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Do Preferences for Pop Music Converge across Countries? – Empirical Evidence from the Eurovision Song Contest

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Abstract: The combination of the digitalization of cultural goods and facilitated cross-border availability through the internet fuels a globalization process that is often said to cause a homogenization of demand across countries, in particular, for entertainment goods as music and movies. In the markets for music, this implies that the same hits and the same artists should be popular across countries and cultures. In order to test this hypothesis, we analyze historical voting data of the Eurovision Song Contest, the worldwide biggest live broadcasted international music competition between all countries of the European Broadcasting Union. It covers the period from 1975-2016 where digitalization and internet availability were invented and evolved into mass phenomena. Consequently, according to the outlined theory of homogenization of preferences, voting should have become more concentrated on the leading artists and less focused on regional differences in taste. For the purpose of detecting concentration trends in the points allocation, we employ different indicators for measuring concentration. First, we calculate a concentration ratio, representing the accumulated total number of points of the top three, five and ten-placed countries in each year of the contest. Second, we calculate the Herfindahl-Hirschman-Index (HHI) and, third, the Gini-Coefficient for each year. Furthermore, we test trendlines for statistical significance. The results show, that our analysis cannot support the thesis of preference homogenization. We find no significant trend towards preference convergence. In contrast, some of the employed indicators and methods point towards significant, albeit weak, deconcentration trends in voting behavior for the contest.

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JEL-Codes: Z10, L82, F60, C01

1. Introduction

In the modern digital online world, songs, movies, e-books, fashion and websites reach the recipients worldwide within few seconds. The video-sharing website YouTube has nearly 900 million unique visits every month (YouTube 2015, Statistic Brain Research Institute), people watch the same television shows (à la television talent contests like Pop Idol or The X Factor), wear the same cloths and eat the same (fast) food. In the literature, this trend of global cultural convergence across industries is also known as „McDonaldization" (Ritzer 1993). The term does not exclusively focus on the fast food restaurant. It serves as a metaphor for an – alleged – effect of globalization that is further fueled by digitalization and the widespread availability of broadband internet: a convergence of tastes and lifestyles away from local traditions and towards standardized and homogenized consumption patterns worldwide.

More economically phrased, the combination of the digitalization of cultural goods and facilitated cross-border availability through the internet fuels a globalization process that is often said to cause a homogenizing trend on preferences, for instance, for entertainment goods (music, movies, etc.) but also for food, fashion and so on, manifesting in a homogenization of demand across countries (Esmer 2006; Jurgenson 2010; Ferreira & Waldfogel 2013; George & Peukert 2014). This, in turn, should promote market convergence: according to the cultural convergence hypothesis, the topsellers will be the same everywhere and international superstars and international superstar products will gain at the expense of local heroes. In the markets for music, this implies that the same superhits and the same superstar artists should be the favorites of the audience across countries and cultures. As such, the convergence process translates into a concentration process where the same group of global superstars leads the market everywhere instead of a kaleidoscope of local heroes. The pro-concentration effect should be even stronger, if the process of digitalization and internet availability is accompanied by trade liberalization and economic integration.

In order to test this hypothesis, we analyze voting data from the Eurovision Song Contest, a music competition where artists from European countries compete for votes from the participating countries. As the EBU Director General Ingrid Deltenre

puts it: *"60 years ago the first Eurovision Song Contest was held with the aim of bringing nations together. Music knows no national boundaries and provides a common language for us all. The friendships formed between the competing artists from over 40 nations come through the screen to audiences watching at home. The fact that the Eurovision Song Contest is so popular in an increasingly polarized world illustrates that the differences are smaller than we think".*[1] This competition has a 60 year history, spanning from 1956 to 2016 (and ongoing). Thus, it covers the period in time where digitalization and internet availability were invented and evolved into mass phenomena. Furthermore, economic integration has significantly proceeded in Europe through this time period as well. Consequently, according to the outlined theory of homogenization of preferences and consequently demand, voting should have become more concentrated on the leading artists and songs in the course of time. Instead of national differences in preferences and taste, voters and experts from different European countries should have converged in their choices. This is highlighted by comments like the following example after the 2015 edition of the contest suspecting this mechanism at work: "The same problem occurred this time. There were a string of favorites who got all the votes. Hence, nothing was left for the bottom half of the ranking, the places 13 to 27. That is why we [Germany] are sitting on the bottom of the table. The distribution of points has just been different" (Urban 2015).[2] In the context of the overall talk, the commentator, a long-time and well-respected expert of the Eurovision Song Contest, put up two hypotheses: (i) the voting behavior in 2015 has concentrated on the same few favorites across all countries, so that they received a larger share of the total points than usual, and (ii) this is an ongoing trend, i.e. the share of the points for the favorites is increasing over time.

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1 See http://www.eurovision.tv/page/news?id=eurovision_song_contest_receives_prestigious_charlemagne_medal

2 Original: *„Das ist auch dieses Mal das Problem gewesen. Es gab eine Reihe von Favoriten, die haben auch wirklich alle Stimmen abgesahnt und deswegen blieb für die zweite Hälfte des Tableaus, für die zweite Hälfte der 13-27 nichts übrig und deswegen sitzen wir nun da unten. Die Verteilung war einfach anders"* (http://www.ardmediathek.de/tv/Eurovision-Song-Contest-2015/Peter-Urban-Man-kann-Ann-Sophie-nichts/Das-Erste/Video?documentId=28484804&bcastId=9525092; 19.10.2015).

However, does the claimed increasing concentration on the top performers actually take place? In this paper, we provide an empirical analysis of the development of the concentration of points allocated to the top performers. We employ a set of different indicators for measuring concentrations, namely simple concentration ratios, the Herfindahl-Hirschman-Index (HHI), and the Gini Coefficient. Furthermore, econometric techniques are used to detect concentration trends in the voting data of the Eurovision Song Contest. However, our analysis cannot support the hypothesis of cultural preferences homogenization: the employed indicators and methods do not reveal a significant pro-concentration trend in the market of the contest. On the contrary, the majority of the employed indicators and methods indicate significant deconcentration trends in the market of the contest. In general, the magnitude and level of concentration is very low.

The paper proceeds as follows. The second section reviews earlier studies in the literature focusing on the topic of convergence and homogenization of cultural preferences. Section three and four form the main part, containing descriptive analysis of points allocation, the different indicators for measuring concentration, the econometric analysis and its empirical results. The paper concludes with a discussion of our results in section five.

2. Literature Review

2.1 Previous Research on Cultural Convergence

While Muska et al. (2014) and Drew (2012) deal with homogenizing trends on preferences and cultural convergence in the field of the tourism industry and international tourism marketing respectively, López et al. (2008) argue from a theoretical point of view about the role of the internet, that may support and provide a process of cultural convergence among countries.

There are only very few empirical studies on convergence and homogenization in media and cultural economics so far. George and Peukert (2014) and Ferreira and Waldfogel (2013) are thematically closely related. They study the topic of whether

trade and current technology replace local culture and local music. George and Peukert (2014) deal with the question whether the lower costs of exchanging cultural goods lead to a homogenization trend of demand in the market for music. If there is a convergence trend in music, same international music-hits should take the same leading chart positions across the countries. George and Peukert (2014) put their empirical research on the role of the video-sharing website YouTube, which was established in 2005. In order to prove, they investigate the change of weekly matches of the number of songs and artists on the market for popular music across Germany, Austria and the US from 2002 until 2013 by also focusing on the Youtube ban in 2009 (videos were blocked by a contract dispute only in Germany). Generally, they find that the presence of YouTube increases the number of US hits on the single charts in Europe, which may be interpreted as pointing towards more convergence. Furthermore, their data displays an increase of the speed of the hit cycle in the YouTube age. However, George and Peukert (2014) conclude, despite the introduction of YouTube, there is still a high demand for domestic music. They stress the fact that "although we find that the net impact of the YouTube platform is to widen the reach of international hits, the magnitude of estimated effects are modest, suggesting that YouTube will not drive out the market for local artists" (George and Peukert 2014: 19).

