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ORIGINAL ARTICLE

Television singing competitions create stars? Empirical evidence from the digital music chart in South Korea

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Abstract

After the success of *American Idol*, television singing competitions have become widespread and popular around the world. Although this format has had a substantial influence on the music market of many countries, few studies have quantified this influence. This study examines whether musicians from singing competitions (contestants) earned more money through digital music sales than did other musicians (non-contestants). We used a unique dataset that summed sales from the top 200 monthly digital music chart of South Korea between 2011 and 2014. We analyze the number of the song sold during this tenure, considering several variables such as gender and seasonality. Our findings indicate that songs by contestants yielded larger sales than did those of non-contestants. This positive impact is greater for the top two finalists in the competitions. The insights gained in this study will provide guidance to record companies who are considering recording contracts with contest winners.

Keywords Television singing competition · Reality TV · Digital music chart · Music industry · Popular music

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1 Introduction

The music industry has struggled to generate sustainable growth in the current environment, in which revenue sources have shifted from record and CD sales to digital streaming and downloading services.[1] Because of this trend, musicians are encountering increasing difficulty in signing contracts with record companies ("labels"). The number of full-time musicians who were employed by a label decreased by about 80% from 2003 to 2012 (Masnick 2013), suggesting that record labels have adopted a risk-averse strategy of investing in fewer new singers. Unlike the contraction of the music industry, singing competitions on TV have become strikingly popular during the same period. Since *American Idol* was first aired in the USA in 2002, it has become one of the most successful shows in American television history in terms of television viewer ratings (Rowe 2011). Moreover, similar singing competitions have been imitated in many countries.

The popularity of singing competitions has created a new path for becoming a professional musician: for example, the debut single released by Kelly Clarkson, the winner of the first season of *American Idol* in 2002, became the best-selling single of the year in the USA, and her second album sold over 15 million copies worldwide. Successful contestants such as Paul Potts and Susan Boyle in the UK have also become successful professional singers. However, Keveney (2014) shows recent sluggish sales of singers debuting from TV singing competitions and claims that TV shows do not create superstars as they used to. Furthermore, successful appearances in singing competitions do not always produce a successful career as a professional musician (Amegashie 2009). This controversy raises the question of whether the publicity that a successful contestant gains especially when she wins a singing competition increases the revenue of the label that contracts with her. An empirical analysis is necessary to compare the commercial success between contestants and non-contestants.

To answer the question above, we first identify two different groups: (1) "contestants"; i.e., musicians who made their debut on television singing competitions; and (2) "non-contestants"; i.e., musicians who had no relation to such television programs. We conjecture that contestants have developed their fan base according to repeated interactions with the audience on several types of media, whereas non-contestants generally do not attain popularity directly from the loyalty of the audience through singing competitions.[2]

[1] According to the Recording Industry Association of America (RIAA), while physical record sales have decreased from $13.7 billion in 2001 to $3.6 billion in 2010, digital record sales accounted for $3.2 billion in 2010 in the USA. As a consequence, the market size of the music industry has halved over the decade.

[2] For example, television viewers may participate in voting to determine the winner of the show, and the audience may share feelings about favorite contestants with friends in online social media. These activities may result in enhanced loyalty to the contestants and may be beneficial for their success in the professional music market.

We then analyze the music chart of South Korea (similar to the Billboard chart in the USA) from 2011 to 2014. To compare the commercial success between contestants and non-contestants, we examine the monthly sales while a song is ranked on the chart. We find that, on average, songs by contestants sold more than those by non-contestants, at least in our sample. Our findings, however, vary according to the different characteristics of singers.

The rest of this paper consists of the following sections. In Sect. 2, the background of television singing competitions in the music industry is described. Section 3 provides hypotheses and theoretical implications. Section 4 puts the implications to an empirical test. Section 5 concludes.

2 Backgrounds

2.1 Television singing competitions

According to the International Federation of Phonography Industry (IFPI) report, the development of online music-sharing applications has caused recorded music sales to plummet, and the effects of online piracy on sales have inspired numerous theoretical and empirical studies. Danaher et al. (2014) find that recorded music sales decreased as the prevalence of illegal file sharing increased, indicating that the music industry needs new income sources, such as concerts, and new marketing practices to adapt to the changing environment of music distribution (Connolly and Krueger 2006). Moreover, the music industry has been a beneficiary of television singing competitions. After the enormous success of *American Idol*, many copycat programs started to air around the world and received wide attention. As a consequence, songs that contestants sing during a contest often appear in the top ranks of the music charts and prompt considerable sales.[3] Kelly Clarkson, the first winner of *American Idol*, made $18.9 million from sales of albums and digital downloads (Marketing Charts 2008); another contestant, Carrie Underwood, has successfully continued her career as a professional musician. Their stories suggest that the recruitment of successful contestants is more likely to be a low-risk marketing strategy because such persons have already created public awareness of themselves and have piqued the interest of audiences. Amegashie (2009) reports that more than 345 songs have appeared on the Billboard chart in the first 10 years of *American Idol*, implying that successful competition contestants significantly stimulate the record market. On the other hand, the phenomenon of *American Idol* has prompted industry practitioners to learn the mechanism through which a contestant moves from her debut to the status of a professional musician.

