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A Historical Investigation of Patterns in Sophomore Album Release

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Abstract

Nielsen SoundScan and *Billboard* chart data for the periods 1993-2003 are utilized to create a cohort panel dataset comprised of “Heatseekers” artists and groups for the purpose of studying historical patterns of sophomore album release. Following Hendricks and Sorensen (2008), the genres used in this study include Rock, Rap/R&B/Dance, and Country/Blues. The econometric model employed is a hazard function as described in Cameron and Trivedi (2009) and Wooldridge (2010). For the panel of acts, the paper documents the following empirical facts. First, the hazard function indicates that most sophomore albums are released 45 months after the debut album and if a sophomore release does not occur within 80 months of the debut album there will most likely be no sophomore release. Second, the time between album release is a function of past album sales; all else equal, the larger the hit the less time it takes for the next album to be released. Third, genre influences the timing of release; all else constant, the Rap/R&B/Dance genre consistently delayed sophomore albums relative to the Country/Blues and Rock genres. Fourth, conditional on successful debut album sales, acts from the Country/Blues and Rap/R&B/Dance genres release more quickly than acts from the Rock genre.

Keywords: sophomore album release, supply of music, cohort data, incidence rate, hazard function

Introduction

Using Nielsen SoundScan and *Billboard* chart data for the periods 1993-2003, this paper develops a cohort panel dataset comprised of “Heatseekers Albums” artists and groups for the purpose of studying historical patterns of sophomore album release. Knowing when and why sophomore

albums are released is of importance to social scientists as it allows the testing of various behavioral theories. Additionally, music industry practitioners and educators may find the description of sophomore album releases important because it indicates how acts (artists, groups, and labels) have historically behaved thus identifying a standard for industry behavior.

The estimation model includes variables that affect the timing of an act's sophomore release. How these variables impact the timing is a priori unknown and thus is a puzzle. One such variable is the cumulative debut album sales. A successful debut album could indicate the future success of a sophomore album resulting in a shorter sophomore release time frame. Alternatively, debut release success may give acts more time to improve and complete the sophomore album thus delaying its release. Another possibility is that past success may not be as important since all of the acts studied have had initial success as indicated by the Heatseekers Albums chart.

Another variable used to test the timing of release is the genre of the act. For various reasons, certain genres may be more efficient in the production and release process due to the number of tracks associated with the album. For example, classical and jazz albums can be more efficiently recorded relative to Hot 100 pop albums that often consist of more than one hundred tracks to edit and mix. Additionally, given the common wisdom that artists have their entire life to write the first album but only a year to write the second, the availability of material within a genre may impact the timing.¹ In total, the main variables used to explain the timing of sophomore album release are chosen based on a theoretical description of the primitives that describe the economic motivations to release an album.

For the panel of acts, the paper documents the following empirical facts about the timing of the sophomore album release. First, the hazard function indicates that most sophomore albums are released 45 months after the debut album and if a sophomore release does not occur within 80 months of the debut album there will most likely be no sophomore release. Second, the time between album release is a function of past album sales; all else equal, the larger the hit the less time it takes for the next album to be released. Third, genre influences the timing of release. Holding all else constant, the Rap/R&B/Dance genre consistently delayed sophomore albums relative to the Country/Blues and Rock genres. Fourth, conditional on successful debut album sales, acts from the Country/Blues and Rap/R&B/Dance genres release more quickly than acts from the Rock

genre. Although the third and fourth empirical facts seem to contradict each other, a simple example clarifies the two. At the extreme, a rap artist with zero debut album sales would have a delayed release relative to a rock artist with the same sales level. However, the probability that a rap artist will release before a rock artist increases as debut albums become more successful.

Data

Following Hendricks and Sorensen (2008), a sample cohort is constructed using *Billboard's* Heatseekers Albums chart of new or developing acts² for the time period 1993-1994. To estimate the econometric model, a sample cohort is needed for two main reasons: (1) the universe of possible acts is too large and (2) employing a sample cohort allows one to compare acts in the same part of their career lifecycle. In total, the sample cohort describes the album sales history of 111 acts whose album reaches *Billboard's* Heatseekers Albums chart in 1993 and 1994. The Heatseekers Albums chart lists the sales ranking of the top 25 new or ascendant artists and bands each week. Although more than 111 acts appeared on the Heatseekers Albums chart during 1993-1994, a smaller number of acts make up the sample cohort because the intent of the paper is to focus on new or ascendant music acts versus artists breaking away from established groups (e.g., Walter Becker of Steely Dan), comedians (e.g., Jeff Foxworthy), and children's acts (e.g., Barney) that also made the Heatseekers Albums chart during that time frame. Table 1 identifies the cohort of 111 acts studied in the paper and shows that the cohort incorporates a diverse group of acts from which we based our estimates.

