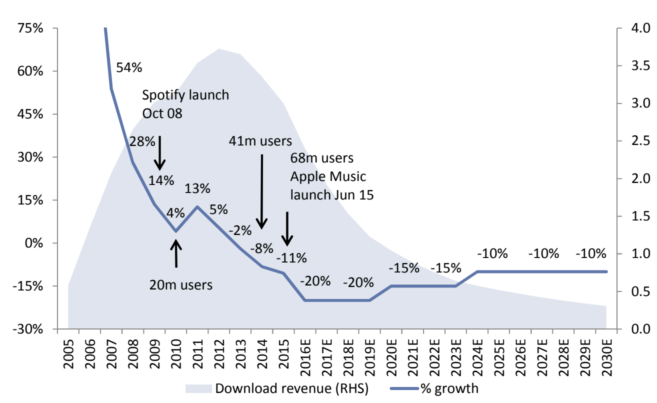
We forecast download revenues to decline around 20% pa over the next four years and 10%-15% thereafter, bringing the total download market to US$300 mn by 2030 (1% of the recorded market), from US$3 bn in 2015 (20% of the recorded market). Given the meaningful revenues that iTunes Music still generates, we do not believe Apple will shut the service down in the medium term. Eddy Cue told Billboard on June 14, 2016: "There's no end date, and as a matter of fact, [labels and publishers] should all be surprised and thankful to the results that they're seeing because our music iTunes business is doing very well".

Meanwhile, the decline in downloads should be more than offset by the growth in streaming, which is already visible in the global IFPI figures, but also in Apple's accounts.

Apple CFO Luca Maestri (2QFY16 earnings call): "It's interesting for us that our Music business, which had been declining for a number of quarters, now that we have both a download model and a streaming model, we have now hit an inflection point," ... "And we really believe that this will be the bottom and we can start growing from there over time."

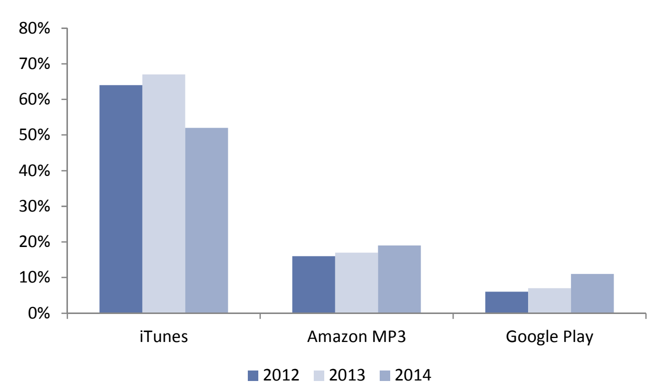
We forecast Apple Music to add about 14 mn subscribers a year for the next four years and around 10 mn pa thereafter, implying 26% share of total subscriber additions in the long run, from 37% in 2015 (as new streaming services launch in the meantime). We calculate this implies US$1.2 bn of revenue in 2016 rising to US$13 bn by 2030. By 2017E, Apple should generate more revenue from the streaming service than from music downloads on our estimates.

Exhibit 48: We forecast the download decline to accelerate from 2016
Global download market (absolute US$ bn) and % growth



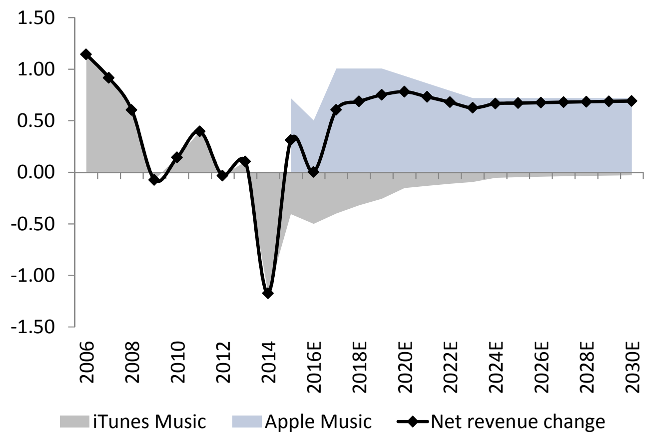
Source: IFPI, Company data, Goldman Sachs Global Investment Research.