[3] For instance, according to Nielson, Leonard Cohen's "Hallelujah" and Israel "Iz" Kamakawiwo'Ole's version of "What a Wonderful World" debuted in the *American Idol* revived the original versions by bringing them to numbers one and eleven on the Hot Digital Song List, respectively (Marketing Charts 2008).

2.2 The music industry in South Korea

According to IFPI (2015), the South Korea's music industry has the highest growth rate (19.2%) in the world, despite the fact that the total size of the global music market declined slightly by 0.4% in 2014. In South Korea, four major music service providers account for about 95% of the whole market, and around 90% of their revenues are explained by streaming service subscription. Korean popular music, called K-Pop, has also entered the lexicon of global popular culture. The visual appeal and performances, as well as the singing ability, of Korean singers have been captivating domestic and global fans and attracting the attention of the international media (Choi and Maliangkay 2014). For example, the music video for "Gangnam Style," sung by PSY, has been viewed more than 2.4 billion times and hit number 1 not only on the Korean music chart, but also on worldwide iTunes dance chart. In addition, young Korean singers have been becoming strikingly popular in Asian countries and major labels, such as SM and YG, are receiving growing attention from both industry practitioners and financial investors (Economist 2012).

The first TV singing competition in South Korea was '*Super Star K*,' launched in 2009. Due to the unprecedented success of the pioneer program, various similar singing competition programs, such as *Audition Survival: K-pop star*, *Star Audition: The Great Birth*, and *Voice of Korea*, have emerged on the main broadcasting channels. Aspiring contestants showing off their potential talents and heart-touching background tales keep viewers glued to the program, fervently supporting their favorite singers to make sure that they make it to the next level. Seeing the process of a nobody becoming a nationwide star gives a thrill to audiences. Moreover, the fact that the audience could cast votes to support their favorite contestants may make them feel involved and attached to the TV show more deeply. Songs contestants sing during a contest are mostly revivals of songs that used to be popular in the past or faded from the public's memory, which enables to bring back audiences' memories. Once he or she is selected as a final winner, notable K-pop entertainment companies usually offer a contract up for grabs to the winner, and in some cases, the debut is far quicker than that through a normal audition. The official debut album comes with new songs after working with various and famous composers. Thus, most winners from competitions have made contracts with major labels and maintained their popularity even after the shows.

3 Related theory and hypothesis development

The success of cultural products is difficult to predict as quality does not guarantee success, although it is an essential part of being successful (Salganik et al. 2006). Studies in the business of performing arts reveal that artists' inherited talent does not determine success in their professional career (Adler 1985; Ginsburgh and Van Ours 2003). Little impact of talent on professional success in the music business is large because cultural products are goods that require learning experience from consumers. Adler (2006) argued that audiences prefer to consume products that are familiar to their ears rather than the best quality products. Stigler and Becker (1977)

emphasize the importance of experience in consuming cultural products as they said that audiences enjoy more when they had more opportunities with the products. Evidence that musicians' achievement in the contest is positively associated with their subsequent success demonstrates that winners in the contest have a competitive advantage of being exposed to more audiences through free publicity on media (Ginsburgh and Van Ours 2003).

In a given situation, there is no doubt that marketing efforts play a vital role in engaging audiences in the music industry. Frequent exposure to media allows musicians to become familiar with their audience, and enhance their attraction (Moreland and Zajonc 1982). Adequate media portrayals draw attention from marketers as a means of helping audiences develop their attitude toward entertainers (Bornstein 1989). However, the strategy used in the business of classical music does not necessarily apply to pop music due to the different level of entry barriers. While the high level of entry barrier caused by long learning curves inevitably leads classical music audiences to heavily rely on critics' reviews, pop music consumers do not need the two-step decision making the process as seen from the classical music business. Music marketers in the pop music industry utilize the direct relationship between artists and audiences to increase music sales (Aiello and Sloboda 1994). Thus, the emotional affinity between audiences and artists has become an integral part of consumers' purchasing decision (Jenkins 2006).

3.1 Para-social interaction

Para-social interaction, as originally hypothesized by Horton and Wohl (1956), offers an explanation of the ways in which an audience can develop a one-sided relationship with the media being consumed. Horton and Wohl (1956, p 215) explain a term of the para-social relationship by describing the pseudo-relationship as a "seeming face-to-face relationship that develops between a viewer and a persona (e.g., talk show host, celebrities, and characters)." The para-social relationship often fulfills the functionality of interpersonal relationship in real life by offering psychological benefits, such as affective bonding (Perse and Rubin 1989; Rubin and McHugh 1987), companionship (Schiappa et al. 2007), and a sense of belonging (Derrick et al. 2008). However, these benefits do not necessarily mean that those who established the para-social relationship with media characters are motivated to seek an alternative of strained interpersonal relationship in real life. Subsequent studies argue against the functional orientation of uses and gratification tradition that emphasizes on fulfilling the needs to resolve loneliness and social isolation with empirical evidence of no connection of those pathological symptoms to establishing the para-social relationship (Ashe and McCutcheon 2001; Tsao 1996). Since then, there has emerged a new perspective on the para-social relationship that audiences are motivated to voluntarily discover instrumental utility from the para-social relationship (Eyal and Rubin 2003).