Once the acts were identified and a cohort developed, a discography was collected in order to determine the number of albums produced and distributed through 2003.³ For the purpose of this study, albums are defined to have multiple (~10) tracks per unit. Thus, singles and EPs are excluded. Moreover, not all acts in the cohort dataset produced and distributed holiday albums and compilations so these too are excluded from this study. The end date was chosen in order to keep sales measurement consistent over the study time period. Thus, digital units, and the complications associated with combining sales, are not considered in this analysis. After completion of the discography of the acts, Nielsen SoundScan was used to construct album sales history and complete the cohort data set. Operating since 1991, Nielsen SoundScan currently collects weekly point-of-sale

Acts Cohort

4 pm, Doug Supernaw, Shawn Camp, Rick Trevino, Fugees
 Duice, Suede, K7, The Indians
 Gibson/Miller Band, Vertical Hold, Faith Hill, Eternal, Kirk Franklin
 Martha Wash, Robin S., Us3, John Berry, Bone Thugs-n-Harmony
 B-Legit, D-Shot, Gabrielle, 12 Gauge, Hootie & the Blowfish
 Boy Krazy, Shania Twain, Total Devastation, Collective Soul, 311
 Ant Banks, Candlebox, Liz Phair, Celly Cel, Weezer
 Arcade Fire, DMG, Dig, Guesss, Ill Al Skcratch
 Intro, Clay Walker, The Conscious Daughters, Frente!, B-Tribe
 H-Town, Brother Cane, October Project, Anotha Level, Ken Mellons
 Tool, Fat Joe, The Screamin' Cheetah Wheelies, Blackgirl
 Boogiemonsters, 95 South, Joe, Sheryl Crow, Ahmad, Lil' ½ Dead
 Toby Keith, Shaggy, Kurious, The Iguanas, O.C.
 Radiohead, Hoodratz, Meshell Ndegeocello, Tha Mexakinz, Dis-n-Dat
 Tracy Byrd, Gary Hoey, Kristin Hersh, 69 Boyz, Veruca Salt
 Ricky Lynn Gregg, Joshua Kadison, RAab, Kenny Chesney
 Brad, Mac Mall, Patra, Pride and Glory
 Masta Ace Incorporated, Black Moon, Shadz of Lingo, Born Jamericans
 5th Ward Boyz, Counting Crows, One Dove, Velocity Girl
 Aimee Mann, Coming of Age, Top Authority, Lari White
 The Coup, Artifacts, Extra Prolific, N-Phase
 The London Suede, Vicious, Flatlinerz, Oasis
 Deadeye Dick, C-Bo, Luscious Jackson, Usher
 Joshua Redman Quartet, G. Love & Special Sauce, The Beatnuts

Table 1. Acts Cohort (source: *Billboard* Heatseekers Albums Chart – 1993-1994).

data from 14,000 retail outlets across North America and functions as a central clearinghouse for music industry data.⁴

Following Hendricks and Sorensen (2008), the genres used in this study include: Rock, Rap/R&B/Dance, and Country/Blues. Table 2 highlights the cohort dataset by genre with respect to the number of acts per genre, the incidence rate of second album releases, and the average number of months to second release.

As indicated in Table 2, Rap/R&B/Dance is the largest genre with 63 acts, followed by Rock with 32 acts, and Country/Blues with 16 acts for a total of 111 artists and groups. The incidence rate represents the probability that a second album is released within a one-month period during 1993-2003. The last column is the average time (in months) an act takes to release its second album. Thus, the incidence rate represents an average

Cohort Data Description			
Genre	Number of Acts	Incidence Rate	Avg. No. of Months to 2nd Release
Rock	32	0.0344828	28.0938
Rap/R&B/Dance	63	0.0120414	56.6825
Country/Blues	16	0.0453258	22.0625
Total/Average	111	0.0186606	43.4505

Table 2. Cohort data description

for a one-month time period, while the average release time represents the average number of months across acts. The high incidence rate of the Country/Blues genre, 0.04532, shows that in any month there is a 4.5 percent chance a second album will be released. Additionally, in the Country/Blues genre, it takes acts 22 months to release a second album. Similarly, acts within the Rock genre have a 3.4% probability of releasing a second album in any month and, on average, release a sophomore album within 28 months of the debut album. On the other hand, the acts associated with Rap/R&B/Dance have a low incidence rate, 1.2%, and release a sophomore album on average every 56.7 months. The difference between Rap/R&B/Dance and the other genres is due to the fact that several acts within the genre never released a second album during the research time frame.

