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Abstract

Cultural proximity increases bilateral trade flows through a trade-cost and a bilateral-affinity (preferences) channel. Conventional measures of cultural proximity, such as common language, common religion, etc., do not allow to separately quantify those channels empirically. We argue that quality-adjusted Eurovision Song Contest (ESC) scores can be used as dyadic, time-variant information on European countries' cultural proximity. Assuming that the trade-cost related component of cultural proximity is time-invariant, in a gravity model of bilateral trade, the time dimension of the ESC data allows to identify the preferences effect. The validity of our identification strategy can be tested by exploiting the lack of systematic reciprocity in ESC scores. While we find robust evidence for a sizable preferences effect, the impact of cultural proximity on trade runs largely through the cost effect.

Keywords: International Trade, Gravity Equation, Cultural Proximity, Identification.

JEL classification: F12, F15, Z10

1 Introduction

Recent empirical literature suggests that cultural proximity is a major determinant of bilateral trade flows. [1] This finding is robust to the exact definition of cultural proximity which researchers usually try to capture by measures such as linguistic proximity, colonial linkages, ethnic or even biological similarity, and constructed variables, for example Hopensted's measures of cultural proximity; see Linders et al. (2005) for a recent survey and references.

Fundamentally, there are two channels through which cultural proximity influences bilateral trade. First, cultural proximity lowers direct and indirect trade costs. For instance, the existence of a common language directly lowers trade costs as it makes expensive translation services redundant. There may also be an indirect effect on trade costs when common language encourages the formation of business networks which in turn tend to increase bilateral trade volumes; see Rauch and Trindade (2004) and Casella and Rauch (2003). Second, cultural proximity may be reflected in the preferences of consumers in one country for the varieties produced in another country, thereby directly enhancing the volume of bilateral trade.

This paper tries to measure the empirical importance of the channels through which cultural proximity affects bilateral trade flows. From a normative point of view, disentangling the *trade cost* channel from the *preferences* mechanism is an important task since only trade creation based on a reduction in trade costs can be straightforwardly associated to welfare gains. To the best of our knowledge we are the first to propose an empirical decomposition strategy in the context of cultural proximity. However, the problem of separately identifying preferences and costs effects is not new in the empirical trade literature. In a very interesting paper, Combes *et al.* (2005) use data on migration and trade between French *Départements* to highlight the importance of ethnic net-

[1] For recent contributions to this debate see the papers by Boisso and Ferrantino (1997), Frankel (1997), or Disdier and Mayer (2005), to cite only a few.

works. They show that migrants convey non-price information between two distant locations and thus facilitate trade by bridging information gaps between their home country and their host region. A stock of migrants from some source country therefore lowers trade costs, but it may also affect trade volumes as migrants continue to consume goods produced in their home countries. Combes *et al.* recognize this issues, but do not offer a way to distinguish both channels.

This paper uses an original database, which provides time-varying information on bilateral cultural proximity between countries. The data are taken from the Eurovision Song Contest (ESC): a yearly competition involving a growing number of European and non-European countries since 1956. Each country is represented by a single artist or a group. Voters in each country grade the other participating countries by according points to that country's artist(s). Controlling for the quality of the song, these grades robustly correlate with standard measures of cultural proximity discussed above. This fact implies that the ESC scores can be used as a proxy of cultural proximity.

Conventional cultural proximity variables are time-invariant and symmetric in that they take the same value irrespective of the direction of the trade relation to be analyzed. In contrast, the ESC scores are dyadic, time-varying, and potentially asymmetric. [2] Our identifying assumption is that the components of cultural proximity related to the trade costs channel are constant over time while the components related to the preference mechanism are not. The latter change according to fashions and fads, political problems between two countries, or simply idiosyncratic shocks. Standard cultural proximity measures matter for preferences, too, but the time varying nature of the Eurovision data allows to separately identify the preferences channel of cultural proximity. We check the validity of our identifying strategy by exploiting another property of ESC scores: their relative lack of reciprocity. Not only is the cost-channel of

[2] These features are nicely in line with the theoretical definition of cultural proximity as employed by sociologists, see below.

cultural proximity largely time-invariant, it is also necessarily symmetric and should therefore foster imports *and* exports between two countries similarly. The time-varying component of the ESC grades, however, reflects the popularity of the graded country in some grader country. It should be correlated to exports of the graded country but need not be correlated to imports from the grader country.

Note that the ESC database has been used a few times in academic research before, albeit not in empirical analyzes of bilateral trade flows. Ginsburgh and Noury (2005) use the data to test whether voting in the song contest involves vote trading (*logrolling*). Haan *et al.* (2005) exploit the transition of the grading process from jury-based voting to generalized televoting in order to address the question on how expert judgment compares to public opinion. Fenn *et al.*(2006) run a cluster analysis on the ESC database to identify clubs of European countries. They find evidence for unofficial cliques of countries. Clerides and Stengos (2006) come to a similar conclusion, and stress that cultural proximity is a good predictor for countries' voting behavior.

