Modeling Voting Behavior in the Eurovision Song Contest

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Abstract

We examine the determinants of voting behavior of the Eurovision Song Contest (ESC) held every year in Europe since 1956. After the televoting system was first introduced in 1998, logrolling of cultural and geographic between countries has been increased. We modeled voting behavior taking into consideration the individual characteristic of performer and voter, as well as quality of song. Estimation result of the linear voting equation shows that not only quality of the song is an important part of voting but also affinity variables are very crucial determinants of voting equation. Estimation result also indicates that order of appearance in the contest, the language of the song and the gender of the performing artist turn out to be quite important parameters in explaining voting behavior.

INTRODUCTION

Modeling voting behavior or determinants of voting in a popular music competition such as Queen Elizabeth Piano Contest and Eurovision Song Contest have been growing tremendously after 2000s. (See [1], [4], [5], [9]). The aim of this study is also to model v_{ij}, voting behavior of juries and public opinion (via televoting system[1]) of country $i \epsilon L$ in evaluating the singer of country $j \epsilon L$ ($i \neq j$) where L is the total number of participants in the Eurovision Song Contest (ESC). The basic problem each country $i \neq j$ faces is to give positive points to only ten favorite songs among L ones. Country i gives 12 points to its favorite song, say $j_1 \in L$, and 10 points to its second favorite song, say $j_2 \in L$, and so on up to the 10th song in ESC. $L - 10$ songs are voted by country i as 0, while only 10 participants are voted positively. Then the set of points v_{ij} equals to $\{12,10,8,7,6,5,4,3,2,1\}$, while final rank_{ij} takes values in the set of $\{1, 2, 3, \dots L\}$. Without taking into consideration any other factors, the basic voting equation can be written (Ginsburgh & Noury, 2006):

$$v_{ij} = \beta_{ij} v_{ji} + \varepsilon_{ij} \qquad (1)$$

Where β_{ij} is a parameter, and ε_{ij} is a random disturbance. If the only factor affecting voting behavior of country i to the country j is quality of the song, then expected value of β_{ij} ($E[\beta_{ij}]$) is 1.[2] This also means that there is a perfect exchange of votes between two countries, and both countries keep their commitment. There are strong evidence that geographical country pairs or cultural affinity (language, religion, ethnicity and common historical background) play important role on voting behavior of both expert judgment and public opinion (televoting) regardless of the quality of the song. In another saying,

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[1] Televoting was firstly used in ESC in 1998. Every citizen can vote via SMS or by phone and give its favorite song 12 points, the next one 10, and then 8, 7, 6, 5, 4, 3, 2 and 1.

[2] Because $\text{E}[v_{ij}] / \text{E}[v_{ji}] = 1$ and $\text{E}[\varepsilon_{ij}] = 0$

geographic neighborhood, and cultural factors are important determinants of points awarded from one country to another (Clerides & Stengos, 2006) with the other characteristics of performer and voter. Characteristic properties x_{ik}, $k = 1,2,3,...,K$ of performer j and characteristics y_{jm}, $m = 1,2,3,...,M$ of voter i together affect votes given to a performer, as well as exchange of votes between two countries. Voting equation (1) can be improved with these factors as below:

$$v_{ij} = \beta_{ij}v_{ji} + \sum_{k=1}^{K} \alpha_k x_{ik} + \sum_{m=1}^{M} \varphi_m y_{jm} + \varepsilon_{ij} \tag{2}$$

Where α_k and φ_m are parameters to be estimated. The last two parameters of right-hand side of the equation (2) are affinity and objective quality of song. These two parameters together indicate some individual characteristics of singer and voter such as gender (male, female and duet), the "language" in which song is performed (English, English +national language, French, National language), the order of "appearance" in the contest, whether the song is performed "alone" or in a "group", a dummy for "host" country (if singer represents the host country, the variable takes 1 and 0 for other), and a dummy variable to capture "cultural block" ties' effect on voting (Western, Scandinavia, Former Yugoslavia, Former Socialist and Independents).

We also need to show average geographic effect and quality of a song on voting behavior. Therefore, two new proxies are constructed. In order to capture the effect of geographic neighborhood on voting, we create a new variable called "neighbor". If country i and j have a common border, they are geographic neighbor.[3] Assume that country i has l geographic neighbors, and the number of participants in ESC is L then variable "neighbor" which shows average geographic points of country i is computed as below:

$$\text{neighbor}_{ij} = \frac{1}{l} \sum_{j=1}^{l} v_{ij}, \qquad i = 1,2,3,...,L \tag{3}$$

It is clear that equation 3 measures the geographic effect quite reasonable, but the variable "neighbor" creates some additional endogeneity, because dependent variable v_{ij} also include j's vote to singer i. Therefore, will use lagged neighbor as an instrument variables of neighbor to avoid endogeneity during estimation. The second proxy we will create is "quality". It is obvious that the most important determinant of voting equation should be quality of the song. As quality of a song is not random and observable, we create two different definition of quality. First definition is excluding geographic neighborhood effect and the second one is excluding block neighborhood (cultural block ties) effect from definition of quality. However, two definition of quality depends on "expected mean of points received by juries and public (via televoting) of non-geographic neighbor countries $(L - l) \in L$ and non-cultural block countries $(L - n) \in L$, where n is number of