Likewise, Ferreira and Waldfogel (2013) focus their study on the convergence of tastes for worldwide hits in the market for music. They use a unique dataset on music charts that corresponds over 98 % of the global market for popular music in order to offer details about the demand of global music and their trade since 1960 until 2007. Their collected 1,202,554 chart entries that cover 68,283 songs and a number of 23,377 artists from 22 countries. Inter alia, they could not find a connection between the growth of communication channels (MTV and Internet) and the simultaneous decrease of domestic music consumption. They also find, against the presumption of US dominance in the world entertainment industry, that music trade is approximately proportional to countries' GDPs and that even smaller countries have a

larger proportional share of trade than the US. Their "(…) findings suggest that concern about cultural domination by large economies – particularly the US – is misplaced for music" (Ferreira and Waldfogel 2013: 30).

Our paper adds to the literature by analyzing a live music event where audience in dozens of countries watches the same performances and vote for their favorite performances. Furthermore, the participating countries predominantly come from Europe, so that the process of cultural convergence should be particularly strong due to (relatively) close geographic proximity. Thus, it is interesting to analyze whether this unique setting yields the convergence trends that the literature struggles to identify in broader contexts.

2.2 The Eurovision Song Contest

We choose the annual Eurovision Song Contest (ESC) as relevant example for testing our hypothesis, because music is said to be the most probable potential source of (cultural) convergence (Cheng et al. 2008). Furthermore, the whole historical voting data of the ESC is available, it covers the period in time where digitalization and internet availability were invented and it always takes place at the same time once a year (in spring).

Nowadays, the ESC is one of the most successful and longest-living international music competitions and television shows worldwide. At the same time, it is the world's largest entertainment broadcast with around 200 million international viewers. The main aim of this contest is to "promote high-quality original songs in the field of popular music, by encouraging competition among artists, songwriters and composers through the international comparison of their songs" (*EBU*/*UER* 2013). In the end of the contest, populations of the participating countries (in fluctuating combinations of expert juries and audience voting) vote for the performances that each participating country represent, however, they must not vote for their own country. In 2015, the Eurovision Song Contest has been awarded a Guinness World Record for the "World's Longest Running Annual TV Music Competition", because it has as

the only television show successfully bringing nations together for a remarkable period of 6 decades[3]. Additionally, one year later (2016) it has also been awarded the "The Charlemagne Medal for European Media" (*médaille charlemagne pour les médias européens*), which is a European media award. It honors personalities or institutions within the field of the media that have supported the development of European unity and a creation of a European identity in a special way.[4]

The first Song Contest (former Grand Prix Eurovision) took place in Lugano on the 24th of May, 1956. However, initially only seven nations participated.[5] All active Members (56 countries) of the European Broadcasting Union (EBU) are invited to take part in the ESC. Although membership is not restricted to European countries, for instance, Morocco, Israel and Australia participated in the contest in the past. Still, its geographical reach predominantly covers Europe. However, due to geographical proximity and supporting factors like an advanced economic integration, the contest offers a particularly striking example: if homogenization trends occur, they should be visible in the ESC.

In the past years, the details of the voting system were frequently modified. The current system of scoring, the so called "douze points"-voting-system, was introduced in 1975 and is based upon every country creating its own ranking of the top 10 performances. The participant who obtains the highest number of votes within a country, receives twelve points, the second place will be rewarded with ten and the third place with eight points. The performers of the seven following ranks receive decreasingly seven to one point. Nine and eleven points are not awarded. Expectedly, the winner of the contest is finally the country having received the highest total number of points. After qualification through semi-final systems and other criteria, a maximum of 26[6] countries participate in the final contest. In the end, all participating countries vote in the final, but only participants performing in the final receive votes. Because of this modification, the total number of countries that are allowed to vote

3 See http://www.ebu.ch/news/2016/04/eurovision-song-contest-receives#sthash.SDzJeIBs.dpuf.
4 See http://www.ebu.ch/news/2016/04/eurovision-song-contest-receives.
5 For comparison, there were 42 participating countries in Stockholm in 2016.
6 Except for 2015 when 27 countries competed in the final.

increases from 24 in 2003 to, for example, 36 in 2004 and an amount of 43 voting countries in 2008, while 25 countries participated in the final of the contest. Moreover, with the introduction of a televoting system from 1997/1998 onwards, not only a jury of experts decided upon the final results and ranks of the participating countries but also audiences in public were allowed to vote for their preferred songs. After some delicate adjustments, the final points allocation of each country is currently compiled half-and-half by votes of the audience and a jury of experts. In case of a draw, audience votes have priority over the jury votes.

The ESC has been subject to empirical analysis in media and cultural economics. Various researchers have focused their study on voting patterns and collusive voting behavior in this song contest. These papers establish empirical evidence for (culturally) biased voting behaviors, which are based on geographical closeness, political relations, and linguistic, religious, and ethnical factors. These variables are allegedly caused by the audience and jury influence in the voting process with the most recent and most elaborate publications being by Fenn et al. (2006), Ginsburgh and Noury (2008), Spierdijk and Vellekoop (2009) as well as Budzinski and Pannicke (2016).[7] However, to our best knowledge, none of the papers has dealt with concentration trends.

3. Data and Descriptive Statistics

In our paper, we perform an empirical study, comparing different indicators measuring concentration trends in points allocation in the Eurovision Song Contest. Therefore, we gather the historical voting data set of the ESC from 1975-2016.[8] An official committee publishes the voting outcomes each year. The results of the voting illustrate the total number of points each partaking country received in the contest. We collect the years 1975-2016 (inclusive) for our data analysis because there were no changes of the "douze points"-voting-system since its introduction in 1975. In total,

[7] Other relevant papers include, inter alia, Haan et al. (2005), Clerides and Stengos (2006), Yair (1995).

[8] See http://www.eurovision.tv.

954 times countries received points throughout the investigated period. All participating countries who received points throughout our sample are listed in Table 1. Here you can find the number of times each country participated (Year), the points' standard deviation, the mean points awarded per country over all partaking years as well as their minimum and maximum points in total of a year. Austria, for example, receives around 50 points on average over a period of 31 years. Denmark likewise participated 31 times but with higher points on average, more precisely with points of 75 on average. Denmark received at minimum 5 points in a contest, their maximum number of receiving points were 281.

Table 1: Descriptive Statistics

Participating countries	Year	mean points awarded	(sd) points Awarded	(min) points Awarded	(max) points awarded
Albania	7	72	39.58535	34	146
Armenia	9	133	70.30647	34	249
Australia	2	353.5	222.7386	196	511
Austria	31	49.83871	57.40157	0	290
Azerbaijan	9	143.1111	70.92856	33	234
Belarus	4	63.5	55.89574	18	145
Belgium	31	60.19355	62.39574	2	217
Bosnia and Herzegovina	18	69	54.3637	13	229
Bulgaria	2	232	106.066	157	307
Croatia	17	64	34.63741	24	131
Cyprus	27	51.59259	37.85322	2	170
Czech Republic	1	41	.	41	41
Denmark	31	74.83871	63.4524	5	281
Estonia	14	81.64286	53.73812	2	198
Finland	31	38.22581	52.20709	0	292
France	41	69.60976	55.32218	2	257
Georgia	7	90.14.286	31.44004	50	136
Germany	41	65.58537	53.7308	0	246
Greece	35	78.08571	64.37453	10	252
Hungary	12	68.25	51.36876	3	143
Iceland	24	54.75	48.89407	0	218
Ireland	34	86.55882	58.01577	5	226
Israel	31	76.19.355	49.71748	4	172
Italy	23	93.78261	59.54292	27	292
Latvia	10	97.1	67.9893	5	186
Lithuania	12	54.41667	62.97107	0	200
Luxembourg	19	49.21053	38.88527	4	142
Macedonia	8	46.125	21.11491	16	73

Malta	22	79.22727	54.27262	1	192
Moldova	8	78	41.57266	22	148
Monaco	5	66	45.17189	12	107
Montenegro	2	40.5	49.49747	37	44
Morocco	1	7	.	7	7
Netherlands	29	66.55172	53.29338	4	238
Norway	38	66.73684	74.86048	0	387
Poland	13	57.30769	67.78936	10	229
Portugal	30	32.7	25.13707	0	92
Romania	17	69.88235	50.99495	6	172
Russia	20	147.8	1.194.834	17	491
San Marino	1	14	.	14	14
Serbia	7	138.1429	79.66477	53	268
Serbia and Montenegro	2	200	89.09545	137	263
Slovakia	3	14	5.567764	8	19
Slovenia	13	42.76923	30.57001	7	96
Spain	42	53.66667	34.32958	0	119
Sweden	40	100.875	8.565.949	2	372
Switzerland	29	61.86207	45.4224	0	148
Turkey	33	60.48485	60.30502	0	195
Ukraine	13	170.6923	135.785	30	534
United Kingdom	42	78.16667	55.46298	0	227
Yugoslavia	13	56.15385	44.02622	1	137
Total	42	7.240.881	6.578.987	0	534

4. Concentration in the Voting Market of the ESC

4.1 Concentration Ratios, HHI and Gini Coefficient

In case of a homogenizing trend on preferences and culture convergence, the contest´s point allocations should have become more concentrated on the leading artists over the investigated period. Conversely, that means regional differences should have become less concentrated over time. In order to measure and compare the different points allocations from the beginning of the "douze points" system in 1975 until 2016, we work with three different measures.