Recent studies demonstrate that the intensity of the para-social relationship is strengthened not only by the duration of media exposure, but also by diverse types of figures portrayed in the media that audiences can identify with (Annese 2004).

The recent success of reality show is partly attributed to its authenticity that helps audiences establish the para-social relationship (Eyal and Fox 2007). From the marketing perspective, to the extent which diverse cues, media producers generate to nurture the mediated relationship in a way that audiences feel as if their relationship with media characters is real will be the key to success of reality shows (Labrecque 2014; Meyrowitz 1982).

3.2 American Idol effect

Jenkins (2009, p 345) points out that American Idol is a landmark cultural show that illustrates "the changed context within which American broadcasting is operating and the changed model of consumer behavior shaping programming and marketing strategies." Mainly, the massive influence of *American Idol* on the cultural industry lies in its distinctive feature of engaging the audience as a decision maker to determine the fate of contestants. Now, audiences are empowered to control what they consume, changing the underlying mechanism of media production. Through a series of episodes, both the audience and the contestants have increasing opportunity to strengthen their affective bonding and to solidify their para-social interaction. For instance, contestants display not only their musical talent but also their life story to the audience, so that the program is able to elicit a strong reaction from the audience toward the media characters. Cohen (2007) found that the para-social relationship is strongly built on talent contests such as Israel's *American Idol* for those who frequently watch the show. Moreover, the tournament-based format mobilizes audience members to devote themselves to the support of their contestants, and to exclude others from the rest of the episodes by stimulating the social identity of the audience (Amegashie 2009).

According to Tarrant et al. (2001), various social identities, such as age, gender, ethnicity, and social class play pivotal roles in establishing audience preferences and influencing their engagement in entertainment products. Moreover, Trepte (2006) explains that voting for a preferred contestant over the competition establishes a strong sense of loyalty to that person, and the mechanism of in-group favoritism and out-group discrimination observed in the social identity building process contributes significantly to the media preferences of the audience. Thus, competition based on this unscripted show has the competitive advantage of associating ordinary viewers with main characters who are also ordinary citizens (Holmes 2004). During the course of the contest, audiences perceive themselves as part of the show and develop a virtual relationship at a personal level with contestants.

The question remains as to whether the established para-social relationship between audiences and contestants continue even after the end of the show, and to what extent the continuing relationship can be monetized. There is no doubt that the intensity of the para-social relationship is heavily related to media exposure (Henry 2011). The loyalty of audiences to contestants tends to decrease over time when the show ends. However, the two-way communication on social media that helps audiences maintain the para-social relationship with contestants will provide a great advantage for contestants to secure long-term success in competitions

against non-contestants. In this regard, examining the performances on the music chart between contestants and non-contestants will be of great interest for music marketers who bear a burden of risk in investing in talents. Considering the discussion above, we argue that singers from televised competitions have an advantage over their counterparts to succeed in their music career. In particular, we measure the success of singers in two different ways: popularity and monetary value. While the volume of music sales is a commonly used indicator for success in the music industry, popularity may be equally important since the primary revenue stream for singers originates from live music performances, which largely depend on their popularity. Therefore, comparative analysis of monthly sales of the songs recorded by a group of contestants with those factors of the songs performed by non-contestants will offer more insight into how the tag of audition stars can translate into marketability in the music industry. Our hypothesis is as follows:

Hypothesis 1 Songs released by contestants are likely to be sold more than those released by non-contestants.

3.3 Bundling product strategy

The integrating of diverse characters into one team and selling a packaged product have become prevalent as a marketing practice in the cultural market (Brabazon 2011). This bundling strategy, consisting of different looks and functioning roles for dancing and singing, provides a lucrative business opportunity for record labels to hedge the risk of their investment by offering a wide range of options to the audience. The enormous success of one Korean boy band, called *H.O.T.*, proves the effectiveness of the bundling strategy, such that many record labels have been producing similar idol bands (Shim 2006). Moreover, a group of idol bands stands on the front line of the Korean Wave, which has swirled around the East Asian Music Industry, and led Korean labels to attempt to create idol bands with multi-national members to penetrate markets in diverse countries.

Despite the popularity of several female idol bands, such as *Girls' Generation* and *Wonder Girls*, boy bands are likely to generate greater revenues by selling more albums. This gender disparity may be attributed to the gender difference in music fandom, which draws on the passionate activity of female fans. According to the Korea Creative Content Agency (2012), total amounts paid by female fans are almost twice as large as those paid by male counterparts at music concerts and on online music sites. As Larsen and Zubernis (2011, p 11) report, "Fandom, for many female fans, is compelling for its invitation to self-expression, including sexual expression;" gender can be an important trait in fandom and can establish para-social interaction. Thus, we further conjecture that the influence of TV singing competitions on popularity could vary across types of musicians—e.g., solo male (or female), groups of males (or females), and groups of males and females. This leads to the second hypothesis, as follows:

Hypothesis 2 Songs released by groups of males and groups of males and females contestants are likely to be sold more than songs by solo female contestants.

