RBB Economics

# Value of YouTube to the music industry - Paper II - Growth of all platforms

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# 1 Introduction

The music industry has undergone significant change over the past few years, with declining volumes of music sold through an ownership model (such as downloads) and rapid growth in usage models (such as streaming).[1] While many services provide value to the recorded music industry, in the 12 months to December 2016 one video streaming platform, YouTube, paid out over USD 1 billion to the music industry from advertising alone.[2] YouTube claims that not only does it return money directly to creators, but also that it has a promotional effect on music.[3] However, some commentators argue that YouTube has a negative impact on the music industry: paying insufficiently for content and cannibalising other services.

RBB Economics has undertaken several empirical analyses in order to evaluate YouTube's potential promotional or cannibalisation effects on the music industry in Europe. We analyse the results from 1,500 person user surveys carried out in each of four European countries, as well as data on YouTube views and streams on audio platforms of over 8,000 tracks across these countries over a three year period.[4]

In our first note we considered the evidence of cannibalisation by YouTube of other legitimate music services.

- Looking at survey evidence we found that significant cannibalisation is unlikely: if music videos were no longer shown on YouTube, 85% of users' time would be lost or shifted to lower or similar value channels, and even to file sharing or piracy.
- Looking at historical data, we found that when particular songs were blocked on YouTube, in Germany, there was generally no significant increase in audio streaming volumes for those same songs.
- On the basis of these data, we find no evidence of significant cannibalisation by YouTube of other legitimate music services.

In this, our second note, we consider evidence on the patterns of growth of different platforms over time, primarily audio streaming and video streaming platforms. This is an introduction to the consideration of a potential promotional effect more generally. We consider three main topics:

[1] https://www.theguardian.com/music/musicblog/2016/apr/28/youtube-no-other-platform-gives-as-much-money-back-to-creators?CMP=twt_a-music_b-gdnmusic.
[2] https://youtube.googleblog.com/2016/12/a-billion-reasons-to-celebrate-music-on.html.
[3] https://www.theguardian.com/music/musicblog/2016/apr/28/youtube-no-other-platform-gives-as-much-money-back-to-creators?CMP=twt_a-music_b-gdnmusic.
[4] Throughout this paper plays of YouTube music videos will be referred to as "views" and plays of audio streams as "streams". YouTube views are sourced from YouTube. Audio streams are sourced from third parties including GfK and OCC.

- First, is YouTube an important discovery platform?
- Second, what is the relationship between increased use of YouTube, and how much do users spend on music outside of YouTube, including on concert tickets, merchandise and fan club memberships?
- Third, what has been the pattern of growth of streaming platforms, and how has this compared to growth in YouTube volumes?

In our next few notes, we will develop these and other ideas further.

- In our third note, which will follow, we will then consider the evidence of a potential promotional effect of YouTube on other legitimate music services in more detail, including further empirical and statistical testing.
- In our fourth note we consider the value for consumers arising from YouTube's music video offering.
- Our fifth note attempts to draw these empirical findings together and consider the direct value for the music industry.

# 2 YouTube is the most important source of discovery when users listen to music on YouTube

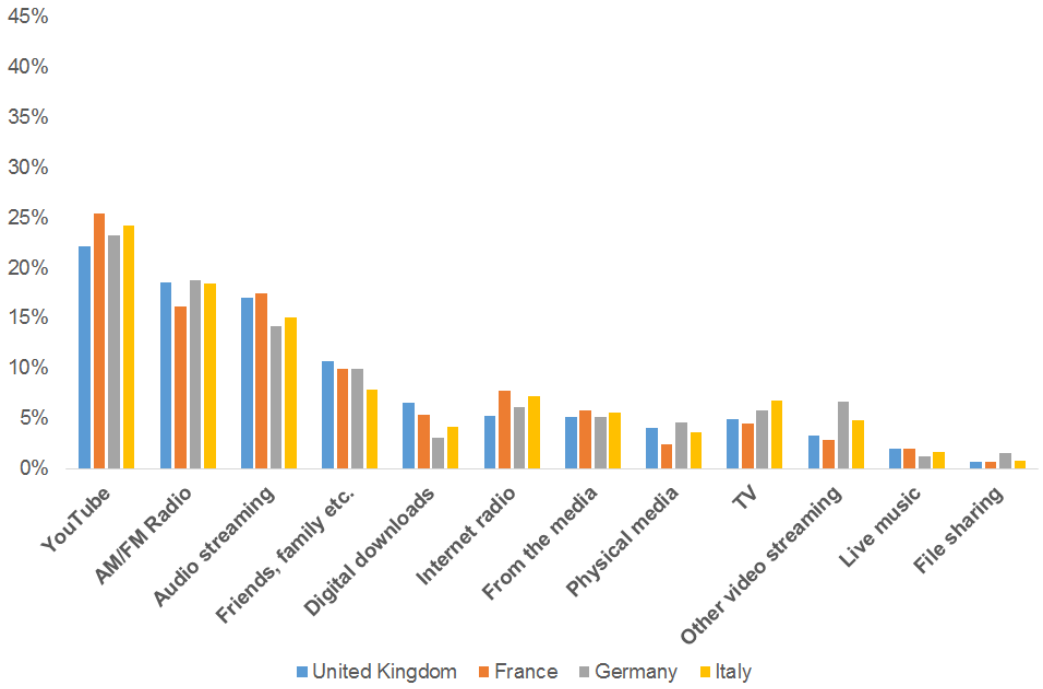
We first consider the extent to which YouTube is an important discovery platform. If YouTube plays an important role in discovery of new music,[5] this might prompt more monetizable actions by consumers, such as the purchase of a new physical or digital download copy of the newly discovered music, or signing up for a new paid subscription service. The role that YouTube plays in the discovery of music by users is an indication of YouTube's promotional value to other forms of music consumption.