First, we calculate the concentration ratio, which is usually used in economics to measure the concentration of market shares in a distinct market. If a market or an industry is dominated by a small number of large firms, the value of the concentration ratio is high, which means stronger concentration power and (more often than not) less competition, and vice versa. The concentration ratio is calculated by the sum

of the market shares of the largest n firms in the market. In our study, we employ this indicator in order to measure the "market share" of the top n performers in the "market for votes", expressed by the points allocation "market for points". We measure the share of points (= market share) won by the top 3 (CR-3), top 5 (CR-5), and top 10 (CR-10) participating countries for each year of the contest. If there is a trend of homogenization and a pro-concentration effect, the accumulated share of the top three-, five- and ten-placed countries should increase, i.e. the top three-, five- and ten-placed of later years score continuously more points compared to those top three, five and ten-placed of earlier years. For example, for calculating the CR-5 concentration ratio, we sum the percentage of points share owned by the top 5 participating countries with the highest number of points, where P1 is the country with the highest amount of points (the winner of the contest), P2 the second-placed, P3 the third-placed and so forth. M is the total number of all distributed points within a contest in year t.

$$CRX_{\mathrm{t}} = \frac{\mathrm{P1+P2+P3+ \ldots Px}}{\mathrm{M}} \qquad (1)$$

A significant rise of concentration ratios indicates an increase of preference homogenization. Since concentration ratios do not take into consideration all market shares of firms (or in our case: participants) in a particular market, they may represent a biased picture of concentration. Furthermore and due to the fact that the value of the CR may also be biased as the number of participating countries in the final increase, we additionally calculate HHI for measuring concentration.

Thus, we secondly calculate the Herfindahl-Hirschman-Index (HHI; named after economists Orris C. Herfindahl 1950 and Albert O. Hirschman 1945, 1964) for each year, which focuses on all firms in an industry and therefore captures imbalances and variations within all firms in a particular market. Because of its main advantage, the Herfindahl-Hirschman-Index is a widespread accepted measurement of market concentration in industrial economics and competition law (inter alia Borenstein 1989, Evans & Kesides 1993, Gilbert 1984, Sulivan 1985; Sumner 1981). It measures the sum of squared market share of all firms competing in that particular market. The

value of the HHI ranges from zero to 10,000. The higher the value of the HHI, the higher is market concentration. In antitrust economics, HHI values above 2500 imply highly concentrated markets. Moderately concentrated markets are characterized through values between 1500 and 2500.[9] We convert the HHI into an indicator of preference homogenization for the ESC by looking at each country's share of points of each contest since 1975. Thus, the index measures the sum of the quadratic share of points won by each country in a contest in year t. Consequently, we calculate the HHI as:

$$HHI_t = \sum_{i=1}^{N} MS_i^2 \qquad (2),$$

where MS_i is the market share of country i in year t and N is the number of participating countries receiving points in the contest. A significant rise of HHI indicates an increase of preference homogenization and therefore a decline in heterogeneity of demand across countries. Note that we are only interested in the change of the HHI from year to year. We do not interpret the level of the HHI (like in antitrust economics).

A third concentration measure is the so-called Gini-coefficient, developed by Corrado Gini. It is mostly known in economics for its application for measuring income or wealth distribution (inter alia, Lambert 1993). However, it is also used for other purposes, for instance, Schmidt and Berri (2001) use Gini-coefficients to measure competitive balance in sports leagues. We adapt the indicator for measuring the homogenization trend in the ESC. As a measure of statistical distribution, the Gini-coefficient is used to point out inequalities. Consequently, values between one and zero are determined. In general, the values are expressed as percentages. The closer the calculated value is to zero, the more balanced and equal is the distribution of the points among all countries. A higher Gini-coefficient indicates that the votes concentrate on just a few participating countries. Values closer to one suggest a contest

[9] For instance, these classifications are used by the Antitrust Division of the U.S. Department of Justice. See https://www.justice.gov/atr/herfindahl-hirschman-index

with a few countries that spread most of the points. Thus, high values signal market concentration and a decline in heterogeneity across countries
We define the Gini-coefficient as:

$$D_{Gt} = \frac{2\sum_{j=1}^{n} jx_j - (1+\mathrm{n})\sum_{j=1}^{n} x_j}{\mathrm{n}\sum_{j=1}^{n} x_j} \qquad (3),$$

where *n* represents the number of evaluated countries in year t and x_j the total number of points per country in year t.

When applying these concentration measures, we have to consider that they may be biased to the changing number of participants in the Eurovision Song Contest. Appendix table 1 shows that the numbers vary between 19 and 27 with a (non-monotonic) trend towards more participants in the ESC final in the course of time. Thus, the voters allocate their votes (and thus the points) in tendency among more candidates. Ceteris paribus, this may drive down concentration, i.e. of the CRs. The HHI should be less sensitive because of its emphasis on the higher shares. In order to get an indication whether this problem is relevant for our analysis, we tested for statistical correlations in order to see if there is a relationship between the changings of participating countries in the final and the changings of our measures from one year to another. We could not find any significant correlations between the difference of the number of participating countries (ΔPart.) and the ones of the applied indicators ΔHHI, ΔCR_3, ΔCR_5 and ΔCR_{10}. Only ΔGini-coefficient is significantly correlated to the difference of the number of participants on a significance level of 0.05 (5%) (see appendix tables 2 and 3). However, Gini shows an increasing concentration with the increase in participation. Altogether, we derive confidence that the increasing number of participants does not counterbalance a possible pro-concentration effect.

4.2 Concentration Trends in the ESC?

Figure 1 shows the results of the Concentrations Ratios measured by the market share of the top 3, 5 and 10 countries in each contest during the entire sample pe-

riod. In 2001, 57% of the distributed points were concentrated on the Top 5 participating countries. The concentration ratios settle at an average of 33.1% (CR-3), 48.9 % (CR-5) and 76.3 % (CR-10). In general no pro-concentration trend is visible. Instead, continuous fluctuations occur. CR-3 and CR-5 reach all-time peaks in 2015 (with value of 41 and 59 per cent, respectively), whereas CR-10 displays its fourth highest all-time value (83 per cent). However, it rather looks like an exception and not like a longer-run trend. No midterm or long-term pro-concentration trend is notable. The simple, descriptive application of the concentration ratios does not support the homogenization hypothesis.