We construct a simple theoretical trade and geography model in the spirit of Redding and Venables (2004) and Combes *et al.* (2005). Our theoretical framework explicitly models the effect of cultural proximity on trade costs and a bilateral affinity parameter that appears in the utility function. We follow the established practice and apply fixed-effects estimation techniques to investigate the impact of a quality-adjusted ESC score on the value of bilateral trade between European countries. [3]

We arrive at the following empirical results. First, conventional measures of cultural proximity explain a significant share of the variance in our European bilateral trade data. Second, quality-adjusted ESC scores correlate robustly with those measures and can therefore be interpreted as proxies of cultural

[3] See Hummels (1999), Anderson and van Wincoop (2004), Feenstra (2004) and Redding and Venables (2004) for recent examples of this strategy.

proximity themselves. Third, including country-pair fixed effects to take out all time-invariant variance from the data, we find that country j's quality-adjusted ESC scores for country i still matter for the volume of exports from country i to country j in a statistically and economically significant way. In line with our identification strategy, imports from country j to country i are affected to a much smaller degree and with lower levels of statistical significance. Our main results survive a number of robustness checks that deal with the validity of our identification strategy and the time-consistency of the ESC data. We conclude that cultural proximity affects bilateral trade flows mainly through the cost channel. However, there is robust evidence for a sizable preferences effects, too.

The paper is organized as follows. Section 2 proposes a theoretical framework and discusses our identification strategy. Section 3 provides a thorough discussion of the data and introduces the econometric model. Section 4 presents our main results and robustness checks, while section 5 concludes.

2 Theoretical framework and estimation strategy

2.1 The standard "new trade theory" model

We base our theoretical model on the conventional multi-country monopolistic competition model of trade, surveyed, e.g., by Feenstra (2004). The only modification to the standard case comes through the appearance of a bilateral affinity parameter which may differ across country pairs. Consumers are assumed to love variety. They choose from a bundle of different varieties, which are symmetric within each country but asymmetric between countries. The constant elasticity of substitution (CES) is the same for any two varieties within the same location but differs between varieties coming from different locations. In the aggregate, consumers's decisions are reflected in those of the representative consumer who buys an average amount of each variety depending on its price. The corresponding utility function is defined as follows:

$$U_{jt} = \left(\sum_{i=1}^{C} a_{ijt}^{\frac{\sigma-1}{\sigma}} \int_{n_{it}} x_{jit}(z)^{\frac{\sigma-1}{\sigma}} dz \right)^{\frac{\sigma}{\sigma-1}}, \ \sigma > 1. \tag{1}$$

The term $x_{jit}(z)$ denotes the quantity of a variety z originating from country i and consumed in country j at time t. n_{it} is the number of varieties offered in country i, and C is the number of countries.

As in Combes *et al.* (2005), we assume that a specific weight, a_{ijt}, is attached to all varieties imported from region i. This weight describes the affinity of consumers from country j for country i. Constraining $a_{ijt} < a_{jjt}$, we would introduce home market bias; moreover, by writing $a_{ijt} = a_{ikt}$ for all $k \neq j$ we would model objectively measurable quality differences between different source countries. For our purposes, we let a_{ijt} completely unrestricted. Note, however, that we assume that the weights a_{ijt} are country-specific; that is, they apply similarly to all varieties z produced by country j.

All imported varieties from some country i enter symmetrically into the respective sub-utility index. Assuming that all varieties from the same origin bear the same mill price p_{it} (reflecting symmetric production technologies), and that *iceberg ad valorem* trade costs $1 + \tau_{jit}$ do not depend on characteristics of the varieties, the quantity, x_{jit} is identical for all z. This allows to derive country $j's$ demand function for varieties imported from country j

$$x_{jit} = a_{ijt}^{\sigma-1} \left(\frac{p_{jit}}{P_{jt}} \right)^{-\sigma} \frac{E_{jt}}{P_{jt}}, \tag{2}$$

where P_{jt} is the ideal price index dual to equation (1)

$$P_{jt} = \left(\sum_{i} \left(\frac{a_{ijt}}{p_{jit}} \right)^{\sigma-1} n_{it} \right)^{\frac{1}{1-\sigma}}, \tag{3}$$

and E_{jt} is total expenditure of country j, expressed in terms of some numéraire. Hence, total demand for varieties originating from country i is larger, the stronger country $j's$ preferences for country $i's$ products (a_{ijt}), the smaller the relative price of products from country i (p_{jit}/P_{jt}), and the larger country $j's$ real income (E_{jt}/P_{jt}). Note that a higher preference for country $i's$ products reduces the price index in the same way as a reduction in the price of imports from country i.