Figure 1 illustrates the Nielsen SoundScan sales history of one of the acts, Radiohead, from the cohort dataset constructed using the methodology described above.⁵ Radiohead represents an example of one act in the dataset that released a sophomore album.⁶ The bottom area of Figure 1 represents the sales history of Radiohead's debut album *Pablo Honey*. The top area represents the sales history associated with the band's sophomore release *The Bends*. One noticeable takeaway is that the debut album follows the peaks and declines of the sophomore album indicating that increases in sales of the sophomore album lead to increases in sales of the debut album. While Figure 1 provides some interesting results with respect to sales history, in order to investigate the historical impact of sophomore album release associated with each act, an econometric model is needed.

The Econometric Model and Theory

The econometric model employed to estimate sophomore album release is a hazard function described in Cameron and Trivedi (2009) and

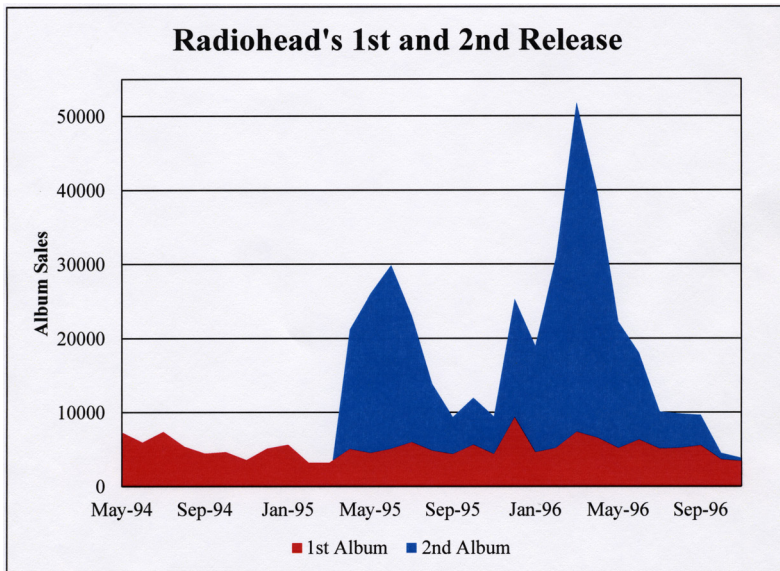


Figure 1. Radiohead's first and second release.

Wooldridge (2010). The hazard function denotes the probability that sophomore albums will be released by act, i , at any time, t , and is defined as:

$$h(X_{i,t}) = 1 - \exp[-\exp(X_{i,t}\beta + \gamma_i)]$$

where $X_{i,t}$ is a vector of variables that are used to describe the hazard function (e.g., cumulative debut album sales and genre). The elements inside β and γ are coefficients to be estimated. The coefficient vector β represents the probability of album release behavior of the acts. For example, a significant, positive coefficient β on cumulative debut album sales implies that acts are more likely to have an early sophomore release. The γ_i represents unique characteristics associated with each act. For example, Kenny Chesney's first month of debut album sales was 20,000 units while Radiohead's first month of debut album sales was fewer than 1,000 units.

To be specific, the variables that are included in the vector $X_{i,t}$ are from four main categories. The first set of variables relates to time. One would not expect an act to release a sophomore album immediately following the debut album release date. As time progresses, however, one

would expect the probability of a sophomore release to increase. It may also be the case that there is a maximum time limit associated with a sophomore release such that the album will not be released. To control for these effects, two variables are employed: time from debut release (*time*) and time squared (*time*²) capturing the quadratic effects described above. We expect the coefficient associated with *time* to be positive whereas *time*² is expected to be negative.