Figure 1: Concentration Ratios (CR-3, CR-5, CR-10) of the ESC points allocation from 1975-2016

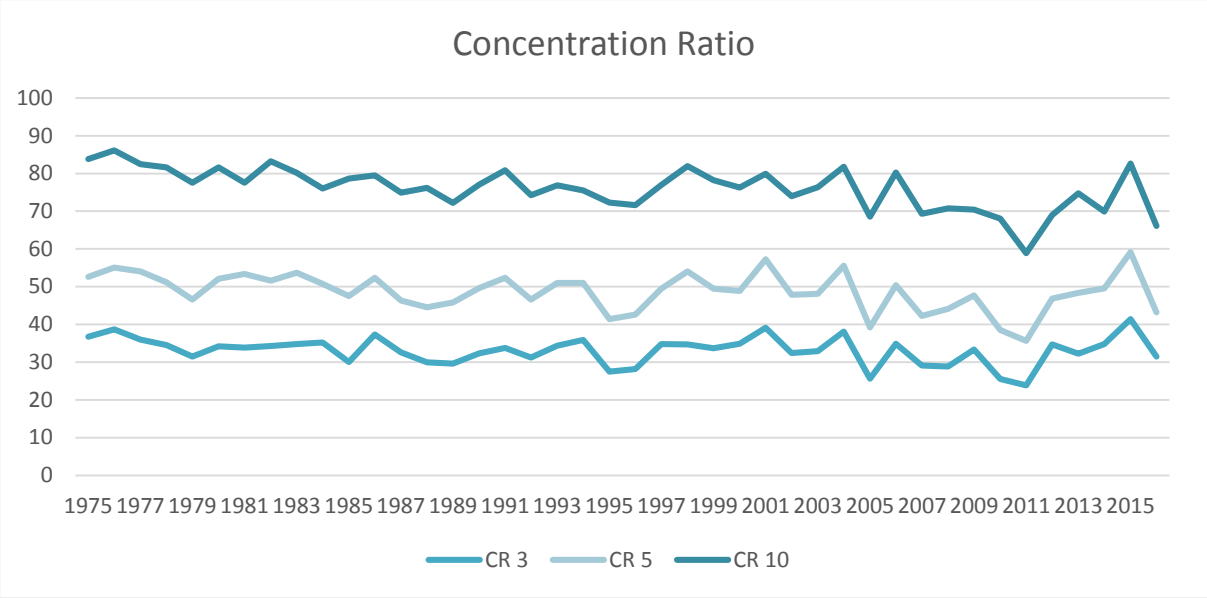
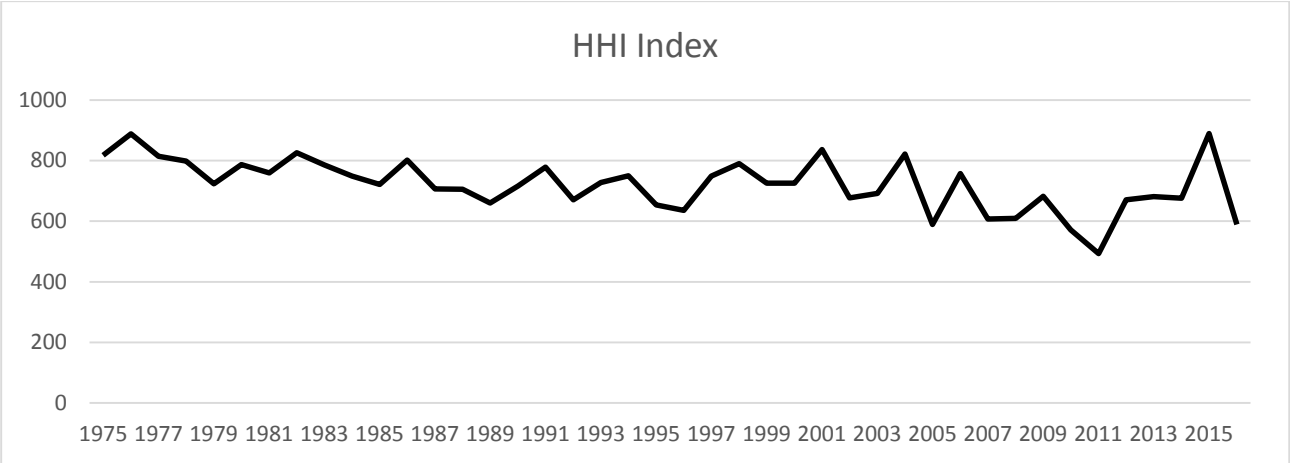


Figure 2 summarizes and illustrates the HHI for each year. The HHI is constantly below a value of 1500, which means that the distribution of the points is generally not highly concentrated. The HHI varies around a mean value of 724.8. The lowest HHI value is dated in 2011, which was 493. The highest HHI, which means the strongest concentration in our sample, was in 2015 with a value of 889. Again, while 2015 indeed represents a year of high points concentration towards the top performers, no general trend towards more concentration can be identified. If at all, the trend

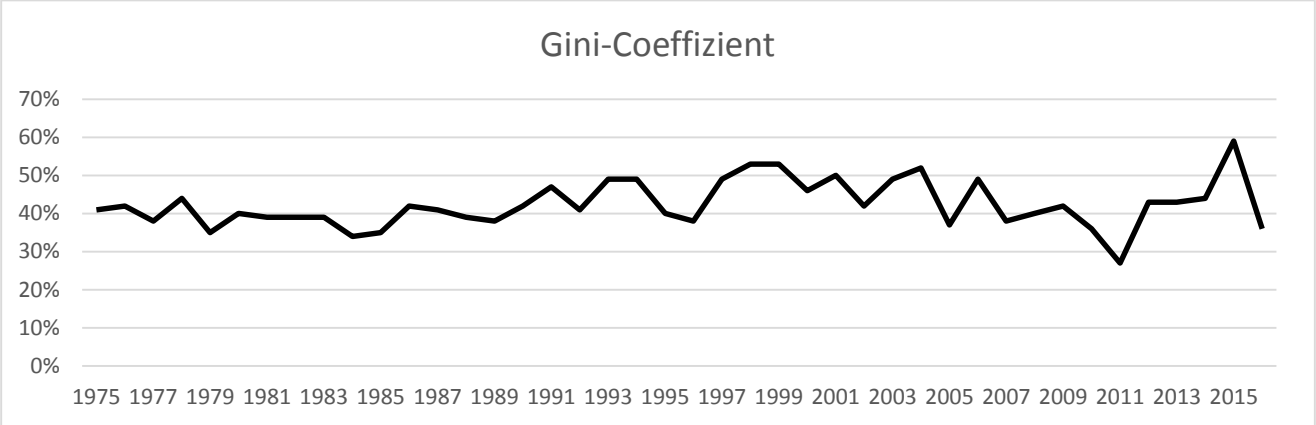
points in the direction of lower concentration and therefore an increase of heterogeneity of demand across countries – with 2015 perhaps representing an outlier. Accordingly, the market share of the top countries receiving points has seemingly not increased.

Figure 2: HHI of the ESC points allocation from 1975-2016



We can see the same picture with the Gini-coefficient (figure 3). In general, it appears to fluctuate up and down year by year. This implies that a year where points are more equally allocated is often followed by a year where points of the participating countries showing a pro-concentration effect. And again, 2015 indeed represents the year with an all-time concentration high of approximately 0.59. Still, the all-time low is only four years ago in 2011 (0.27).

Figure 3: Gini-Coefficient of the ESC points allocation from 1975-2016



From looking at the standard concentration measures in economics, we cannot support the hypothesis of a longer-run or midterm pro-concentration trend in the ESC market of points. The development is rather characterized by continuous fluctuations with some years displaying a stronger concentration of votes across Europe towards the top and others the opposite. However, the year 2015 indeed appears to be a year with an exceptionally high concentration of votes on the top performers.