We consider the survey data. YouTube commissioned SurveyMonkey to conduct online surveys of 1,500 music listeners in each of the United Kingdom, France, Germany and Italy. The survey results allow us to consider which channels consumers use to discover new music.

Figures 1 and 2 show the population weighted average importance of YouTube in the discovery of new music by YouTube users and non-YouTube users.

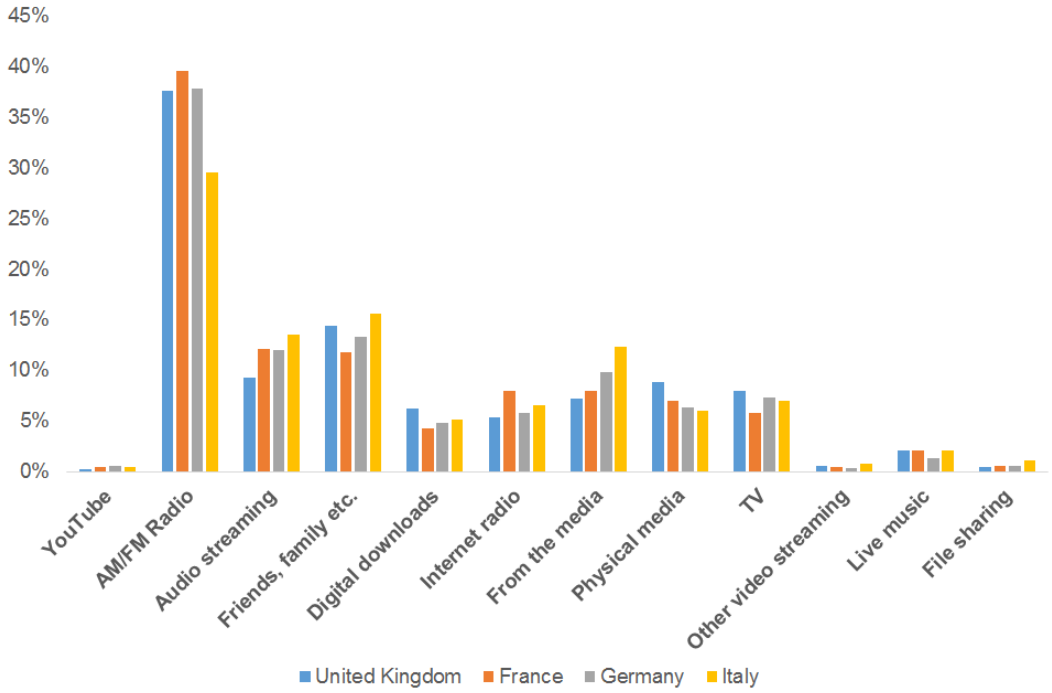
[5] New discovered music is either recently-released music, or songs, albums and artists that are new to the respondent.

**Figure 1: YouTube music users - average importance of channel for new music discovery**




*Source:* *Survey Q12, Q48-52, YouTube internal data; samples sizes: United Kingdom- (155 Heavy/ 451 Medium/ 152 Light); France - (474 Medium/ 170 Heavy/ 151 Light); Germany - (194 Heavy/ 456 Medium/ 122 Light); Italy - (267 Heavy/ 567 Medium/154 Light). Missing values were treated as zeros. Sample sizes by country, YouTube user segment and platform will be smaller and will in some instances have an impact on the robustness of the results.*

**Figure 2: Non-YouTube users - average importance of channel for new music discovery**




*Source:* *Survey Q12, Q48-52, YouTube internal data; samples sizes: United Kingdom- 775 non-YouTube users; France - 474 non-YouTube users; Germany - 751 non-YouTube users; Italy - 570 non-YouTube users. Missing values were treated as zeros. Sample sizes by country, YouTube user segment and platform will be smaller and will in some instances and have an impact on the robustness of the results. Note that there is a small fraction of non-YouTube users indicated to be using YouTube for discovering new music. This is a result of time incongruence in a set of questions in the survey.*