4 Data and empirical analysis

4.1 Data

This study used a dataset on the digital music chart that lists the 200 most popular songs in South Korea each month. This music chart has been published by the Korea Music Content Industry Association since 2010. The chart is compiled from online streaming sales data assembled by major record labels and digital music distributors in South Korea. These sales account for over 95% of music sales in the country, so the data provide a trustworthy measure of music sales. The first year of operation (the year 2010) was a test year, so this study considers data beginning in January 2011. The ending period was May 2014, when we crawled the chart data. A substantial number of songs were listed for several successive months; this characteristic provides a favorable condition for the empirical analysis. After eliminating duplicates, 3622 unique songs released by 1042 unique musicians were obtained and were the subjects of our study. The unit of analysis was one song performed by one musician.[4]

To distinguish contestants from non-contestants, we consider three major Korean domestic television singing competitions, one from the most popular music cable channel and two from major terrestrial broadcasting channels in South Korea.[5] Thus, the group of contestants consists of musicians who debuted in one of three television singing competitions. The group of non-contestants represents musicians whose debuts were independent of those competitions. As a result, 417 songs and 116 musicians were included in the group of contestants, and account for 11.5 and 11.1% of the data, respectively. To distinguish the performance of winners in television singing competitions from other contestants, we also defined top two finalists: in this group, 197 songs and 33 musicians were included, and account for 5.4 and 3.2% of the data, respectively. We then identified the outcome variable of the study. For regression analysis, sales of each song are defined as either the average monthly unit sales or the total aggregate sales while the song was listed on the charts. We also coded additional attributes—the type of musicians (solo male (or female), a group of males (or females), a group of males and females), the debut rank on the chart (i.e., initial rank of 1 = top of the chart and initial rank of 200 = bottom), the

[4] For example, several songs on one album can be released by a particular musician and listed on the chart simultaneously. These songs are treated as different observations in the study. Also, two musicians may sing different arrangements of the same song; these are also treated as two different observations.

[5] The title of the television singing competition from the cable channel Mnet is "Superstar K"; this is the longest-running show (since 2009). The other two are "Star Audition: The Great Birth" on MBC and "Audition Survival: K-pop Star" on SBS; both were started in 2010.

career year (i.e., time elapsed since the performer's or group's debut), and the major label (i.e., if a record label is listed on the stock market, 1: 0 otherwise).[6]

Table 1 reports summary statistics with the definition of each variable used in the study, and Fig. 1 presents comparisons between the treatment group (contestants) and the control group (non-contestants). The statistics differed significantly between the two groups. On average, songs by contestants are sold more than did those of non-contestants while they are placed on the chart, except in 2014. In the following section, we develop models to explain these observations.

4.2 Empirical analysis: sales of songs

Our objective was to determine whether sales of songs recorded by contestants were significantly different from sales of songs by non-contestants. This comparison was performed using the average monthly sales of a song or the total aggregate sales while it appeared on the charts. An empirical equation was adapted to quantify this relationship:

$$\log\left(\text{sales}_{ij}\right) = \beta_0 + \beta_1 \text{Treat}_{ij} + \beta_z Z_j + d.\text{Season}_{ij} + d.\text{Year}_{ij} + \varepsilon_{ij}, \tag{1}$$

where $sales_{ij}$ represents monthly digital music sales (or total aggregate sales) of song i by musician j during our study period. In the right-hand side of Eq. (1), $Treat_{ij}$ is one if song i is performed by musician j who debuted in a television singing competition, and 0 otherwise. β_1 can be interpreted as showing the average quantity difference to which an appearance on a television singing competition affected music sales. Z represents covariates including the song- and musician-specific characteristics, i.e., the type of musicians, and the career year of a musician. We also include a set of dummy variables indicating each season and each year to account for the average seasonal and year effects, respectively.[7] Parameter estimates were obtained using ordinary least squares regression.

The estimated parameters with a dependent variable of monthly music sales shown in Table 2. First, the estimate of *Contestants* in Column (1) suggests that songs by contestants tend to sell 11.0% more than those by non-contestants, on average. This finding supports the hypothesis 1. However, the estimated parameters of the set of interaction terms in Column (2) suggest that sales vary considerably across

[6] We firstly considered two different independent variables, the time elapsed (since participation) and the career year (since official debut), on the regression analysis. Here, the time elapsed variable literally captures the time elapsed since participation in the contest and the career year captures the time since official debut with a new song. This is plausible in the sense that the reality singing competition is another way for agencies to source talent that can be debuted faster as successful contestants require less training to get up to scratch, and into a readily accepting market due to public recognition of them. For these reasons, we define that the debut year for both contestants and non-contestant is the year when their first new song is released as a professional singer.