4.3 Econometrics – Methods and Results

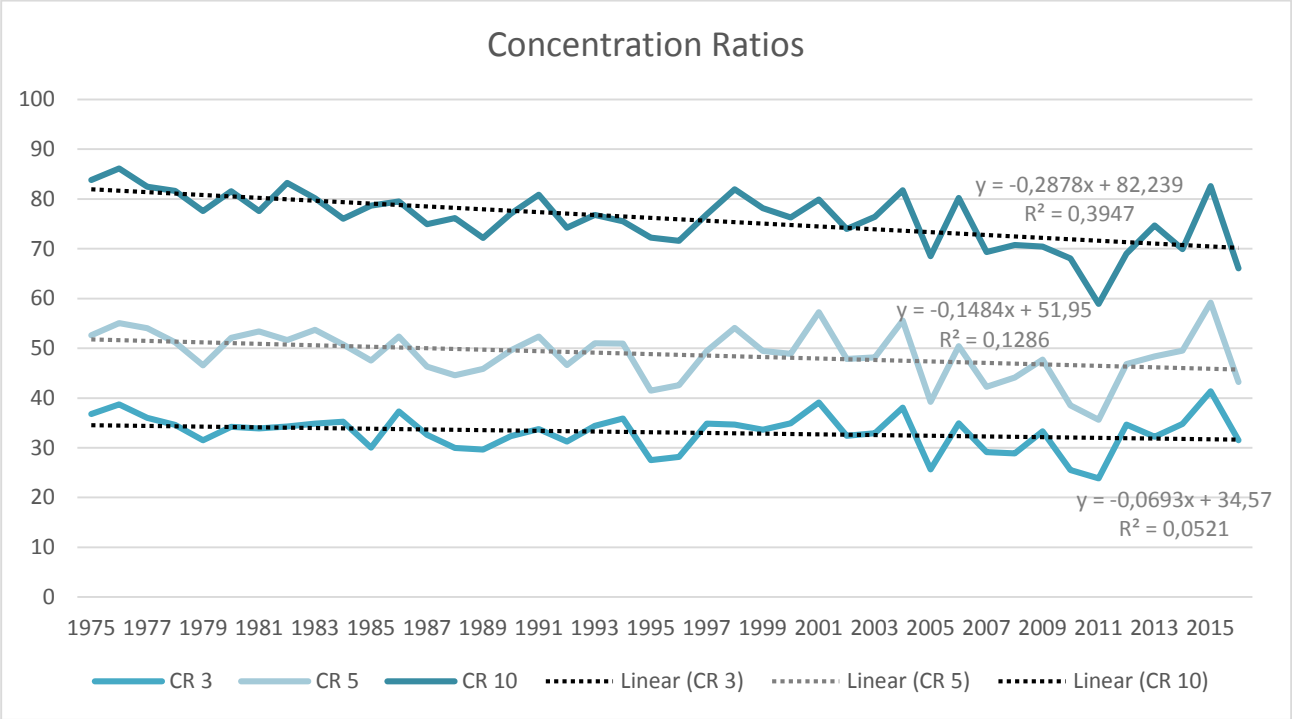
To formally test whether a linear trend occurs, we run a set of time series regression with a time trend as the independent variable. Accordingly, we define Y_{ti} as the dependent variable (1):

$$Y_{ti} = \alpha_{0i} + \beta_{1i} \cdot t + \varepsilon_{ti} \qquad (4),$$

where Y_{ti} represents the concentration ratio (CR3, CR5 and CR10), HHI and Gini-Coefficient, β_{1i} t the independent variable time (measured in years) and $\varepsilon_{t,i}$ the corresponding error term.

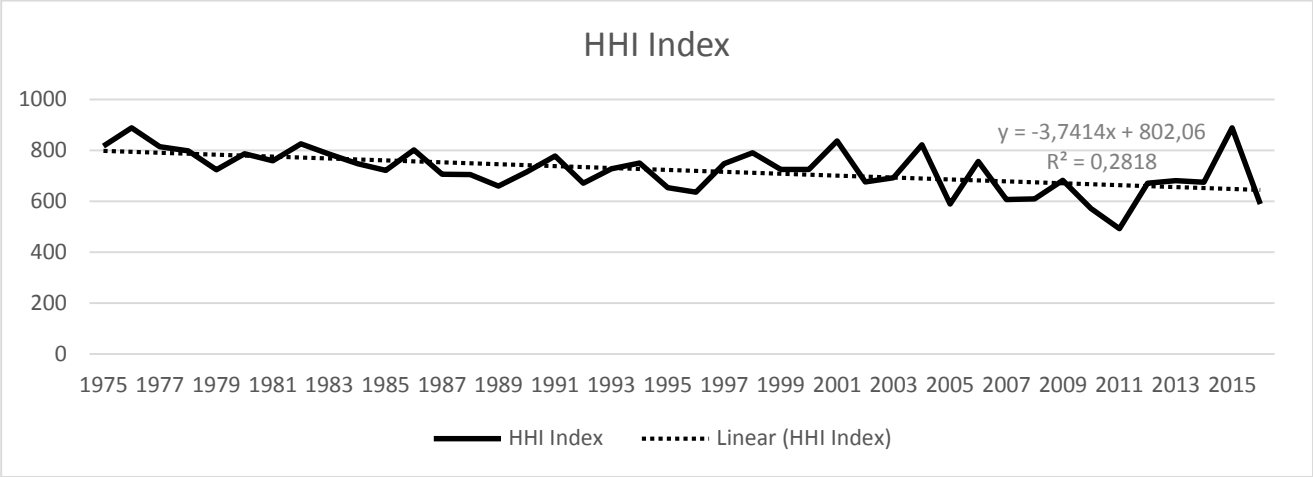
In order to see whether a trend exists, a time series regression model was estimated. The following figures show the results of running a regression of CR, HHI and Gini-Coefficient against time with an assumed linear trend. In general, the results from our linear trend model do not confirm the results by George and Peukert (2014) to the extent that a homogenization trend of preferences can be show significantly.

Figure 4: Linear Regression Trendline Using Least Squares – CR, 1975-2016



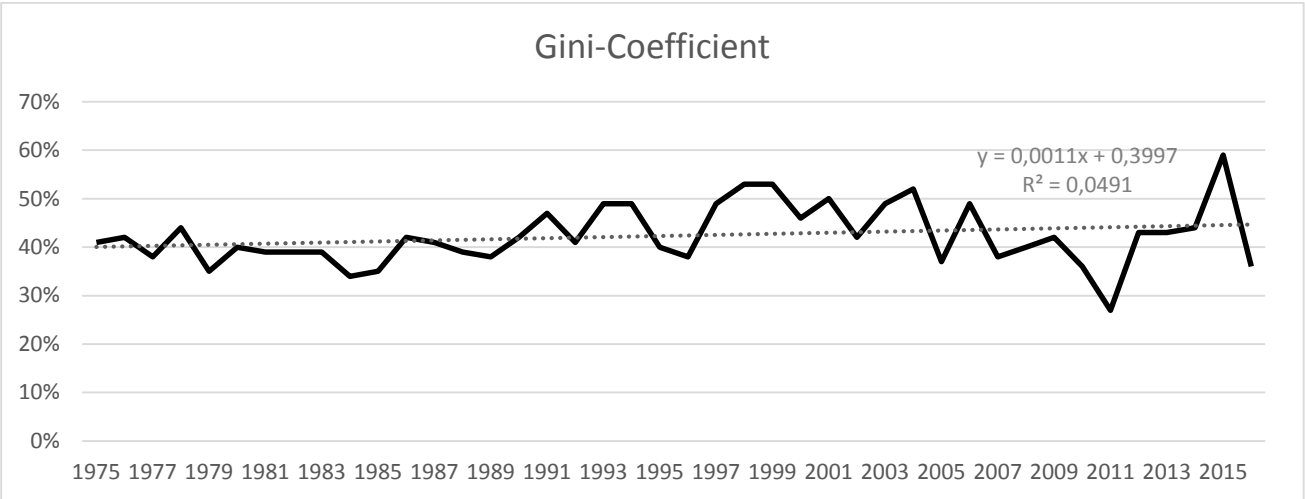
No significant trend occurs in the data of CR-3. The concentration ratio rise and fall with no particular pattern. On the contrary, a significant trend occurs when looking at concentration ratios representing the accumulated total number of point´s share of the five- and ten-placed countries in each year of the contest. CR-5 shows a significant negative trendline on a one-star level, while CR-10 decrease significantly on a three-star level (see table 2). Therefore, we cannot find a pro-concentration effect. On the contrary, the employment of concentration ratios suggests a trend towards a lower concentration during the period of time, i.e., a heterogenization of tastes.

Figure 5: Linear Regression Trendline Using Least Square – HHI, 1975-2016



When looking at the trendline of the HHI, we find a linear function with a negative slope (figure 5). This equation shows that during the sample period, the HHI of voting significantly decreases by an average of 3.54 per year. Again, the hypothesis of a homogenization trend is rejected. In contrast, a significant deconcentration is derived.

Figure 6: Linear Regression Trendline Using Least Square – Gini, 1975-2016.



In contrast to the other concentration measures, the trendline of the Gini-coefficient displays a trend towards more concentration of the points allocation (figure 6). This would imply support for the hypothesis of cultural convergence. However, the trend is not significant.