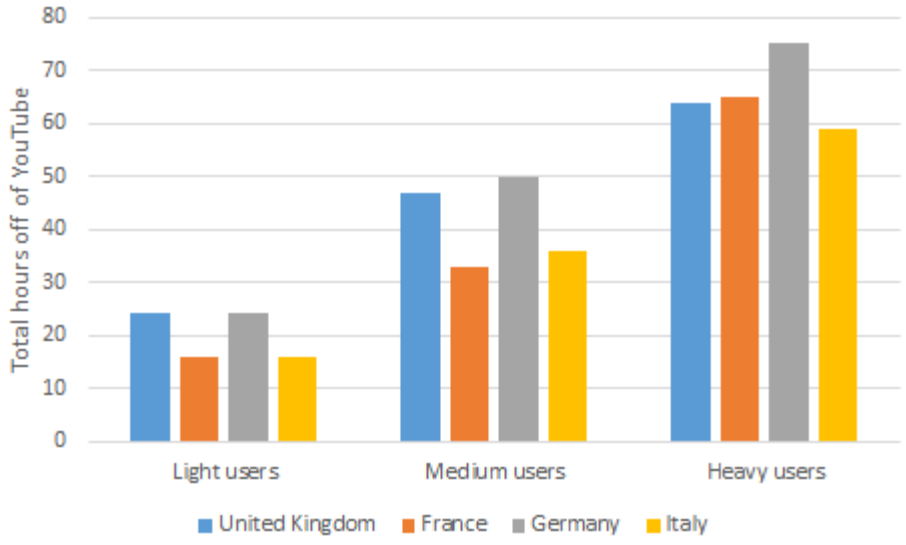
YouTube is the most important platform for discovering new music for YouTube music users in each of the four countries. For respondents who do not listen to music on YouTube, AM/FM radio is the most important platform for new music discovery. This is consistent with a conclusion that YouTube users potentially use YouTube as a substitute for AM/FM Radio for music discovery, although there are alternative potential explanations. We understand that YouTube monetises better than AM/FM Radio,[6] such that a user that shifts discovery from AM/FM Radio to YouTube will be more valuable to the music industry for the time spent discovering music.

[6] YouTube provided us with revenue figures for different media outlets, which suggest, that YouTube pays up to 15 times the value of AM/FM radio to the music industry per listen.

# 3 The more users watch and discover music on YouTube, the more they listen to and spend on music off-YouTube

The survey results also allow us to consider how much time each user spends watching music videos on YouTube, and also listening to music through other channels. Figure 3 shows the total hours spent listening to music off of YouTube, depending on whether respondents were "Light" YouTube users (up to 3 hours per month), "Medium" YouTube users (between 3 and 20 hours per month), or "Heavy" YouTube users (more than 20 hours per month).[7]

**Figure 3: YouTube users' time spent listening to music off of YouTube (hours per month)**




*Source: Relevant questions: Q6-Q12; samples sizes: United Kingdom- (155 Heavy/ 451 Medium/ 152 Light); France - (474 Medium/ 170 Heavy/ 151 Light); Germany - (194 Heavy/ 456 Medium/ 122 Light); Italy - (267 Heavy/ 567 Medium/154 Light).*

**The more time respondents spend listening to music on YouTube, the more time they spend listening to music off of YouTube.**

The following two subsections convert the time spent by YouTube users on other platforms into total monetary values to the music industry, and secondly consider money spent on users on concerts, merchandise, and fan clubs.

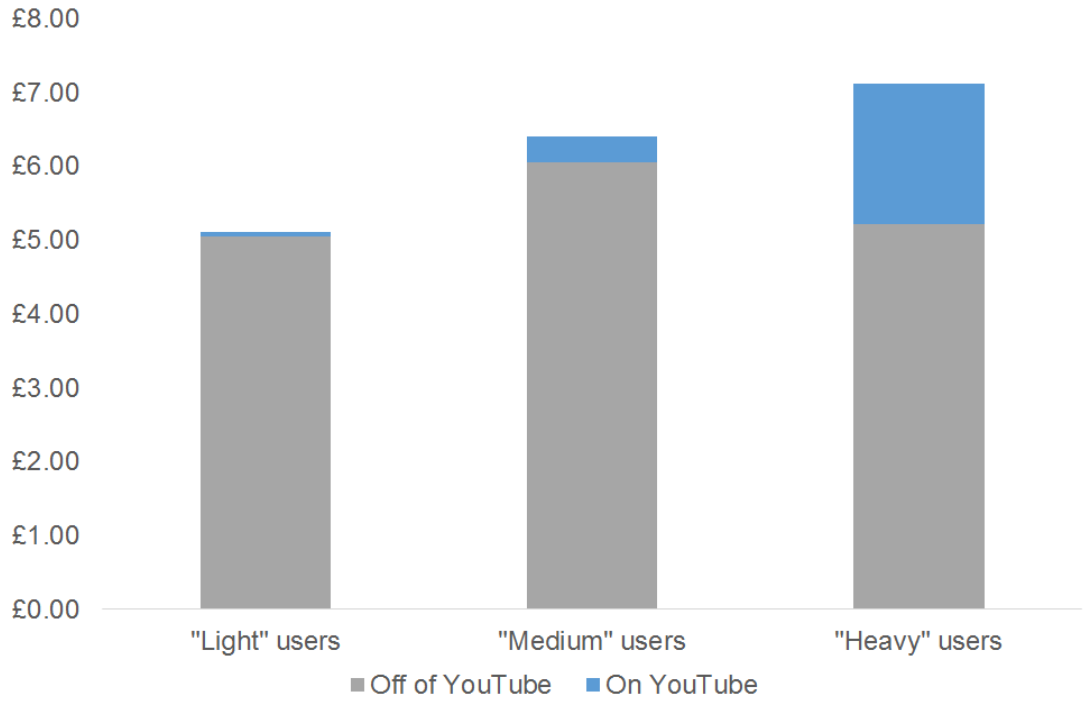
[7] We understand that when analysing consumers' music usage and behaviour, YouTube and other stakeholders in the music industry typically segment YouTube users into three user segments, based on their levels of consumption: Light, Medium and Heavy: Light YouTube users spend up to 3 hours viewing music videos on YouTube per month, Medium YouTube users between 3 and 20 hours, and Heavy YouTube users greater than 20 hours. Figures are calculated as total listening time minus listening time on YouTube.