Exhibit 49: iTunes still predominant in music downloads
Share of paid download sales (tracks and albums) in the US



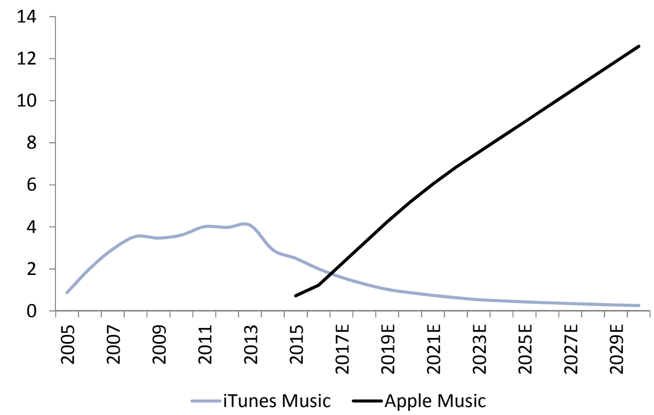
Source: MusicWatch 2015.

Exhibit 50: Apple Music should more than offset the decline in iTunes Music sales
Absolute revenue change (US$ bn)



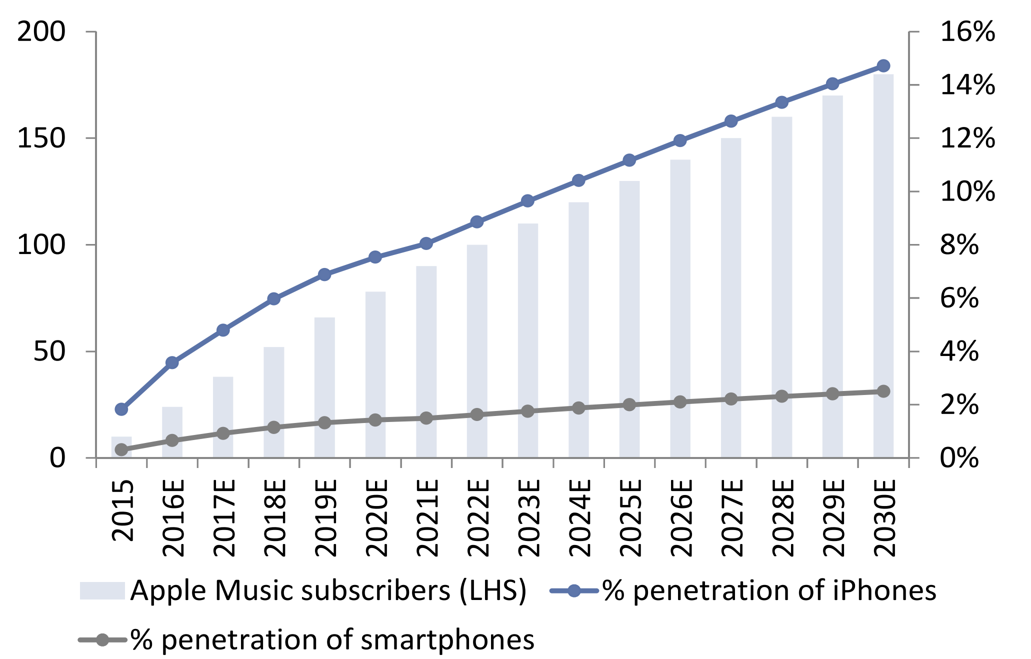
Source: IFPI, Company data, Goldman Sachs Global Investment Research.

Exhibit 51: We expect revenues from Apple music to exceed iTunes Music in 2017E
Absolute revenue (US$ bn)



Source: IFPI, Company data, Goldman Sachs Global Investment Research.

Exhibit 52: We forecast Apple Music subscribers to account for 14% of iPhone users by 2030 from 2% in 2015
Apple Music subscribers (mn, LHS) and penetration rates (%, RHS)



Source: Company data, Goldman Sachs Global Investment Research.

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We, Lisa Yang, Heath P. Terry, CFA, Masaru Sugiyama, Simona Jankowski, CFA, Heather Bellini, CFA, Robert D. Boroujerdi, Piyush Mubayi, Brett Feldman, Drew Borst, Mark Grant and Otilia Bologan, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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