Table 2: Regression of HHI, CR-3, CR-5, CR-10 and Gini Coefficient against time (year) with a linear trend

	HHI	CR3	CR5	CR10	Gini-Index
Year	-3.741***	-0.0693	-0.148*	-0.288***	0.00112
	(0.945)	(0.0468)	(0.0611)	(0.0564)	(0.000781)
_cons	802.1***	34.57***	51.95***	82.24***	0.400***
	(23.31)	(1.155)	(1.508)	(1.391)	(0.0193)
N	42	42	42	42	42
R-sq.	0.2818	0.0521	0.1286	0.3947	0.0491
Adj. R-sq	0.2297	0.028	0.107	0.380	0.025

t statistics in parentheses; $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

4.4 Comparison of Concentration Trends before and after the introduction of Televoting in 1998

The ESC consists of two different groups of voters: (i) music experts and music industry representatives form national juries, and (ii) the television audience votes directly via various telecommunication channels. During the years, the voting system and the weight of the votes between those two groups has changed. In the literature on ESC voting behavior, there is indication that juries and the audience differ in their voting behavior with respect to voting biases (inter alia, Haan et al. 2005; Clerides and Stengos 2006; Spierdijk and Vellekoop 2009). Although it has not been analyzed so far, expert juries and audiences may also be affected by cultural convergence to different degrees and extents. Notwithstanding, it is implausible to claim that one of the two groups – expert juries and audience – is not subject to the forces of cultural convergence at all. Still, if the influence differs in extent, our analysis may underestimate a possible homogenization trend when using the different indicators without looking separately at different voting regimes. From 1975 until 1997, there was no audience voting and all points were allocated by expert juries, whereas from 1998 until 2016 either both juries and audience voted (with equal weight) or only televoting determined the points allocation (the latter in only few years from 1998 to 2008). Consequently, we separated our dataset into two samples in order to detect differences due to the major regime change.

Table 3: Comparison of the averages of HHI, concentration ratios and Gini-Coefficient before (1975-1997) and after the introduction of the televoting system (1998-2016)

Year	*HHI Index*	*CR 3*	*CR 5*	*CR 10*	*Gini-Coeff.*	*Participants*	*Points*
1975-1997	748,85462	33,378235	49,63866	78,13100	0,40913043	20,913044	1215,478
1998-2016	688,641493	32,717530	47,695795	73,53244	0,44157895	24,842105	2164,316

Looking at the concentration ratios (figure 7 and 8), there seem to be very little differences between the two regimes. In other words, the introduction of audience voting did not speed up a convergence process. Predominantly, the oscillations seem to have increased with audience voting.