The next set of variables describes the past success of the debut album. Cumulative debut album sales (*sales*) are included as our measure of past debut album success. On one hand, a successful debut album could indicate the future success of a sophomore album. Thus, the coefficient of *sales* is expected to be positive. On the other hand, debut release success may give acts more time to improve and complete a sophomore album. If that holds, the coefficient of *sales* is expected to be negative. A final possibility is that past success may not be as important since all of the acts studied have had initial success given their identification on the Heatseekers Albums chart. In this case, one would expect the coefficient on *sales* to be zero.

A third set of variables relate to genre. Using the definition of genre from Hendricks and Sorensen (2012), two dummy variables are constructed relative to the Rock genre: *Rap/R&B/Dance* and *Country/Blues*. For various reasons, certain genres may be more efficient in the release process. For example, if the *Country/Blues* genre can be tracked, edited, and mixed in a shorter time frame than the Rock genre, *Country/Blues* is expected to be positive. Additionally, given the common wisdom that artists have their entire life to write the first album but only a year to write the second, the availability of material within a genre may impact the timing. For example, if the *Country/Blues* genre is characterized by many professional songwriters relative to the Rock genre, *Country/Blues* is expected to be positive.

The final set of variables incorporates the effects from the interaction of past debut album sales and genre relative to Rock: *sales*Rap/R&B/Dance* and *sales*Country/Blues*. The coefficient of the interaction terms would be positive when the probability of sophomore album release for the *Rap/R&B/Dance* and *Country/Blues* genres increases faster than the Rock genre as debut albums become more successful. This might occur when there is considerable variance of success within the genres of *Rap/R&B/Dance* and *Country/Blues* with respect to Rock.

Results

Table 3 presents the estimation results employing maximum likelihood to the hazard function. Here * indicates the coefficients are statistically significant at the 5% level.⁷ The first two rows show, as expected, the coefficients for *time* and *time*² are positive and negative, respectively. This suggests that as time progresses the probability of a sophomore release increases. It also indicates that there is a maximum time limit associated with a sophomore release.

Taken together, the results relative to *time* and *time*² produce a quadratic estimated hazard function for the 111-cohort dataset as illustrated in Figure 2. In the first few months after the debut release, the probability of a sophomore release is extremely low. As time progresses, however, the likelihood of a sophomore album release rises. In fact, the hazard function illustrates that sophomore album release most often occurs within 45 months after the debut album and if the sophomore album is not released within 80 months after the debut album, it probably never will be.

Table 3 highlights the fact that the variable *sales* is positive and significant at the 5% level. This implies that acts within the same genre that have achieved a successful debut album will more quickly release a sophomore album relative to those acts that had a less successful debut album. The results also indicate that there is no incentive for successful debut album acts to delay a sophomore album release for reasons associated with

Estimation Results		
Variable	Coefficient	Std. Error
<i>time</i>	0.1162949*	0.0221281
<i>time</i> ²	-0.0014571*	0.0002966
<i>sales</i>	8.63e-08*	1.13e-08
<i>Rap/R&B/Dance</i>	-1.302987*	0.2948817
<i>Country/Blues</i>	0.1523804	0.4220972
<i>sales*Rap/R&B/Dance</i>	1.34e-06*	5.04e-07
<i>sales*Country/Blues</i>	2.11e-06*	9.443-07
<i>Constant</i>	-4.902492*	0.3765369
<i>N</i>	4,823	
$\chi^2_{(7)}$	46.027*	

Table 3. Estimation Results (* indicates the coefficients are statistically significant at the 5% level).

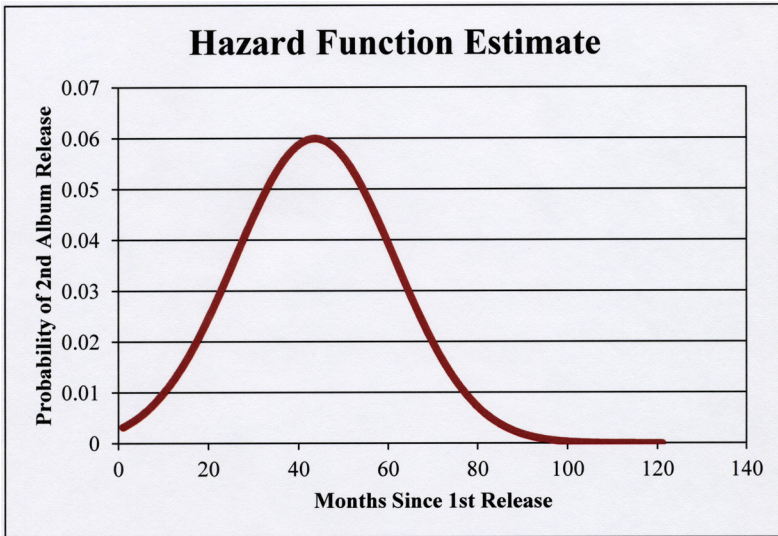


Figure 2. Hazard function estimate.

improved creation or production.