Equation (2) describes the volume of country j's imports for any variety produced in country i. Its aggregate value gives total imports from i to j, i.e., country i's total exports to country j.

$$X_{ijt} = n_{it}p_{ijt}x_{ijt} = a_{jit}^{\sigma-1}(1+\tau_{ijt})^{1-\sigma}n_{it}p_{it}^{1-\sigma}E_{jt}P_{jt}^{\sigma-1}. \tag{4}$$

The right-hand side of this equation contains both demand and supply characteristics. We define $\phi_{jt} \equiv E_{jt}P_{jt}^{\sigma-1}$ as country $j\prime s$ market capacity and $\phi_{it} \equiv n_{it}p_{it}^{1-\sigma}$ as the supply capacity of the exporting country, i. All this allows the trade equation to be rewritten as:

$$X_{ijt} = a_{jit}^{\sigma-1}\left(1+\tau_{ijt}\right)^{1-\sigma}\phi_{it}\phi_{jt}. \tag{5}$$

2.2 Modeling cultural proximity

Cultural proximity affects the bilateral trade equation (5) in two ways. First, it lowers direct trade costs, $1+\tau_{ijt}$. For example, information costs are lower when partners share the same language. By the same token, legal contracting costs are lower when buyers and sellers in different locations operate in similar jurisdictional and institutional frameworks. Moreover, cultural proximity indirectly affects trade costs as it facilitates the formation of business and/or social networks. In turn, these networks help to overcome informational trade barriers, associated to contract enforcement. Of course linguistic and jurisdictional similarity also helps with developing and maintaining business contacts, but network formation is fostered by a wider array of factors including common values or religion, a common past, ethnic links, etc.

The second channel through which cultural proximity influences bilateral trade affects consumers' preferences via the bilateral affinity parameter a_{jit}. A high value of a_{jit} means that the representative consumer in country j puts a high value on products produced in country i. Together with the assumption $\sigma > 1$, this leads to higher trade volumes.

We decompose country $j's$ cultural proximity to country i (Π_{jit}) into a symmetric, time-invariant part $\bar{\pi}_{ji}$ and an asymmetric, time-variant part π_{jit}, postulating a multiplicative form $\Pi_{jit} = \bar{\pi}_{ji}\pi_{jit}$. The key identifying assumption in this paper comes in two parts: (i) the trade cost channel of cultural proximity on trade operates only through the time-invariant component $\bar{\pi}_{ji}$ while (ii) the bilateral affinity term a_{jit} is driven by both, the time invariant and the time variant components.

That decomposition is motivated by the definition of cultural proximity as sociologists use it. For instance, according to Straubhaar (2002), cultural proximity goes *"beyond language to include history, religion, ethnicity (in some cases) and culture in several senses"*. It relates to closeness in terms of *"identity, gestures and nonverbal communication; what is considered funny or serious or even sacred; clothing styles; living patterns; climate influences and other relationships with the environment.*" It is clear that this definition refers both to time-invariant (language, religion, ethnicity) and time-variant (clothing styles, living patterns, etc.) components of cultural proximity. The definition implicit in the measures used in economic applications focuses only on the time-invariant part, since the time-variant one is difficult to observe.

Assumption (i) is motivated by the fact that those components of cultural proximity that matter for trade cost, e.g., linguistic, religious, legal, or ethnic proximity, are both largely time-invariant and symmetric in nature. It is true that even the cost-relevant component of cultural proximity evolves over very long time horizons, for example due to invasions, mass migration, or due to the emergence of a single global cultural pattern. However, the time span analyzed in our paper is very short (29 years) compared to these secular dimensions.[4] The assumption that $\bar{\pi}_{ji}$ is symmetric, i.e., $\bar{\pi}_{ji} = \bar{\pi}_{ij}$ for all i and j, is trivially justified by the nature of trade cost-relevant cultural proximity.

Assumption (ii) implies that both, time-variant and time-invariant components of cultural proximity, i.e., π_{jit}, affect trade through the bilateral affinity term a_{jit}. The term π_{jit} may (but need not) be asymmetric. Our assumptions mean that the time-invariant components discussed above may matter for the preference channel, but that a large array of time-variant factors matter, too. For example, Italy and Italian products may be popular in Finland, the absence of a common language, common values and ethnic ties notwithstanding. Italy may be appealing to Finns because of its cultural, intellectual or political achievements. While the definition cited above understands bilateral affinity as just another dimension of cultural proximity, there is nothing that precludes the preference effect from changing over time or from being asymmetric across two countries. It is conceivable, that Finns feel culturally close to Italy, but that feeling need not be reciprocal.

Having said this, we plug the term $\bar{\pi}_{ji}$ into a conventional trade cost function, with the state of technology and geographical distance as additional arguments. Hence, we posit $1 + \tau_{ijt} = A_0 e^{gt} D_{ij}^{\delta} \bar{\pi}_{ji}^{\beta_1} e^{K_{ijt}} \varepsilon_{ijt}$, where $A_0 e^{gt}$ measures the state of technology, reflecting advances in transport or communication technologies, while D_{ij} is geographical distance. The term $e^{K_{ijt}}$ is meant to capture the stance of trade policy, with a low value of K_{ijt} indicating a low degree of policy-induced trade restrictiveness. Our key identifying assumption is that the trade costs channel of cultural proximity is related to variables that do not change over time, at least not over the time span under investigation in the present study. The parameter β_1 is expected to be negative, while δ is positive; ε_{ijt} is an idiosyncratic disturbance.