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[3] If a country has no common border with others, then it has no neighbor.

countries in block. Here, i's vote is not included in the definition of quality. Then the quality of singer i is defined as below:

$$\text{quality}_{ij}{}^g = \frac{1}{L-l-1} \sum_{j=1}^{L-l-1} v_{ij}, \quad i = 1,2,3,\dots,L \qquad (4)$$

$$\text{quality}_{ij}{}^b = \frac{1}{L-n-1} \sum_{j=1}^{L-n-1} v_{ij}, \quad i = 1,2,3,\dots,L \qquad (5)$$

Equation 4 and 5 indicates that quality is equal to difference between the average points of a country received by total participants and its geographic neighbors and block countries. Thus our variable quality is not affected by the presence of cultural blocks and geographic neighborhood.

DATA AND ESTIMATION RESULTS

Although the first Eurovision Song Contest was held in 1956, in this study we use voting result of ESC's after 1998. Because televoting system was first used in 1998. Data on the Eurovision Song Contest can be found on different websites such as ESC official website http://www.eurovision.tv and other ones collected by ESC followers (see http://www.escstats.com and www.kaggle.com). Each year ESC host an average of 22 countries from various parts of Europe. We analyze 3410 voting behavior in 13 years. Each country gives total 58 and in average 2,52 points to other finalists, except itself in ESC. Table 1 column 1 to 2 contains the linear estimation results of Tobit method [4] of the equations of (6) and (7) given below:

$$v_{ij} = \beta_{ij1} v_{ji-1} + \sum_{k=1}^{K} \alpha_{k1} x_{ik} + \sum_{m=1}^{M} \varphi_{m1} y_{jm} + \gamma_1 \text{quality}_{ij}{}^g + \varepsilon_{ij1} \qquad (6)$$

$$v_{ij} = \beta_{ij2} v_{ji-1} + \sum_{k=1}^{K} \alpha_{k2} x_{ik} + \sum_{m=1}^{M} \varphi_{m2} y_{jm} + \gamma_1 \text{quality}_{ij}{}^b + \varepsilon_{ij2} \qquad (7)$$

However, from the definition of quality and neighbor, there is endoneneity between independent and dependent variables, we also use Two Stage Least Square Estimation method to find reasonable coefficient of equations 6 and 7. Instrument variables are lagged values of quality (quality_{ij-1} and quality_{ij-2}) and lagged values of neighbor (neighbor_{ij-1} and neighbor_{ij-2}). Table 1 column 3 and 4 shows TSLSM method results.

As it is seen from the table 1 both geographic neighborhood and cultural affinity are important determinant of votes received by other countries. Quality and appearance are the other factors explaining voting behavior of televoting and jury voting system of Eurovision Song Contest

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[4] Voting set ranges from 0 to 12, except 9 and 11. Average points received by a performer are scaled between 0 and 12. Thus dependent variable is available to be regressed on independent variables by Tobit method.

Table 1. Estimation Results of The Voting Equation

Variable	1 Coeff.	1 Std. Err.	2 Coeff.	2 Std. Err.	3 Coeff.	3 Std. Err.	4 Coeff.	4 Std. Err.
CONSTANT	-1.074	(-0.678)*	-0.443	(1.083)*	-0.458	(1,005)*	-0.18	(0,81)
APPERANCE	1.463	(0.770)**	2.601	(0.851)***	2.023	(0,660)***	1.254	(0,600)***
GEOG. NEIGHBOUR	0.520	(0.069)***			0.412	(0,064)**		
HOST	0.607	(-1.067)	0.305	-1.205	-19.044	(0, 233)	0,678	(0,205)
MALE_SINGER	0.658	(-0.802)	1.666	(0.903)**	1.673	(0,718)*	0.94	(0,715)*
FEMALE_SINGER	0.937	(0.774)*	1.562	(0.977)*	1.293	(0,765)*	1.14	(0,765)*
SOLO	-0.519	-0.604	0.012	(-0.678)	0.248	(0,535)	-0.57	(0,530)
SUNG_IN_ENGLIS_PLUS_NATI	0.385	-0.717	-0.763	(-0.845)	-0.911	(0,539)*	0.284	(0,639)
SUNG_IN_ENGLISH	0.227	-0.560	-0.217	(-0.700)	-0.243	(0,491)	0.165	(0,489)
SUNG_IN_FRENCH	-0.196	-1.635	-2.459	(1.841)*	0.520	(0,524)	0.698	(0,519)
SCANDINAVIA			0.765	-0.908				
FORMER_SOCIALIST_BLOCK			1.972	(0.774)***				
FORMER_YUGOSLAVIA			1.661	(0.985)*				
INDEPENDENTS							-1.485	(0,651)**
WESTERN_EUROPE			0.362	0.833			-1.427	(0,551)**
QUALITY					0.415	(0,064)***	0.414	(0,065)***

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