[7] Seasonality is captured by four different dummies: March 1–May 31, spring, June 1–August 31, summer, September 1–November 30, fall, and December 1–February 29, winter. The year of a certain song represents the year in which it first appeared on the chart.

Table 1 Descriptive statistics

Variable	Definitions	Mean	SD	Min	Max
Sales	The average monthly sales while a song is listed on the charts	2,637,952	5,299,458	265,111	146,882,288
Total sales	The sum of monthly sales while a song is listed on the charts	6,598,883	12,327,719	265,111	196,894,531
Contestants	If a musician is a contestant, 1; 0 otherwise	0.115	0.319	0	1
Top two finalists	If a contestant is one of the top two finalists in the audition, 1; 0 otherwise	0.054	0.226	0	1
Solo male	If a musician is a solo male, 1; 0 otherwise	0.298	0.457	0	1
Solo female	If a musician is a solo female, 1; 0 otherwise	0.213	0.409	0	1
A group of males	If a musician is a group of male, 1; 0 otherwise	0.269	0.443	0	1
A group of females	If a musician is a group of female, 1; 0 otherwise	0.133	0.340	0	1
A group of males and females	If a musician is a group of male and female, 1; 0 otherwise	0.078	0.268	0	1
First rank	The rank at which a song first appears on the chart	108.195	55.271	1	200
Career year	The year length from the debut year to the year of a song released	6.675	5.783	0	45
Major label	If a music label is listed on the stock market, 1; 0 otherwise	0.376	0.484	0	1
Spring	March 1–May 31	0.289	0.453	0	1
Summer	June 1–August 31	0.225	0.417	0	1
Fall	September 1–November 30	0.232	0.422	0	1
Winter	December 1–February 29	0.254	0.435	0	1
Yr2011	Year of 2011	0.317	0.465	0	1
Yr2012	Year of 2012	0.305	0.460	0	1
Yr2013	Year of 2013	0.273	0.446	0	1
Yr2014	Year of 2014	0.105	0.307	0	1

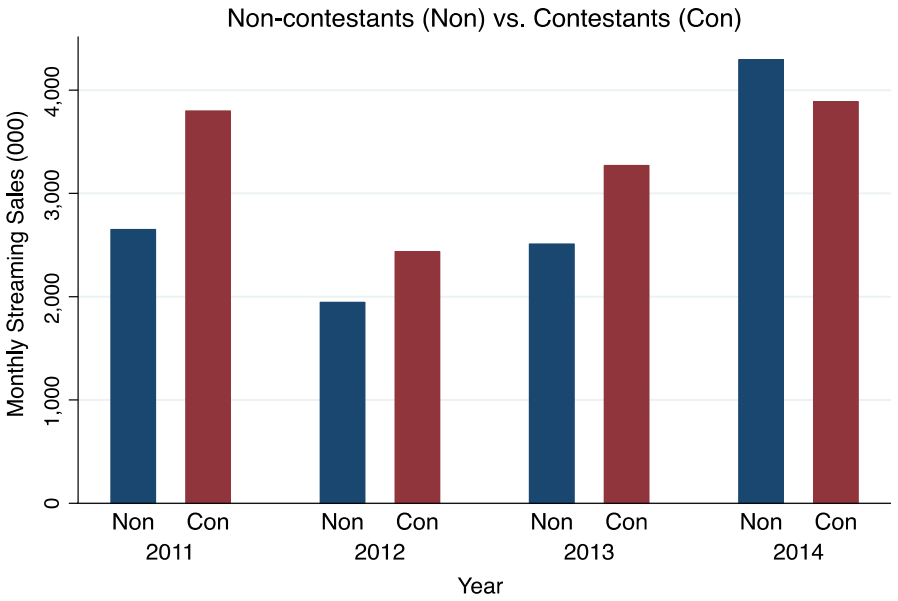

Fig. 1 Comparisons between groups of contestants and non-contestants. *Note* In addition to looking at the yearly differences, the mean difference in music sales between the two groups was also statistically significant at 5% level (t test result: 2.23)

the types of musicians. Interaction effects between *Contestants* and *Group of males* (and *Group of males and females*) were positive and statistically significant with very high magnitudes. These findings suggest that songs by contestants of groups of males and of groups of males and females show strikingly higher sales than do songs by corresponding groups of non-contestants, which supports the Hypothesis 2. The estimated parameters of *Career year* were negative and statistically significant in both columns.[8] This finding suggests that sales of songs tend to decrease as the time since a musician's debut increases, regardless of whether the singer appeared on a television singing competition. It is intuitive in the sense that aspiring singers showing off their appearances, hidden talents and their heart-touching background tales kept audiences glued to their TV shows, fervently supporting their favorite singers to make sure they make it to the top. Though the successful musician's popularity multiplied after debut, he or she is likely to fail to create much buzz after new stars

[8] Apart from participating in the contest, there is another path to debut; one can become a trainee after passing the internal screening of a particular agency. As a trainee, she has to take singing, dancing and acting lessons up to 5 h or more a day on average. The life of a trainee is hard and tiring as another step to compete before official debut, in which many trainees are likely to give up their dreams of becoming a star. It is known that the average training period for a successful trainee is usually between 2 and 4 years although it can vary for each trainee. Based on this process for debut, the training period is considered as another competition to survive before official debut, rather than a career experience. In fact, it was hard for us to acquire each musician's training period unless the musician or agency officially announces it to the public. Therefore, we do measure the "career year" with the time since official debut excluding the training period for the non-contestant.