In turn, the bilateral affinity parameter a_{jit} depends on both components of

[4] We come back to this point in our robustness checks.

cultural proximity. Hence, we write $a_{jit} = \Pi_{jit}^{\beta_2}\epsilon_{ijt}$, where ϵ_{ijt} is an idiosyncratic error term. Plugging the specification of trade costs and the bilateral affinity parameter into equation (5), we derive our base-line specification:

$$X_{ijt} = \left((A_0 e^{gt} D_{ij}^{\delta} \bar{\pi}_{ji}^{\beta_1} \varepsilon_{ijt})\right)^{1-\sigma} (\Pi_{jit}^{\beta_2}\epsilon_{ijt})^{\sigma-1}\phi_{it}\phi_{jt}. \qquad (6)$$

This equation links the exports of country i to country j to the market and supply capacity measures ϕ_j and ϕ_i, the trade costs, τ_{ij}, and the bilateral affinity between countries, a_{jit}.

3 Data and empirical strategy

In this subsection, we first provide some evidence on the time variation and degree of reciprocity of the ESC data, and then argue that ESC scores can be interpreted as measures of cultural proximity. Moreover, we provide the sample statistics for our regressions and characterize our econometric model.

3.1 Eurovision Song Contest score data

The Eurovision Song Contest (ESC) was founded in 1955 by European broadcasting stations represented in the European Broadcasting Union (EBU), and held for the first time in Lugano, Switzerland, in 1956, with seven countries competing. The number of participants has increased steadily since then and also includes two regular non-European participants: Israel and Turkey. The only formal restriction is that the television station that broadcasts the show (the previous year's winning country) has to be member of the EBU. Since 2002, there are 24 slots for finalists, of which four are reserved for Germany, France, Spain and the United Kingdom. Other countries are guaranteed a slot every other year. Each ESC is broadcast by television, and since 1985, this happens via satellite. In 2001, the contest was held in front of an audience of 38,000 in Copenhagen, and broadcast live all around the world. Usually, several hundred millions of people watch the show every year.

The scoring system changed several times. Since 1975–the first year in our dataset, the 11 (16 between 1988 and 1997) jury members in each country (often a popular jury, not consisting of experts), can rate on a scale from 1 to 10. Televoting was introduced in 1998,[5] so that every citizen can participate, and according to Haan, Dijkstra and Dijkstra (2005), "in many countries, the number of people calling into register their vote is in the hundreds of thousands."

The ratings are normalized so that the favorite song gets 12 points, the next one 10, and then 8, 7, 6, 5, 4, 3, 2 and 1. This allows each voting country to give positive ratings to ten other countries. Participating countries cannot vote for their nationals. The order in which candidates perform is randomly drawn before the competition starts. After the performance, countries are asked to cast their votes. Results are announced country by country, in the same order in which participants have performed. Finally, participants are ranked according to their aggregate score.

In order to investigate the degree of reciprocity in ESC grading behavior, we compare country j's grades for country i's song ($score_{ij}$) with the grades that country i has for country j ($score_{ji}$). Focusing on the time span 1975-2003 that we use later on, we can compute the Spearman rank correlation coefficient between $score_{ij}$ and $score_{ji}$. This coefficient is 0.0811, which is significantly different from zero at any conventional level of significance. Hence, there is evidence for reciprocity, but this evidence is weak in the sense that the correlation coefficient is very low. Since every year the song contest succeeds in dressing at least a partial ranking of songs, lack of reciprocitgy is a *necessary* feature of the data. Perfect reciprocity would lead to ties at the first and the

[5] Our data spans the period 1975-2004; hence, we carry out robustness checks related to the introduction of televoting.

last place of the ranking. But even after controlling for this fact, the degree of reciprocity is low on average and high only in special subsamples of our data, e.g., in the subsample of Nordic or Mediterranean countries.

We conduct the following exercise to substantiate this claim. We denote μ_{it} the average score that country i has received in year t from the other ESC competitors. We regress $score_{ij}$ on μ_{it} and a comprehensive set of country-pair specific intercepts. These intercepts measure how country j's judgment on i's song deviates from the average score that i received over the years. Hence, we interpret the intercepts as excess-scores, i.e., evidence of *excessive* friendliness (or lack of it) of a country vis-a-vis of the other, denoting them $excess_{ji}$ for all i and j. The correlation between $excess_{ji} - excess_{ij}$ is an indication of the total degree of reciprocity corrected for average grades. That statistic amounts to 0.4356, indicating less-than-perfect reciprocity. Finally, while the country-pair average of $excess_{ji} - excess_{ij}$ is statistically indistinguishable from zero (necessarily so), the standard deviation is rather large, namely 1.2847.