The results in Table 3 with respect to genre are interesting for a couple of reasons. First, the significant, negative coefficient of -1.303 indicates that *Rap/R&B/Dance* acts are less likely, at any time, to release a sophomore album than acts from the Rock genre. Second, because the coefficient on the *Country/Blues* variable is insignificant, the Rock and *Country/Blues* genres are not significantly different with respect to the probability of a sophomore album release.

Conditional on successful debut album sales, acts from the *Rap/R&B/Dance* and *Country/Blues* genres release more quickly than acts from the Rock genre as indicated by the significant, positive coefficients for $sales * Rap/R\&B/Dance$ and $sales * Country/Blues$. Although this result appears to contradict the previous results for the genre variables, a simple example clarifies. Consider a rap artist with zero debut album sales. At any time, the artist should have a lower probability of sophomore release relative to a rock artist with the same debut album sales level of zero. However, as both the rap and rock acts' cumulative debut album sales increase, the probability of a sophomore release for the rap artist increases more quickly than that for the rock artist.

Conclusions

This paper created a historic cohort panel dataset of Heatseekers Albums acts employing Nielsen SoundScan and *Billboard* chart data for the periods 1993-2003. Using the dataset, a hazard function model was estimated for the purpose of determining what economic variables determine the probability of an act's sophomore album release. Given the estimated coefficients, a hazard function was constructed for the cohort dataset.

The estimation results along with the plotted hazard function displayed several interesting empirical facts with regard to sophomore album release. First, the hazard function is quadratic with respect to months since debut album release indicating the most likely time for a sophomore album to be released and identifying a point beyond which no sophomore album will be released. Specifically, most acts release a sophomore album within 45 months of the release date of the debut album and if a sophomore album release does not occur within 80 months of the debut album there will most likely be no sophomore release. Second, successful debut album release acts are *more likely* to release a sophomore album at any point in their career cycle. However, this implies that making the Heatseekers Albums chart does not necessarily guarantee a sophomore album release. Third, genre matters—at least for *Rap/R&B/Dance* acts—even when compared to rock acts with the same sales. Finally, our results show that the probability of sophomore release increases more rapidly with respect to cumulative debut album sales for those acts associated with the *Rap/R&B/Dance* and *Country/Blues* genres relative to the rock genre.

The results presented in this paper will be of interest to social scientists, industry practitioners, and educators because they identify 45 months as a potential industry standard for sophomore album release. Additionally, the results identify 80 months as a maximum limit on the release time. Future research will include the expansion of the cohort panel dataset by increasing the number of acts included in the analysis over time, extending the number of subsequent album releases, and developing a model to incorporate the impact of the digital revolution on subsequent album releases.

Endnotes

1. The authors would like to thank Dr. David Tough of Belmont University and Pat McMakin, Sr. of Ocean Way Nashville for their insights into genre-related timing of album release.
2. *Billboard* defines Heatseekers Albums as “the week’s top-selling albums by new or developing acts, defined as those who have never appeared on the top 100 of the Billboard 200 or the top 10 of R&B/Hip-Hop Albums, Country Albums, Latin Albums, Christian Albums, or Gospel Albums. If a title reaches any of those levels, it and the act’s subsequent albums are then ineligible to appear on Heatseekers Albums. Titles are ranked by sales data as compiled by Nielsen SoundScan.” For more information see <http://www.billboard.com/charts/heatseekers-albums>.
3. Discography information was compiled from discogs.com and verified relative to the artist websites when possible.
4. For more information about Nielsen SoundScan and its databases see <http://nielsen.soundscan.com/help/help.html>.
5. Graphs such as Figure 1 were constructed with respect to many of the cohort acts but were not included for two main reasons: (1) the authors wanted to conserve both time and space and (2) simply illustrating sales history is not the focus of this research.
6. Note that there are twenty-one acts that never released a sophomore album.
7. A coefficient that is statistically significant at the 5% level implies that one is 95% sure that the coefficient is not equal to zero.

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