Table 2 Results: OLS regression model with/without interaction effects

Variable	(1) log(monthly sales)	(2) log(monthly sales)
Group of contestants (treatment)	0.110**	0.042
	(0.049)	(0.119)
Group of contestants × solo female		0.086
		(0.124)
Group of contestants × group of males		0.379***
		(0.122)
Group of contestants × group of females		0.182
		(0.228)
Group of contestants × group of males and females		0.561***
		(0.151)
Group of contestants × career year		− 0.038**
		(0.018)
Group of contestants × major label		0.022
		(0.100)
Solo female	0.075*	0.066
	(0.041)	(0.044)
Group of male	0.068*	0.027
	(0.038)	(0.040)
Group of female	0.143***	0.125**
	(0.047)	(0.049)
Group of male and female	0.128**	0.047
	(0.055)	(0.060)
Career year	− 0.004*	− 0.004*
	(0.002)	(0.002)
Major label	0.162***	0.148***
	(0.030)	(0.032)
Spring	− 0.089**	− 0.096**
	(0.042)	(0.042)
Summer	− 0.245***	− 0.247***
	(0.045)	(0.045)
Fall	− 0.119***	− 0.128**
	(0.044)	(0.044)
Year 2012	− 0.082**	− 0.081**
	(0.038)	(0.038)
Year 2013	0.268***	0.274***
	(0.038)	(0.038)
Year 2014	0.569***	0.571***
	(0.057)	(0.056)
Constant	14.138***	14.167***
	(0.060)	(0.061)
R squared	0.085	0.090
No. observations	3622	3622

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; robust standard errors in parentheses

and discovered truly talented singers introduced, especially for Korean pop idols. To regain popularity, the musicians have to make a number of alterations like adopting a new dance or a music style.

This is remarkable for contestants. Seeing the process of a nobody becoming a nationwide star gave a thrill to viewers. Moreover, the fact that the audience could cast votes to support their favorite contestants and that anyone regardless of their age could audition made viewers feel involved and attached to the show. This is in line with our result that the interaction term between 'contestants' and 'career year' was also negative; this observation suggests that record sales of contestants declined more rapidly as time since debut increased than was the case for non-contestants. Parameters that represent seasonality indicated that songs released in the winter season sold more than did songs released in other seasons. Also, the affiliation with a large record label shows a positive impact on sales for non-contestants, but it does not have a significant impact for contestants.

In a similar manner, Table 3 reports estimated parameters with a dependent variable of total aggregate sales. While signs and significances of most parameter estimates are unchanged from corresponding results in Table 2, the magnitudes of estimated parameters regarding *Contestants* are considerably greater than those in Table 2. This finding supports our argument that songs by contestants are indeed sold more than songs by non-contestants.

4.3 A comparison between top two finalists and other contestants

Our main finding demonstrates that songs by contestants yielded larger sales than did those of non-contestants. In the given result, one may wonder how the winner or top-ranked contestant in television singing competitions shows a significantly better performance than other contestants especially when she moves from her debut to the status of the professional musician. Most singing competitions have the nature of the multi-stage elimination process over a few weeks—i.e., the contest sequence with the smaller number of remaining contestants as each stage proceeds (Fu and Lu 2012). In this hierarchical procedure, remaining contestants are likely to have more opportunities to develop a strong para-social relationship through repeated interaction and contacts with audiences.

To delve into this question, we distinguished the top two finalists from other contestants: in this group, 197 songs and 33 musicians were included, indicating that 5.96 songs per musician were appeared on the monthly top 200 charts during our study periods. This average value is greater than 3.46 songs per musician for the group of non-contestants and 3.59 song/musician for the group of all contestants in the same periods. In other words, the winners and runner-ups of singing contests have been placed on the charts which presents an evidence of their success as a professional musician. We further examine their performances by replicating the analysis replicating OLS models used in our main analysis. For brevity, we report the empirical result of the main variables in Table 4. The parameter estimates of the top two finalists are shown in Column (1), being compared with corresponding results [shown in Column (2)] from the previous analyses.