Figure 7: Linear Regression Trendline Using Least Squares – CR, 1975-1997

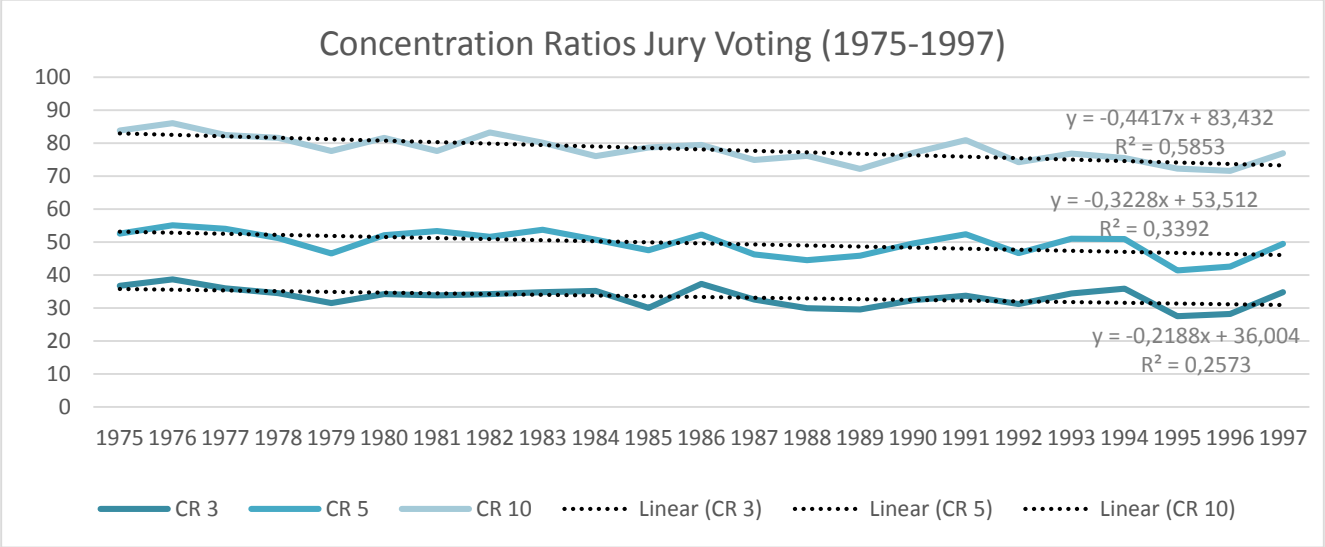


Figure 8: Linear Regression Trendline Using Least Squares – CR, 1998-2016

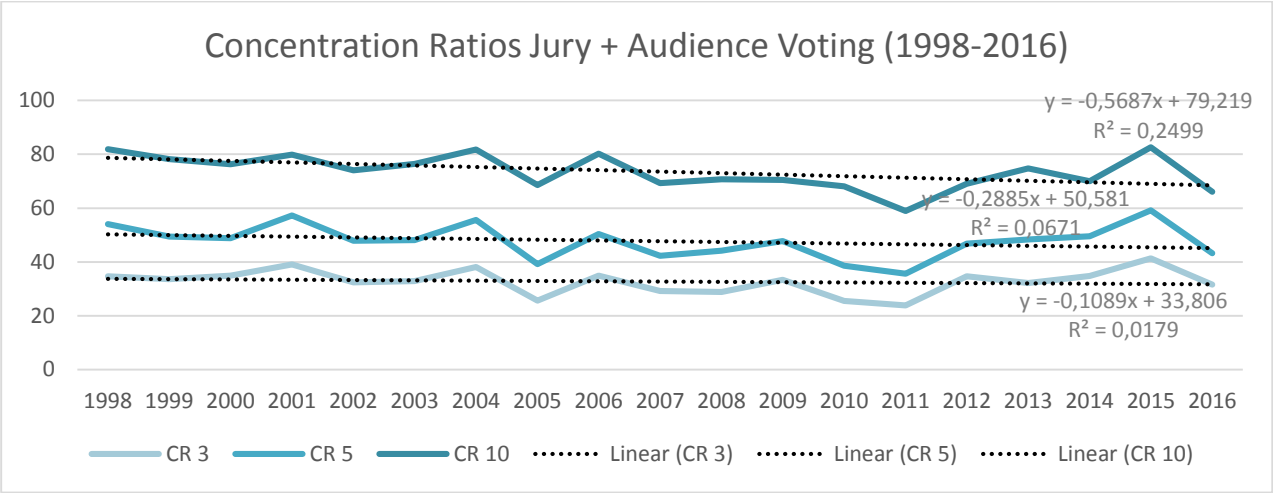


Figure 9: Linear Regression Trendline Using Least Square – HHI, 1975-1997

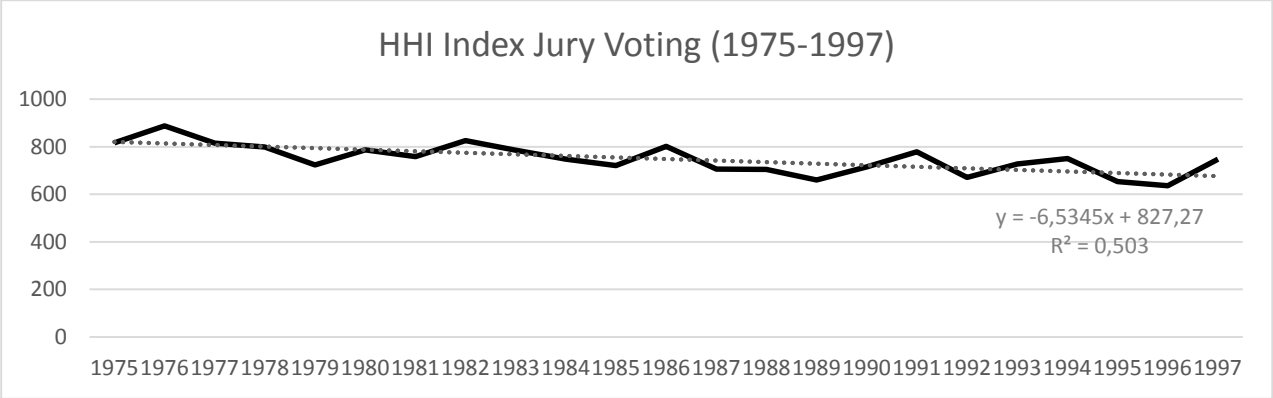
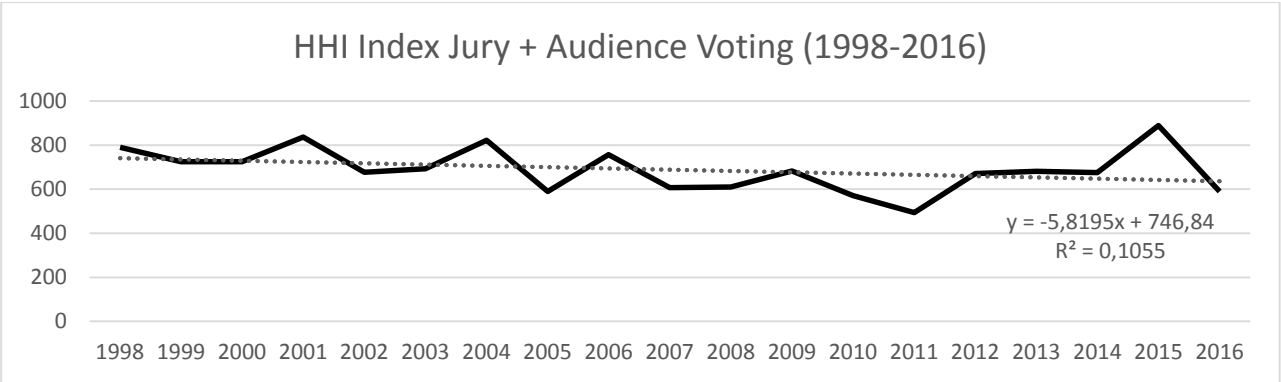


Figure 10: Linear Regression Trendline Using Least Square – HHI, 1998-2016



Employing the HHI again shows very little differences. Quite in contrast to the convergence hypothesis, the concentration appears to be decreasing with the introduction of the audience voting. This may indicate the audience is less prone to cultural convergence than expert juries. Again, fluctuations increase after the introduction of audience voting.

Figure 11: Linear Regression Trendline Using Least Square – Gini, 1975-1997

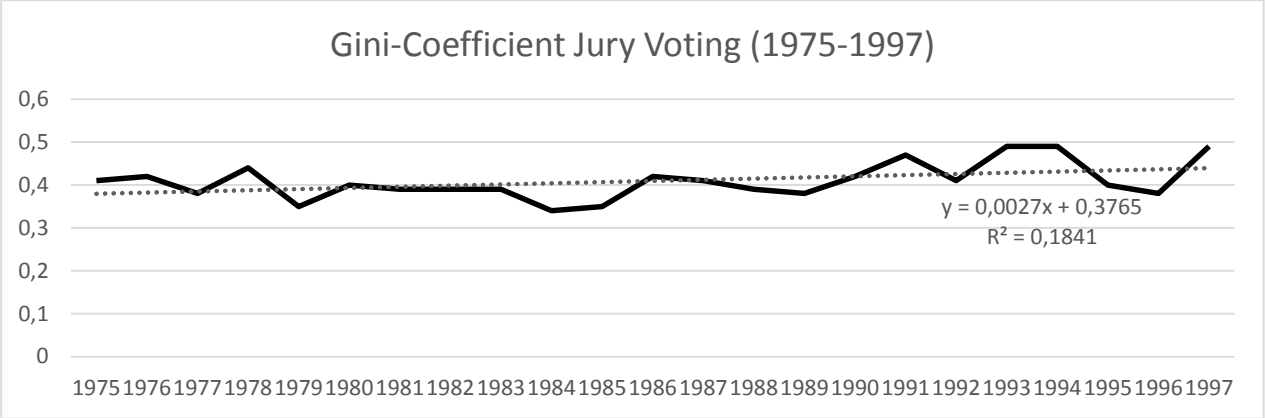
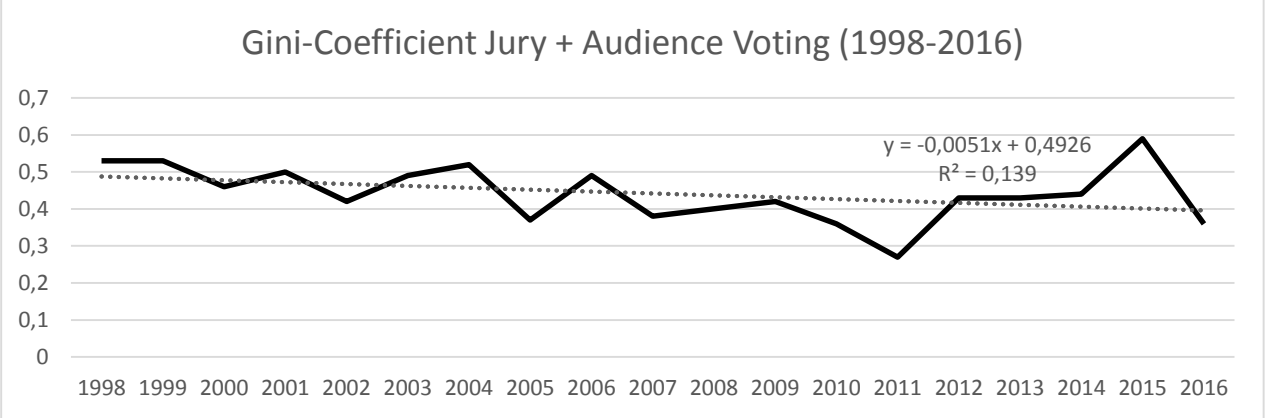


Figure 12: Linear Regression Trendline Using Least Square – Gini, 1998-2016



When looking at the gini coefficient, there is an interesting effect in the data: the two regimes differ from each other in so far as the functions show opposite slopes. While the slope of the jury-voting function is positive (figure 11), the gini coefficient of the audience-voting-function decreases gradually (figure 12). As mentioned in 4.3, the trendline of the Gini-coefficient was the only function that displays a trend towards more concentration of the points allocation (see figure 6). This would confirm

the hypothesis of cultural convergence. However, the trend can only be seen when focusing the trendline of expert juries on a significance level of 0.05 (5%) (table 4). The trend of the Gini Coefficient seemingly reverses with the introduction of the audience voting. This may show the audience is, again, less susceptible to a trend of a homogenization than expert juries. Nevertheless, this trend is not significant (table 5), so we should be reluctant with interpretations. Furthermore, the regression model for the 1998-2016 period (table 5) suggests with respect to its sample size and its very low values of adjusted R^2 (even a negative value in CR3) that its economic relevance is restricted and the model is quite poor because it does not fit the data. The results may be improved with the increase of sample size, what is unfortunately not possible so far. Altogether, a convergence trend cannot be supported.