Table 1 shows the excess-scores $excess_{ij}$ and $excess_{ji}$ for 10 dyads with the highest excess-scores, the 10 dyads with the lowest excess-scores and a couple of dyads that are interesting for other reasons. In all the cases shown, the countries have met at least 10 times in the competition and all excess-scores are significantly different from zero.[6] For example, the first line of the table is to be read as follows. Cyprus (CYP) has been awarded by Greece (GRC) a score 7.382 points higher than the average score that Cyprus receives in an average year. In turn, Cyprus reciprocates by grades 8.754 points higher than average. The lower region of the table illustrates some cases with rather low reciprocity. For example, Finland is awarded by Italy average scores 0.806 points lower than its average, but gives grades that exceed Italy's average by 3.324 points. Somewhat surprising, but in line with the literature, immigrant stocks are not systematically correlated to grading behavior. For example,

[6] The full results are available at request.

Table 1
ESC scores: Selected deviations from means

Country i	**Country** j	$excess_{ij}$	**std. err.**	$excess_{ji}$	**std. err.**
CYP	GRC	7.382	(0.059)	8.754	(0.048)
DNK	ISL	3.655	(0.090)	2.276	(0.051)
ISL	SWE	3.056	(0.051)	1.584	(0.091)
HRV	MLT	2.852	(0.067)	3.445	(0.083)
CYP	YUG	2.685	(0.061)	2.775	(0.075)
ESP	GRC	2.648	(0.066)	1.902	(0.058)
TUR	YUG	2.456	(0.025)	3.587	(0.074)
DNK	NOR	2.341	(0.076)	0.714	(0.055)
DNK	SWE	2.130	(0.073)	3.275	(0.093)
ITA	YUG	1.927	(0.103)	-1.476	(0.076)
NOR	SWE	1.792	(0.058)	2.799	(0.089)
ESP	ITA	1.704	(0.074)	3.254	(0.094)
GBR	HRV	1.589	(0.091)	-1.511	(0.069)
FIN	ISL	1.297	(0.021)	-1.339	(0.050)
AUT	TUR	1.197	(0.048)	-0.236	(0.041)
BEL	FRA	1.130	(0.055)	-0.500	(0.093)
ISR	YUG	0.822	(0.089)	2.327	(0.072)
GRC	ISR	0.642	(0.060)	-2.027	(0.096)
AUT	GER	-0.239	(0.045)	-0.690	(0.088)
GER	TUR	-0.617	(0.082)	2.013	(0.038)
CHE	ISR	-0.719	(0.085)	2.006	(0.095)
FIN	ITA	-0.806	(0.041)	3.324	(0.093)
GRC	TUR	-1.018	(0.053)	-0.337	(0.039)
CHE	ESP	-1.744	(0.077)	1.581	(0.066)
FRA	TUR	-1.810	(0.082)	1.036	(0.039)
GBR	ISL	-2.022	(0.093)	0.800	(0.053)
CYP	TUR	-2.099	(0.051)	-1.348	(0.042)
DNK	YUG	-2.284	(0.071)	1.481	(0.078)

Pair specific intercepts, means adjusted.
Robust standard errors in parentheses.

Austria is awarded an excess-score of 1.197 by Turkey, but grants lower than average points to Turkey. The opposite is true for the pair Germany-Turkey, with a similar immigration pattern. Finally, table 1 also provides evidence for a Nordic club (involving Denmark, Iceland, Norway, Sweden, but not Finland), and a Mediterranean club (involving Cyprus, Greece, Croatia, Malta, Yugoslavia (Serbia and Montenegro) and Spain, but not Turkey). These results are consistent with recent findings of Fenn et al. (2006).

The variables $score_{ji}$ and $score_{ij}$ exhibit substantial time variance. The coefficient of variation computed separately for 507 country pairs[7] takes a maximum value of 4.79 for Belgian grading of Finn songs, and a minimum of 0.20 for Cypriot grading of Greece songs. The average coefficient of variation is 1.41 with a standard deviation of 0.55. Not surprisingly, there is a strong degree of negative correlation between the coefficient of variation and excess scores.

3.2 ESC scores as a measure of cultural proximity

Before we turn to a comparison of the ESC scores to other measures of cultural proximity, we have to deal with two major problems that make ESC scores noisy indicators. First, the organization of the song contest follows a strict set of rules. If there is a total of N nations competing, a given grading country must fully exploit each of the 10 available non-zero grades. The remaining $N - 11$ countries all receive the score of zero. Hence, if two countries face the same high cultural proximity to the grading country, they cannot be allocated the same score, and if two countries face different but low cultural proximity to the grading country, they will be allocated identical scores (namely zeros) nevertheless. The larger N, the more inaccurate the index, as more countries have to receive zeros in spite of (possibly) different degrees of cultural proximity with the grading country. We have no reason to assume that this measurement error is systematically correlated to the true cultural proximity between two countries. Hence, while our our empirical results will suffer from attenuation bias, they are nevertheless consistent.