## 3.1 Value of YouTube users to the music industry

The value to the music industry was calculated by summing up the average value of each music channel, and was calculated separately for each YouTube user segment.[8] The value of each music channel was computed using time spent on each channel and value assumptions which were provided by YouTube.

Figure 4 shows the monthly value to the music industry per user, for each YouTube user segment, in the United Kingdom. The value that YouTube users present to the industry is increasing as their YouTube usage does, but so too does YouTube's share of the total value.

**Figure 4: Value to the music industry, per user per month, United Kingdom**




*Source: Survey Q6, Q12, YouTube internal data on value assumptions; Sample sizes: 152 Light users, 451 Medium users, 155 Heavy users; Sample sizes by user type and platform are in most cases smaller than the sample size by user type.*

This trend is not consistent across countries. Total value to the music industry increases from Medium and Heavy users in Italy, but not in France and Germany. This might indicate cannibalisation by Heavy YouTube use on other channels. However, Heavy YouTube use might alternatively be lost or diverted to lower value channels if YouTube was unable to offer music – in that case Heavy YouTube use might not cannibalise higher value channels.

[8] The simple average values treat missing values as zeros.

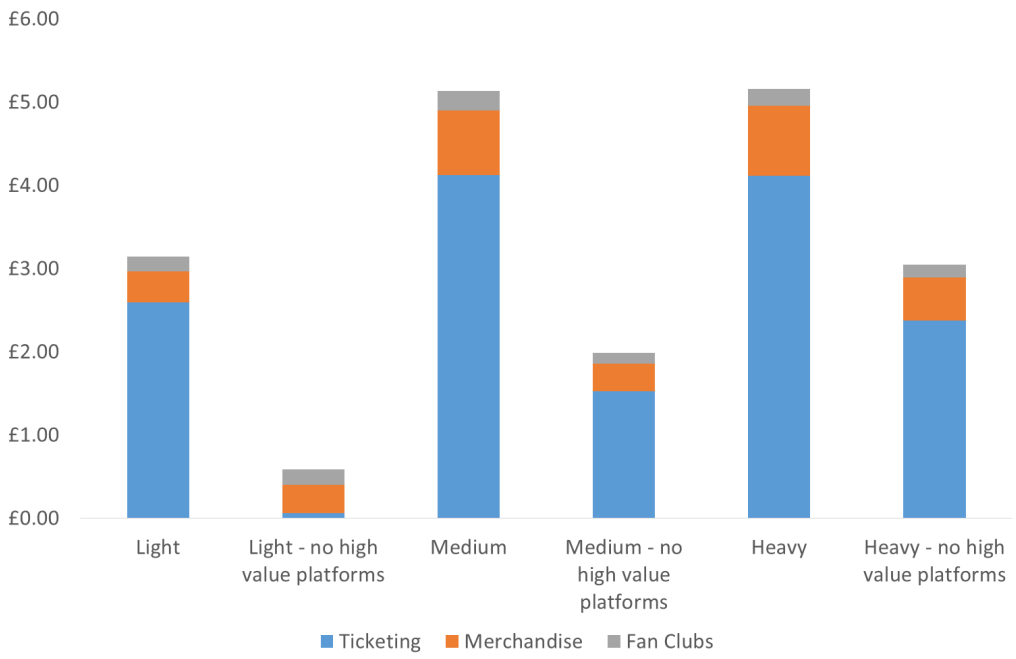
## 3.2 Direct value to artists through concert tickets, merchandise and fan club memberships

We then considered how the amount spent on ancillary music channels, such as concert tickets, merchandise and fan club memberships might vary, depending on YouTube usage.

We considered similar categories of Light, Medium and Heavy users, and we also further divided YouTube users depending on whether or not they also used any "high value platforms" (physical media, digital downloads and subscription streaming)

Figure 5 summarises the spend on concert tickets, merchandise and fan club membership for these different categories of YouTube users.[9]

**Figure 5: Spend on Concert Tickets, Merchandise, and Fan Club Memberships for different categories of YouTube user, per user per month, United Kingdom**




*Source:* *Survey Q6,Q12,Q36, Q39, Q42-43, Q46-47; Sample sizes: All YouTube users (152 Light/ 451 Medium/155 Heavy); YouTube users who don't use high value platforms: (40L/ 148M/ 64H); There are 27L (3), 35M (6), 33H (16) YouTube users, which do (don't) use high value platforms and spent a positive amount of money on Fan Clubs, equally there are 19L (4), 121M (30), 45H (16) YouTube users which do (don't) use high value platforms and spent a positive amount of money on merchandise and 76L (3), 84M (18), 90H (14) YouTube users which do (don't) use high value platforms and spent a positive amount on tickets to live events.*

[9] Spend on merchandise is the sum of "Artist or band merchandise" and "Other merchandise not listed". Spend on concert tickets, merchandise and fan clubs was calculated as a rebased median, in order to minimise the effects of outliers that may be due to erroneous survey responses and that may bias a similar type of analysis using a simple average instead of the rebased mean. The median was determined by taking into account responses larger than zero in each category, i.e. only those respondents who spent any positive amount in the category. The median was then rebased by multiplying it by the share of positive responses in each category for each YouTube user type in order to obtain the average spend on merchandise by YouTube user type in each category, that is including those that did not spend anything in the respective categories.