Table 3 Results: OLS regression model with/without interaction effects

Variable	(1) log(total sales)	(2) log(total sales)
Group of contestants (treatment)	0.182**	0.117
	(0.073)	(0.169)
Group of contestants × solo female		−0.081
		(0.171)
Group of contestants × group of males		0.711***
		(0.194)
Group of contestants × group of females		−0.057
		(0.358)
Group of contestants × group of males and females		0.969***
		(0.230)
Group of contestants × career year		−0.070***
		(0.025)
Group of contestants × major label		−0.031
		(0.147)
Solo female	0.117**	0.134**
	(0.058)	(0.063)
Group of male	0.134**	0.061
	(0.056)	(0.058)
Group of female	0.350***	0.330***
	(0.073)	(0.075)
Group of male and female	0.189**	0.047
	(0.082)	(0.088)
Career year	−0.005	−0.005
	(0.004)	(0.004)
Major label	0.341***	0.317***
	(0.045)	(0.048)
Spring	−0.154***	−0.164***
	(0.059)	(0.059)
Summer	−0.286***	−0.293***
	(0.065)	(0.065)
Fall	−0.134**	−0.152**
	(0.065)	(0.064)
Year 2012	−0.066	−0.064
	(0.055)	(0.055)
Year 2013	0.325***	0.346***
	(0.055)	(0.055)
Year 2014	0.459***	0.458***
	(0.075)	(0.074)
Constant	14.496***	14.623***
	(0.075)	(0.080)
R squared	0.059	0.069
No. observations	3622	3622

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; robust standard errors in parentheses

Table 4 Replications with top two finalists in the televised singing competition

	(1) Group of top two finalists	(2) Group of contestants
A. OLS regression [DV: log(monthly sales)]		
Coefficient	0.279 ***	0.110***
	(0.069)	(0.049)
B. OLS regression [DV: log(total sales)]		
Coefficient	0.584***	0.182***
	(0.108)	(0.073)

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; robust standard errors in parentheses

We can notice that there is a large difference of estimated coefficients between the group of the top two finalists and the group of contestants from the regression analysis in Rows A and B. In short, the group of the top two finalists shows even better performances than that of non-contestants by yielding larger sales.[9]

4.4 Robustness checks

To check the validity of our results, we apply the propensity score matching method, which uses a set of control variables to select samples that are most similar to those in the treatment group; i.e., propensity score matching approaches identify a control group that is not significantly different from the treatment group (Dehejia and Wahba 2002). This identification allows the construction of a randomized, experiment-like setting to exclude the effect of unobserved heterogeneity. More formally,

$$E\left(Y_{ij}|\text{Treat}_{ij} = 1, \boldsymbol{X_{ij}}\right) > E\left(Y_{ij}|\text{Treat}_{ij} = 0, \boldsymbol{X_{ij}}\right), \tag{2}$$

where Y_{ij} can be logarithms of monthly sales, or total sales corresponding to dependent variables used in the main analyses, respectively. *Treat* represents the group of contestants, and $\boldsymbol{X_{ij}}$ is a vector covariate that includes the musician- and song-specific attributes presented in Table 1. We use the 10-nearest neighbor matching algorithms with replacements (Brynjolfsson et al. 2011); i.e., for each sample in the treatment group, we identify ten songs according to the closest similarity. Results are reported in Table 5. Estimated parameters accounting for observations in the sample are all positive and significant; in line with earlier results shown in Tables 2 and 3, marked differences for the group of males and the group of males and females were observed between contestants and non-contestants. Taken as a whole, estimates using the propensity score matching method strengthen our primary results.

[9] Note that we also tested if the group of winners in the singing competitions yields different results from those of the group of top two finalists. We find that estimated parameters are very similar to those in Table 4.

Table 5 Results: propensity score matching method

Dependent variable		(1) log(monthly sales)	(2) log(total sales)
Type of musician	Obs.	Coefficient	Coefficient
All	3622	0.108**	0.183***
		(0.048)	(0.066)
Solo male	1080	0.015	0.090
		(0.068)	(0.091)
Solo female	774	0.076	−0.001
		(0.090)	(0.108)
Group of males	974	0.245***	0.460***
		(0.086)	(0.130)
Group of females	485	0.251	0.139
		(0.197)	(0.315)
Group of males and females	283	0.274**	0.631***
		(0.130)	(0.228)

*$p<0.1$; **$p<0.05$; ***$p<0.01$; robust standard errors in parentheses

However, one may still wonder whether contestants as a group are systematically different from non-contestants as a group, which may lead to bias in our estimation. For example, singing ability may have been omitted as an explanatory factor (and cannot be quantifiable). The ability of contestants might be lower than that of non-contestants, because a musician with high ability is likely to debut without participating in television singing competitions. If this were true, we should expect a downward bias, i.e., that the true parameter β_1 is higher than the estimate in Eq. (1), i.e., $E\left(\hat{\beta}_1|\text{Treat}\right) < \beta_1$. As a result, the direction of this possible bias does not diminish the validity and significance of our findings, and the benefit of appearance on a television singing competition might be even greater than our estimates.

5 Discussion and conclusions

In this study, we analyzed how the debut of a musician on a television singing competition affects his or her subsequent commercial success. Due to the growth of television singing competitions and their effects on the music market, the much scholarly discussion has considered the nature of such shows and has acknowledged the expanded power of ordinary individuals in the current media environment (Jenkins 2006; Ouellette and Hay 2008). However, the extent to which an appearance on a television singing competition provides a competitive advantage in generating music sales remains unanswered due to an absence of empirical evidence. Our study attempted to remedy this absence by comparing the sales of songs on music charts between songs by contestants and by non-contestants.