Table 4: Regression of HHI, CR-3, CR-5, CR-10 and Gini Coefficient against time (year) with a linear trend, 1976-1997

1975-1997	HHI	CR3	CR5	CR10	Gini-Coefficient
Year	-6.534***	-0.219*	-0.323**	-0.442***	0.00272*
	(1.417)	(0.0811)	(0.0983)	(0.0811)	(0.00125)
_cons	827.3***	36.00***	53.51***	83.43***	0.377***
	(19.43)	-1.112	-1.348	-1.113	(0.0171)
N	23	23	23	23	23
R-sq.	0.5030	0.2573	0.3392	0.5853	0.1841
adj. R-sq	0.479	0.222	0.308	0.566	0.145

*t statistics in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001*

Table 5: Regression of HHI, CR-3, CR-5, CR-10 and Gini Coefficient against time (year) with a linear trend, 1998-2016

1998-2016	HHI	CR3	CR5	CR10	Gini-Coefficient
Year	-5.820	-0.109	-0.289	-0.569*	-0.00511
	(4.109)	(0.195)	(0.261)	(0.239)	(0.00308)
_cons	746.8***	33.81***	50.58***	79.22***	0.493***
	(46.85)	(2.228)	(2.974)	(2.725)	(0.0351)
N	19	19	19	19	19
R-sq.	01055	0.0179	0.0671	0.2499	0.1390
adj. R-sq	0.053	**-0.040**	0.012	0206	0088

*t statistics in parentheses, * p < 0.05, ** p < 0.01, *** p < 0.001*

5. Discussion and Implications

The combination of globalization, digitalization and the widespread availability of broadband internet is often believed to cause a convergence of tastes and preferences across countries and cultures, in particular regarding entertainment products (cultural convergence hypothesis). We contribute to the empirical analysis of this topic by analyzing voting data from the Eurovision Song Contest, a competition of popular music, where each country presents a song and expert juries and the audience from all countries vote for their favorite performances. According to the cultural convergence hypothesis, votes should concentrate in the course of time on the same hit performances, leading to an increased concentration of points on the side of top positions – in contrast to a rather even distribution of points among the participants. Both representatives of the ESC organizers and long-standing experts of the contest have expressed that according to their perception this convergence or concentration process takes place (see section 1). In order to review these assessments, we apply three different concentration measures – concentration ratios, the HHI, and the Gini coefficient – and test for significant time trends.

Altogether, our empirical analysis of the points allocation development in the ESC during the last four decades does not support the hypothesis of preference convergence. None of the employed measures displays a significant increase in the concentration of points on the top positions. Only the Gini coefficient yields a positive sign, indicating an increase in concentration. However, it is not significant, in particular not for the time period after 1998. Consequently, we find no indication that the pop music tastes of the citizens of European countries converge in the course of time along with the ongoing process of digitalization and internationalization of (internet-based) music platforms (video streaming, legal and illegal downloading, audio streaming, etc.). To that regard, the observation of ESC experts cannot be substantiated by our empirical research.

Quite in contrast to the convergence hypothesis, we find that some measures display a significant trend towards a deconcentration of the points allocation, i.e. towards a

heterogenization of tastes and preferences. CR5, CR10 and the HHI significantly decrease over time. However, we remain cautious about interpreting this trend. On the one hand, even though it is significant, it does not appear to be a strong trend taking place on a very deconcentrated level. On the other hand, the increasing number of participants in the contest may be the main driving-force for this deconcentration trend. Furthermore, if we isolate the period from 1998-2016 where audience voting influences the results, the econometric model does not display considerable explanatory power.

Whereas we cannot support the convergence hypothesis, we do find support for the claim that 2015 was a year with a particular strong concentration of points on the top performers. All the measures we employed display the year 2015 as belonging to the top 3 most concentrated years in the history of the contest. However, this appears to be an outlier rather than a systematic effect.

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Appendix

Table 1: Descriptive Statistics

Year	Number of Partici-pants	Total Points	HHI Index	CR 3 in %	CR 5 in %	CR 10 in %	Gini-Index
1975	19	1102	817,059232	36,7513612	52,6315789	83,8475499	0,41
1976	18	1044	888,272339	38,697318	55,0766284	86,1111111	0,42
1977	18	1044	814,598288	36,0153257	54,0229885	82,4712644	0,38
1978	20	1160	798,483948	34,5689655	51,2068966	81,637931	0,44
1979	19	1102	723,745969	31,4882033	46,5517241	77,5862069	0,35
1980	19	1102	787,332716	34,2105263	52,0871143	81,5789474	0,4
1981	20	1160	759,185494	33,8793103	53,362069	77,5862069	0,39
1982	18	1044	825,993453	34,2911877	51,6283525	83,2375479	0,39
1983	20	1160	785,58264	34,8275862	53,7068966	80,1724138	0,39
1984	19	1102	748,400038	35,2087114	50,7259528	76,0435572	0,34
1985	19	1102	721,506187	30,0362976	47,5499093	78,6751361	0,35
1986	20	1160	801,694411	37,3275862	52,3275862	79,4827586	0,42
1987	22	1276	706,532955	32,6018809	46,3166144	74,9216301	0,41
1988	21	1218	705,131835	29,9671593	44,5812808	76,1904762	0,39
1989	22	1276	660,014642	29,6238245	45,846395	72,1786834	0,38
1990	22	1276	715,622881	32,3667712	49,6081505	77,0376176	0,42
1991	22	1276	778,367941	33,7774295	52,3510972	80,8777429	0,47
1992	23	1334	670,796536	31,2593703	46,6266867	74,2128936	0,41
1993	24	1450	727,419738	34,4137931	51,0344828	76,8275862	0,49
1994	25	1450	750,002378	35,862069	50,9655172	75,5172414	0,49
1995	23	1334	653,623713	27,5112444	41,4542729	72,2638681	0,4
1996	23	1334	635,799042	28,185907	42,5787106	71,5892054	0,38
1997	25	1450	748,489893	34,8275862	49,4482759	76,9655172	0,49
1998	25	1450	790,192628	34,6896552	54,0689655	81,9310345	0,53
1999	23	1334	725,270798	33,6581709	49,4752624	78,185907	0,53
2000	24	1392	725,357957	34,9137931	48,8505747	76,2931034	0,46
2001	23	1334	836,961579	39,1304348	57,2713643	79,910045	0,5
2002	24	1392	676,546605	32,3994253	47,8448276	73,9942529	0,42
2003	26	1508	692,188083	32,8912467	48,1432361	76,3925729	0,49
2004	24	2088	822,04368	38,0747126	55,5555556	81,7528736	0,52
2005	24	2262	589,100981	25,6410256	39,2130858	68,5234306	0,37
2006	24	2204	757,021551	34,8911071	50,4083485	80,2177858	0,49
2007	24	2436	607,10848	29,1461412	42,2824302	69,3349754	0,38
2008	25	2494	609,568819	28,8692863	44,1459503	70,7698476	0,4
2009	25	2436	681,970767	33,3333333	47,7011494	70,4433498	0,42
2010	25	2262	571,382336	25,5526083	38,5499558	68,0813439	0,36
2011	25	2494	493,29618	23,8572574	35,6054531	58,9013633	0,27
2012	26	2436	671,02723	34,6880131	46,8390805	69,0065681	0,43
2013	26	2262	681,118327	32,2281167	48,3642794	74,7126437	0,43
2014	26	2146	675,519335	34,7623486	49,5340168	69,944082	0,44
2015	27	2320	889,064358	41,3793103	59,1810345	82,6293103	0,59
2016	26	4872	589,448671	31,5270936	43,1855501	66,091954	0,36
Mean	22,6	1644,71429	721,615348	33,0793451	48,7597453	76,0507033	0,4238

Table 2: Correlation matrix of the sample

	dPartic.	dHHI	dCR3	dCR5	dCR10	dGini
dPartic.	1.000					
dHHI	0.0755	1.000				
	0.6388					
dCR3	0.1795	0.9149*	1.000			
	0.2615	0.0000				
dCR5	0.1781	0.9470*	0.9416*	1.000		
	0.2652	0.0000	0.0000			
dCR10	0.0534	0.9266*	0.7545*	0.8478*	1.000	
	0.7401	0.0000	0.0000	0.0000		
dGini	0.3331*	0.9097*	0.8470*	0.8846*	0.8866*	1.000
	0.0333	0.0000	0.0000	0.0000	0.0000	

Table 3: Regression-output of changes in HHI, CR-3, CR-5, CR-10 and Gini Coefficient against changes of the number of participating countries in the final by OLS

	(1) ΔHHI	(2) ΔCR3	(3) ΔCR5	(4) ΔtDR10	(5) ΔGini
ΔParticipants	7.017	0.789	1.012	0.291	0.0227*
	(0.47)	(1.14)	(1.13)	(0.33)	(2.21)
_cons	-6.749	-0.262	-0.403	-0.483	-0.00510
	(-0.40)	(-0.33)	(-0.40)	(-0.49)	(-0.44)
N	41	41	41	41	41

t statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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