The results indicate that heavier YouTube use is generally associated with heavier spend in these ancillary channels of concert tickets, merchandise and fan club memberships.

The monthly spend on concert tickets, merchandise and fan club memberships increases with increasing time spent on YouTube, although spend in these ancillary channels only increases marginally between Medium and Heavy YouTube users, in the United Kingdom. For YouTube users who do not spend any positive amount on high value platforms, the relative increase in spend in these ancillary channels from Light to Medium to Heavy YouTube users is even greater. This trend is largely consistent across YouTube user segments in different countries.

**Overall value to the music industry from concerts, merchandise and fan club membership is generally increasing in YouTube usage, which is consistent with YouTube having a promotional effect on these other channels.**

The correlation between spend in these ancillary channels and YouTube usage may be driven by underlying consumer preferences. Moreover, the sample sizes in some cases are small.

# 4 Streaming continues to grow rapidly

We then consider the data on YouTube views and streams on audio platforms. RBB received historical data from GfK for France, Germany and Italy, and from OCC for the United Kingdom, showing weekly volumes of audio streaming for a picklist of over 8,000 tracks across these countries, as well as country totals for audio streaming; RBB also received internal data from YouTube on video streaming volumes for the same tracks for the United Kingdom, France, Germany and Italy, as well as country totals for YouTube music video views.

The data on views and streams allow us to consider the patterns of growth on each type of music platform, primarily audio streaming (e.g. Spotify), and video streaming (e.g. YouTube).

We find that audio streaming volumes have continued to grow rapidly over the past few years, while video streaming volumes have also grown.

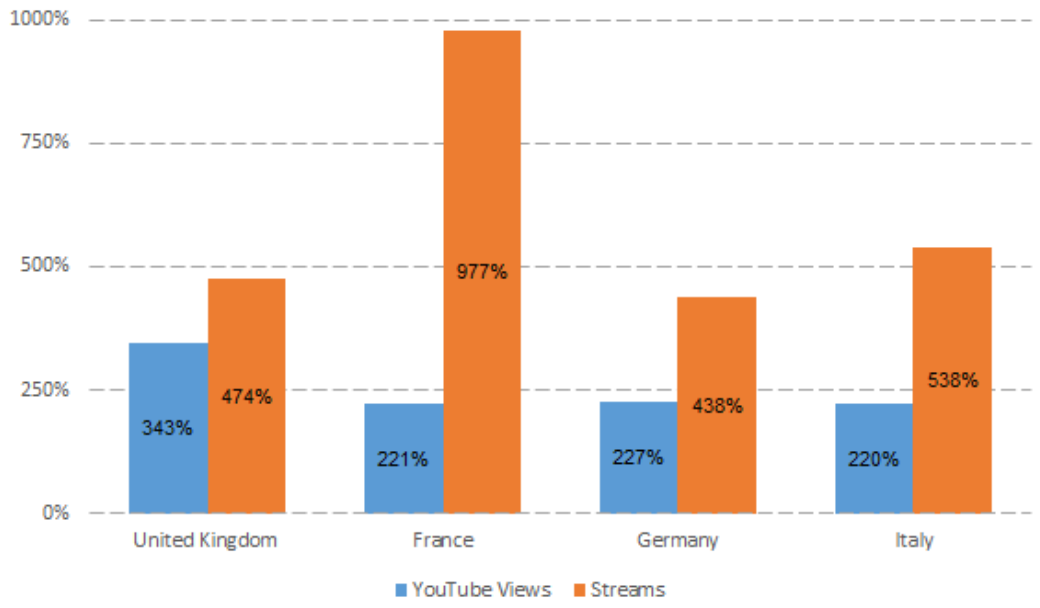
YouTube does not seem to be stifling the growth of streams - streams have been growing at a faster rate than YouTube views of music content. In all four countries, YouTube music views have grown significantly, increasingly by around 2 or 3 times over a two and a half year period.[10] However, streams have grown at a far higher rate, increasing between by between 4 and 10 times over the same period. Accordingly, streams grew at between 1.4 and 4.4 times

[10] This growth is observed over the time period of the data, from the first week of 2014 to week 30-32 of 2016.

the growth in YouTube views over this period, and on average across the four countries, streams grew at 2.3 times the growth in YouTube views.

Figure 6, below, summarises the growth rates in streams and YouTube views, from the start of 2014, until mid-2016, for each country.