Second, the ESC scores reflect not only cultural proximity. They are also affected by the quality of the artistic performance. This implies that the ESC scores have to be adjusted for measurable quality differences before they can be used to measure cultural proximity. It is notoriously difficult to find objective criteria for the quality of a song, but ex post measures of popularity may help.

[7] Here, we account for the direction of the relationship

We construct the following indicator of song quality. We count how many documents *google.com* finds in the world wide web on a given combination of the artist's name and the title of his/her song. [8] We adjust this web count by accounting for the number of internet connections and per capita income in the artist's home country, and whether the artist's country uses the Latin alphabet or not. [9] The specification is as follows:

$$Score_{ijt} = \zeta_0 + \zeta_1 S_{it} + \zeta_2 S_{ijt} + \nu_t + u_{ijt}, \tag{7}$$

where $Score_{ijt}$ measures the number of points that country i allocates to country j at date t. S_{it} is a vector of song-specific characteristics while S_{ijt} measures whether the song was performed in the language of country j. We account for the changing number of participants at the ESC by introducing a non-parametric time trend ν_t.

Since ESC scores are censored at zero, we estimate a zero-inflated negative binomial model. The methodology and the estimation results are presented in Table 8 in the Appendix. We use the residuals obtained in these regressions to construct a variable $A_{ijt} = \hat{u}_{ijt}$. This variable is meant to measure the non quality-related part of country $j's$ vote on country $i's$ performance.

Taking into account the censored part of the data, we are able to explain 9% of the variance in outcomes by objective song-related criteria, such as the ex-post success of a song or the language used. Ginsbourgh and Noury (2004) arrive at qualitatively similar results, although they include an important additional regressor, lagged ESC scores, which drives up the share of explained variance to about 30%.

There is a rich body of literature on the role of cultural proximity for inter-

[8] Ginsburgh (2005) also computes an ex-post measure of song quality. He uses the sum of points that a country receives in a given year from all partner countries. The problem with this measure in our context is that it reflects cultural proximity: A country receiving a high aggregate score enjoys a high degree of cultural proximity to the grader countries.

[9] The reason for including this latter variable is that our search strategy underweights websites using the Cyrillic alphabet.

national transactions. Widely used proxies for cultural proximity are common language (a binary variable), linguistic proximity (a continuous variable), common past (e.g., colonial ties), common religious beliefs, common legal origins, etc. A common language dummy is present in most gravity-type regressions with bilateral trade, foreign direct investment, labor mobility, or aid as the dependent variable (Alesina and Dollar, 2002; Rose, 2004).

Linguists have come up with continuous measures of linguistic proximity, which take into account that some languages may have common origins, while they are not identical, see Dyen *et al.* (2002). This measure has been used in Ginsburgh (2005). While the Dyen database are available only for indo-European languages, they contain more provide a more detailed measure of linguistic proximity than the common language dummy. The index ranges between zero and one, where countries with an almost identical linguistic texture (e.g., Austria and Germany) obtain the value of one. Note that the index takes into account the existence of minority languages or distinct dialects, so that the Dyen measure for UK-Ireland is close to unity (0.83) but not perfectly so. Within the family of indo-European languages, France-Greece receives the lowest measure, while pairs that involve countries from the indo-European and another linguistic family (in our case, the Finno-ugric family), receive the value of zero.

Some studies have controlled for cultural proximity by including a dummy that takes the value of one if two countries share the same majoritarian religion. We construct a more subtle indicator of bilateral religious similarity, based to the one constructed in Alesina et al. (2003). Since our sample is basically limited to Europe (with the exception of Israel), we use the shares of Catholics, Protestants, orthodox Christians, Muslims, Jews, atheists, and non-religious persons in total population, drawn from mid-1990ies Census data.[10] Denoting the share of adherents to religion r in country i by s_{ri}, we compute a bilateral

[10] The data are freely available on www.worldchristiandatabase.org and coincide closely with entries in the CIA fact book and other sources.

index $\rho_{ij} = 100 \times \sum_r s_{ri} s_{rj}$, with $\rho_{ij} \in [0, 100]$. This measure is meant to capture common values, beliefs and traditions. It reaches a maximum value of 85.43 for the dyad Poland-Malta, two fervently catholic countries, and is minimum, 0.012, for the pair Poland-Turkey, which features strong but different majoritarian religions. Typical European pairs have values such as 10.11 (UK-France) or 58.39 (Austria-Italy). We assume that our measure of religious proximity, derived for the mid 90ies, is representative for the whole time span covered by our exercise (that is, 1975-2003).