Based on a theoretical discussion, we hypothesized that songs by successful contestants on television singing competitions were likely to generate higher profits than those by non-contestants. We then used and sale volumes (measured as the number of months and the average monthly sales of songs that appeared on the charts in

South Korea, respectively) to test the hypotheses. Estimates of the music sales also suggested that appearances on television singing competitions increased the sales of songs by the contestants. These findings support our first and second hypotheses that television singing competitions contribute to an increase in the popularity of singers. As a practical implication, our results provide an adequate rationale for record labels to recruit successful contestants who have already proved their potential as marketable entertainers in the sense that these singers will have the competitive advantage of establishing commercial success in the long term by mobilizing their existing fandom, obtained through the television show.

Recently, record labels' trainees are likely to begin participating as contestants. This holds our argument that competitions may be an effective marketing tool for the labels, to explore their trainees' potential. As Fiske (1992) pointed out in his *Cultural Economics of Fandom*, productivity of fans inevitably accompanies financial costs. The level of fandom obtained through the multi-stage process in the contest is a useful indicative of trainees' marketability that can help decision making for record labels on the debut of their trainees. In other words, the core marketability is the emerging fandom of successful contestants which can hardly possess without participating in the competition. One might argue for an innate ability of successful contestants as a key driver for their successful transition from contestants to professional musicians. Some musical talents, such as the ability to compose a song, may distinct contestants from other musicians in South Korean music industry (Jung 2014). However, a certain level of the innate ability is a prerequisite for becoming successful professional musicians, and it does not guarantee that the talents translate into their marketability or success in the entertainment industry. Moreover, it is hard to argue that contest participants are more qualified than record labels' trainees, to become a successful star. Through long years of rigorous professional training, the trainees may be getting well-equipped with a variety of requirements to be a popular artist (Kim and Kim 2013; Seabrook 2012). Considering this typical process of being professional musicians in the South Korean music industry, it may be more convincing argument that the success of contestants on the professional stage is attributed to their nurtured fandom gained from the multi-stage singing competition, rather than their innate ability. The recent movements, that record labels sponsor by entering their trainees for the competition as well as bear production costs, highlight that the merit of singing competitions tests their trainees' marketability rather than discovers new talents. Since the new format satisfies marketing needs of record labels, the popularity of television singing competitions is expected to constantly continue as a marketing tool in the entertainment industry.

However, additional findings from a series of interaction effects indicate that the positive effect of the popularity of contestants may vary across the types of musicians, as shown in Hypothesis 2. The empirical evidence from the Korean music charts suggested that only songs by some types of contestants (solo male, groups of males, and groups of males and females) were likely to be sold more than those by the corresponding types of non-contestants, while sales of songs by other types of performers did not differ significantly between contestants and non-contestants. While the observable evidence that music listeners in Korea seem to have high preferences for grouped contestants, the most successful contestants of television

singing competitions in the USA are solo female musicians, such as Kelly Clarkson and Carrie Underwood, indicating that a particular type of contestant might be more likely to succeed in the music industry than others under a different cultural background. Furthermore, the negative interaction between the group of contestants and career year provided an important managerial implication, suggesting that music companies have to develop appropriate marketing strategies to sustain high profits and the popularity of their musicians after the debut of the competition because the positive effect of TV shows is likely to diminish over time.

Our study yields two contributions. First, despite the substantial influence of television singing competitions in the music industry (Amegashie 2009; Heizler and Kimhi 2012), surprisingly few academic studies have examined this influence. To the best of our knowledge, this is the first attempt to measure whether musicians from television shows subsequently achieve commercial success better than that of other musicians. Second, we use a novel dataset of digital streaming music sales, which correspond to the major source of revenue in the music industry, while previous empirical literature in similar contexts mainly considered conventional sales of music in stores (Strobl and Tucker 2000; Bhattacharjee et al. 2007; Dertouzos 2008). Lastly, we consider several variables that affect the outcome, such as gender, group or solo, seasonality, while most studies analyze few variables (i.e., group/solo, national/international) (Ordanini 2006).

Although our study provides compelling empirical evidence as a pioneering work in this domain, it has certain limitations that should be addressed in future studies. First, the data we used in this study do not represent the entire Korean music market. However, we believe that this limitation does not lessen the importance of our study in the sense that a small portion of successful songs accounts for most revenue in the music industry (Seabrook 2003). Furthermore, we can extend our analysis into world music chart, though we concentrated on Korean popular music in this study. The results of analysis of world music market might be different from that of Korean music market. Second, although we consider many variables, including additional variables might improve the explanatory power on the empirical test. For example, sizable, major record labels tend to invest more in recruiting. However, anecdotal evidence suggests that minor labels may find it easier to adjust to market changes than is the case for major labels (Green 2004), so that small sized labels might be able to popularize contestants using various marketing methods. Finally, the rationale behind the success of the contestant as a professional musician can be further explored by considering the psychological reaction of the audience.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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