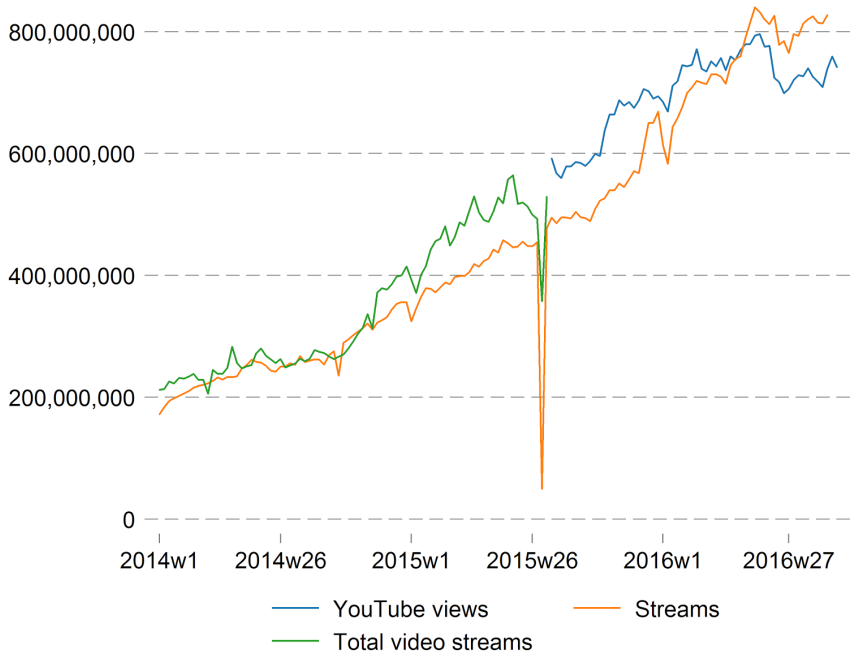
**Figure 6: Growth of volume of streams/YouTube views in 2016, week 30 compared to 2014, week 1**




*Source: RBB analysis of OCC data, GFK data and YouTube internal data. Note: YouTube views data were only available in the United Kingdom from 2015, week 30. The data have been extended to prior years using OCC data on total video streams.*

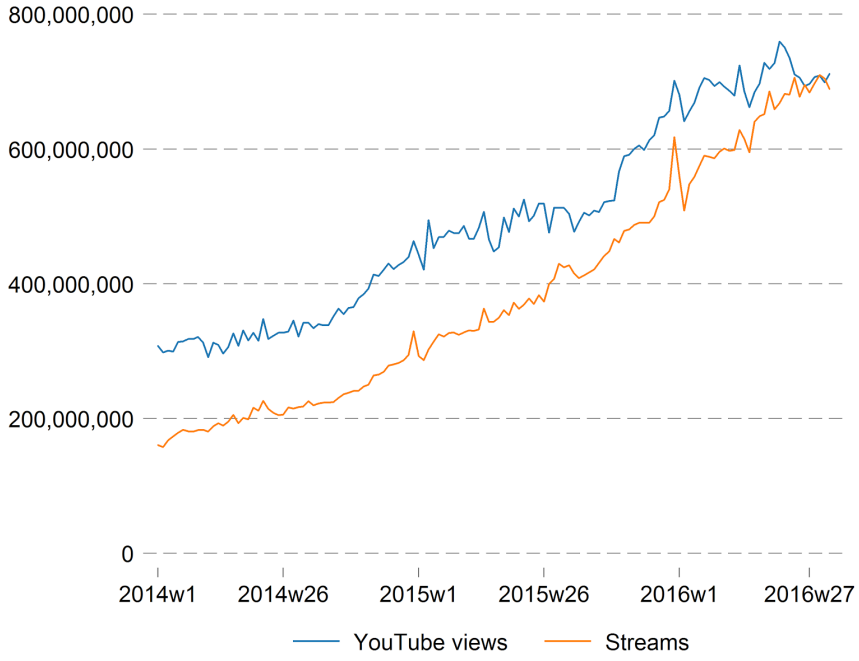
Figure 7 and Figure 8 below show that in the United Kingdom and Germany, streams have grown faster than YouTube views and overtook YouTube views by the last week of the data (2016, week 32).

**Figure 7: Total platform YouTube views vs streams in the United Kingdom**




*Source: RBB analysis of OCC data and YouTube internal data. Note: YouTube views data were only available from 2015, week 30. The data have been extended to prior years using OCC data on total video streams.*