Finally, cultural proximity has been identified with the existence of similar governmental and jurisdictional traditions. La Porta *et al.* (1999) construct a measure that they refer to as common legal origin. They distinguish between English, French, German, Scandinavian, and Socialist origins. Using their data, we construct a dummy that takes the value of one if two countries share the same legal origin and the value of zero otherwise.

All these measures have in common that they are either entirely time-invariant, such as legal origin or linguistic distance, or move very slowly over time without clearly discernible patterns, such as religious proximity. Moreover, those measures have in common that they are symmetric, e.g., $\rho_{ij} = \rho_{ji}$, much the same as geographical distance. And they usually turn out as highly relevant determinants of bilateral trade volumes.

Table 2 shows that the the conventional measures of cultural proximity discussed above, correlate with the raw and the adjusted ESC scores.

Comfortingly, all measures of correlation shown in table 2 are positive and different from zero with p-values very close to zero. This shows that the quality adjusted scores still correlate strongly with the unadjusted ones. Moreover, the fact that ESC scores correlate tightly with standard measures of cultural proximity used in the literature suggests that the scores are indeed good measures of cultural proximity. The correlation with linguistic proximity is particularly high (0.5914), while common legal origin exhibits a lower degree of correlation

Table 2
Correlation matrix

Variable name	**Adjusted ESC-Score**	**ESC-Score**	**Linguistic Proximity**	**Common Legal Origin**	**Religious Proximity**
Adjusted ESC-Score	1.0000				
	(0.0000)				
ESC-Score	0.4250	1.0000			
	(0.0000)	(0.0000)			
Linguistic Proximity	0.5914	0.2428	1.0000		
	(0.0000)	(0.0000)	(0.0000)		
Common Legal Origin	0.1446	0.0885	0.1152	1.0000	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
Religious Proximity	0.3873	0.2032	0.2938	0.2167	1.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

The table shows R^2 values obtained by regressing each variable against the other, one-by-one. Within group correlation adjusted P-values of F-statistics in brackets. Number of observations $9,493$ except for correlations involving linguistic proximity ($N = 3,466$).

with our and the other measure of cultural proximity. Table 2 fits nicely into the picture drawn by Table 1, since the emergence of high ESC tends to occur within country pairs that also exhibit a high degree of culutral proximity.

3.3 Summary statistics

Table 3 provides the summary statistics of our data. The source of our bilateral trade data is the Direction of Trade Statistics (DoTS) provided by the International Monetary Fund (IMF) and is measured in billion U.S. Dollars, data on GDP comes from the Penn World Tables 6.0, and has been transformed into billion U.S. Dollars. Our ESC data is drawn from the Facts&Figures page at the official Eurovision website. The number of observations for most observations is 9,493 except for the Dyen measure which is available for 3,462 country pairs. [11]

[11] The full STATA data set including codes and additional output is available from the authors.

Table 3
Summary statistics: $N = 9,493^{*}$

Variable	Mean	Std. Dev.	Source
Ln Exports	19.073	2.619	DoTS, IMF
Ln Imports	19.143	2.518	DoTS, IMF
ESC Score	2.886	3.747	http://eurovision.tv
Adjusted ESC Score	2.882	1.055	Own construction
Linguistic proximity	0.522	0.311	Dyen et al. (2002)
Common legal origin	0.181	0.385	La Porta et al. (1999)
Religious proximity	22.234	25.228	Own construction
ln Geographical distance	7.288	0.641	www.cepii.fr
Country i ln GDP	25.375	1.758	PWT 6.0
Country j ln GDP	25.388	1.749	PWT 6.0
Country i ln population	2.191	1.470	PWT 6.0
Country j ln population	2.203	1.464	PWT 6.0
Both in EU	0.160	0.367	http://europa.eu.int
Both in EFTA	0.063	0.244	http://www.efta.int
FTA with EU	0.049	0.215	http://europa.eu.int
FTA with EFTA	0.006	0.078	http://www.efta.int
Song in english	0.250	0.433	http://eurovision.tv
Song in multiple languages	0.041	0.199	http://eurovision.tv
Song in own language	0.835	0.371	http://eurovision.tv
Identical language	0.072	0.259	http://eurovision.tv
Repeated performance of singer	0.075	0.307	http://eurovision.tv
Ln google counts	6.640	0.808	Own construction
Cyrillic alphabet	0.124	0.329	CIA factbook
Per capita Internet connections (2003)	0.360	0.144	World Development Indicators

* Except for linguistic distance, where $N = 3,462$

3.4 Empirical Strategy

In order to derive the empirical specification, we must deal with two important issues. First, the price index P_j in the market capacity term complicates the estimation by introducing non-linearity in unknown parameters. Second, the number, n_i, of varieties produced in region i and the mill price, p_i in the supply capacity equation are not observable. We follow the established practice and apply a comprehensive set of exporter and importer fixed effects to capture unobservable origin and destination economic effects.[12] In particular, we set

[12] See Hummels (1999), Redding and Venables (2004) and Combes *et al.* (2005), for recent treatments of these issues.