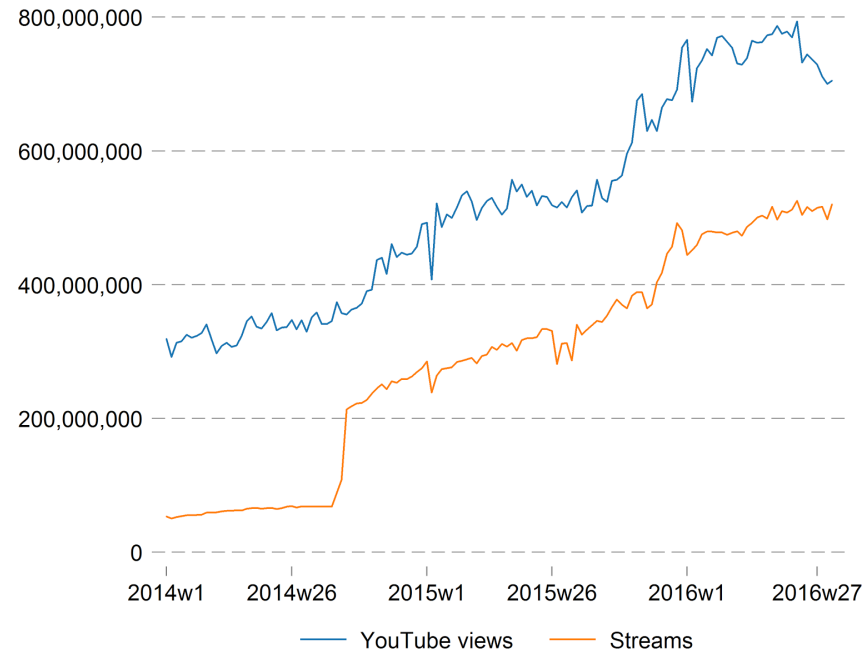
**Figure 8: Total platform YouTube views vs streams in Germany**




*Source: RBB analysis of GfK data and YouTube internal data.*

In France, streams and YouTube views have continued to grow at similar rates, though YouTube views remained higher than streams, as shown in Figure 9.

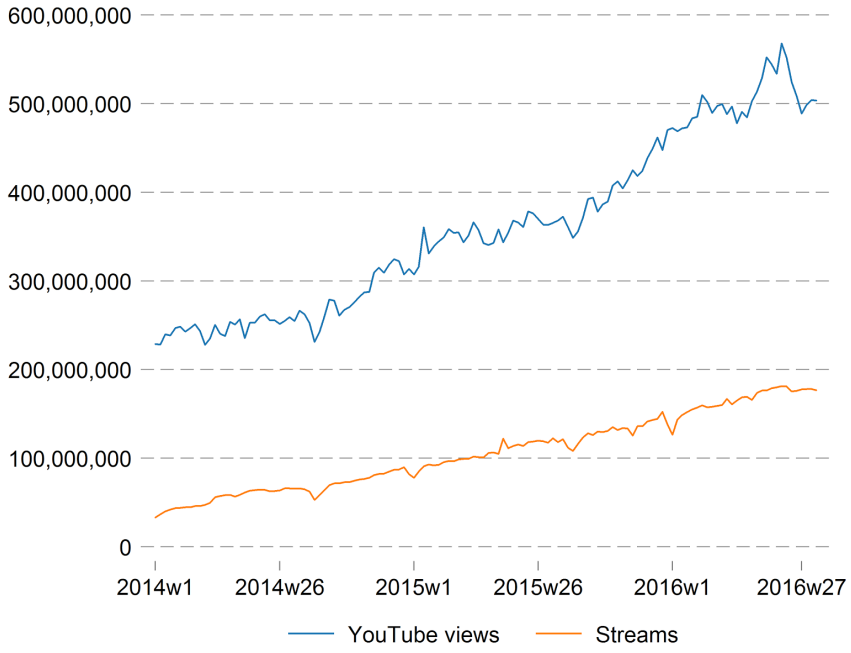
**Figure 9: Total platform YouTube views vs streams in France**




*Source: RBB analysis of GfK data and YouTube internal data.*

Figure 10 shows that in Italy, YouTube views were much higher than streams throughout the period, although streams showed a higher percentage growth rate.

**Figure 10: Total platform YouTube views vs streams in Italy**




*Source: RBB analysis of GfK data and YouTube internal data.*

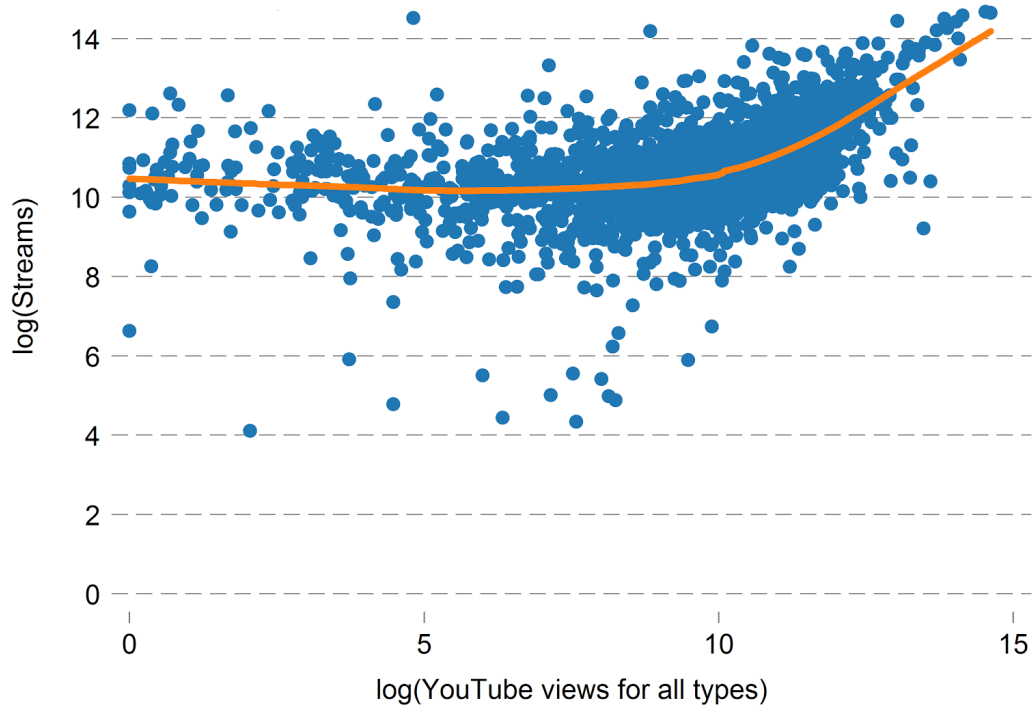
# 5 YouTube views and audio streams are correlated

The data on views and streams also allow us to consider whether individual songs that have shown high volumes of views on YouTube, have shown high or low volumes of streams on audio streaming platforms, such as Spotify.

We find that audio streaming volumes and video streaming volumes are positively correlated in all countries. That is, a higher number of YouTube views is associated with a higher number of streams for the same tracks. A positive correlation between streams and YouTube views is consistent with complementarity between the platforms. On the contrary, a negative correlation between the YouTube views and streams would have indicated some degree of substitutability between the two platforms. Figure 11 below shows the log of YouTube views vs the log of streams in the United Kingdom.[11]

[11] Logs are used to smooth out big outliers and allow a percentage interpretation in the regressions below. Conclusions in this paper do not depend on this technical choice. Similar figures were obtained for France, Germany and Italy.

**Figure 11: Correlation between streams and YouTube views, United Kingdom**




*Source: RBB analysis of OCC data and YouTube internal data. Correlations are calculated across all track observations, i.e. for all the weeks in the dataset.*

We have also undertaken a number of statistical regressions, in order to better understand the relationship between audio streams and video views for the same songs. These tests confirm the positive relation between YouTube views and audio streams. We use a panel regression which consists of a log-log regression that tests whether there is any association between streams and YouTube views when other factors are taken into account. The model includes a specification that allows each track to be uniquely identified over time (so-called 'fixed effects'), to control for time-invariant characteristics of each song, such as that some songs are inherently likely to be more popular than other songs. This base model (1) was expanded by including monthly dummies in order to control for the growth in streams over time (2).

Table 1 below shows the results of panel regressions for the base model (1) as well as the expanded model (2) in the United Kingdom.[12] **The results indicate that an increase in YouTube views is associated with an increase in streams.**

[12] Similar figures were obtained for France and Italy. Germany exhibited a lower albeit positive and significant correlation.

**Table 1: Panel regression results of YouTube views on streams in the United Kingdom**

| | Interpretation of results | Model specification | Interpretation of results | Model specification |
|---|---|---|---|---|
| | | (1) | | (2) |
| | | log(streams) | | log(streams) |
| log(YouTube views) | Statistically significant and positive - higher YouTube views are associated with higher streams | 0.366*** (7.69) | Statistically significant and positive - higher YouTube views are associated with higher streams | 0.327*** (21.73) |
| February_2014 | Controls | | Controls | 0.0693*** (5.72) |
| March_2014 | Controls | | Controls | 0.110*** (7.61) |
| April_2014 | Controls | | Controls | 0.158*** (11.87) |
| May_2014 | Controls | | Controls | 0.218*** (17.12) |
| July_2016 | Controls | | Controls | 1.011*** (39.53) |
| August_2016 | Controls | | Controls | 1.670*** (59.00) |
| Constant | | 7.037*** (14.47) | | 6.834*** (51.20) |
| N | | 340003 | | 340003 |
| N_g | | 3217 | | 3217 |

*Source: RBB analysis of OCC data and YouTube internal data. The numbers in parentheses indicate the t-statistics. * - p < 0.05; ** - p < 0.01; *** - p<0.001*

The results show that a 1% increase in YouTube views is associated with a 0.33% - 0.37% increase in streams in the United Kingdom. In the other countries, a 1% increase in YouTube views is associated with an increase in streams ranging from 0.1% - 0.34%.

A negative correlation would have indicated that views and streams were substitutable, as an increase in the consumption of one would have been associated with a reduction in the consumption of the other. However, this is not observed. The positive correlation shown here is consistent with a degree of complementarity between the growth of views and the parallel (and often faster) growth of streams.

# 6 Conclusion

In this second note we have considered the evidence on the growth across different legitimate music services.

We first looked at the results from a 1,500 person user survey in each of four European countries, which showed that **YouTube is the most important source of discovery for YouTube users**, and that **heavier YouTube users also more heavily consume music through other legitimate channels**.

We then considered historical data on YouTube views and streams on audio platforms for over 8,000 tracks across these four European countries, as well as YouTube and audio streams platform totals, over a three year period. These data showed that the **volumes of audio streams have continued to grow strongly, and in most markets have grown more strongly than video streams**. We also found that **individual songs that achieve higher video streaming volumes on YouTube, achieve higher audio streaming volumes on platforms like Spotify (and vice versa)**.

These findings indicate that video and audio streaming have grown in tandem, and do not indicate significant substitutability between these two channels.