$\ln \phi_{it} = \alpha_3 \ln Y_{it} + \nu_i$ and $\ln \phi_{jt} = \alpha_4 \ln Y_{jt} + \nu_j$, where Y_{it} and Y_{jt} are country $i's$ and country $j's$ real GDPs, respectively, and ν_i and ν_j summarize unobserved country specific heterogeneity.

Log-linearizing the gravity equation (6), plugging in our trade cost specification and our specification of cultural proximity, we obtain the following equation:

$$\ln X_{ijt} = \alpha_1 \ln \bar{\pi}_{ij} + \alpha_2 \ln \Pi_{ijt} + \alpha_3 \ln Y_{jt} + \alpha_4 \ln Y_{it} + \alpha_5 \ln D_{ij} + \alpha_6 K_{ijt} + \nu + \nu_i + \nu_j + \nu_t + u_{ijt}, \quad (8)$$

where $\nu \equiv \ln M_0^{1-\sigma}$, $\nu_t \equiv g_t^A t$, $u_{ijt} = \ln \left(\epsilon_{ijt}^{\sigma-1} \varepsilon_{ijt}^{\sigma-1} \right)$. $\alpha_1 \equiv (1-\sigma)\beta_1, \alpha_2 \equiv (\sigma - 1)\beta_2, \alpha_5 \equiv (1-\sigma)\delta, \alpha_6 \equiv (1-\sigma)$.

We proxy $\bar{\alpha} A_{ijt} = \alpha_1 \ln \bar{\pi}_{ij} + \alpha_2 \ln \Pi_{ijt}$, where A_{ijt} is the adjusted ESC score. When we run this regression (our specifications S1 or S3 in later tables), the estimate $\widehat{\bar{\alpha}}$ reports the *total* effect of cultural proximity on bilateral trade flows, combining thee the cost and the bilateral affinity channels. However, including country-pair specific fixed effects $\nu_{ij} \equiv \alpha_1 \ln \bar{\pi}_{ij}$ (in specifications S2 and S4) allows proper identification of the bilateral affinity effect α_2. More generally, the fixed effects ν_{ij} control for all time-invariant characteristics of country pairs, making any conventional measures of cultural and geographical distance redundant. The time fixed effects take care of common time movements in bilateral trade volumes, such as the world-wide business cycle. The effects of GDP Y_{it} and Y_{jt}, trade policy K_{ijt} and our *time-variant* measure of cultural proximity A_{ijt} are then solely identified by their time variation.[13]

$$\ln X_{ijt} = \alpha_2 A_{ijt} + \alpha_3 \ln Y_{jt} + \alpha_4 \ln Y_{it} + \alpha_6 K_{ijt} + \nu + \nu_i + \nu_j + \nu_{ij} + \nu_t + u_{ijt} \quad (9)$$

Our estimate of the cost effect follows straightforwardly by computing $\widehat{\alpha}_1 =$

[13] See Baltagi et al. (2003) for an example of a gravity equation that includes country-pair fixed effects.

$\widehat{\widehat{\alpha}} - \widehat{\alpha}_2$. Note that the dependent variable in our regressions are either the natural logarithm of exports or imports, where the latter specification offers a natural way to check the validity of our instrumentation strategy, see below.

The variable K_{ijt} will be proxied by a vector that contains information about regional and free trade areas, including the European Union (EU), the European Free Trade Area (EFTA) and all bilateral trade agreements that involve those entities and other countries. Since our sample includes only European countries, this procedure seems appropriate. [14]

Before interpreting the results, the specified model raises several econometric issues. The quality-adjusted ESC score is derived using the estimated errors of the ESC equation (7). Sampling errors carried over from the first-stage regressions could lead to a slight over-estimation of the standard error of the estimated coefficient in the second-stage regression. We thus use bootstrap technique to estimate standard errors. Finally, we use the Huber-White method to correct for heteroscedasticity. Since the data are pooled over years, we also correct for serially correlated responses from pair of countries (Wooldridge, 2002). [15]

4 Results

4.1 The impact of cultural proximity on trade

Our first goal is assess the importance of cultural similarity on bilateral trade. We thus estimate a first model taking into account all measures of cultural proximity. Since most variable are time constant, we run a set of OLS regressions and account for within-dyad serial correlation of error terms and report

[14] For example, the pre-accession treaties with East-European countries and Turkey, and the special arrangements of the European Economic Association that establish free trade between EFTA and EU, are accounted for in that vector.

[15] We have experimented with the unadjusted ESC scores with the conclusion that our key findings do not depend on quality adjustment. However, quality adjustment does lead to somewhat more precise estimates.

adequately adjusted standard errors.

The estimated coefficients of first model are presented in Table 4. We report four different specifications (S1) to (S4) including the adjusted ESC score in the second and fourth specification. The first and the second specification deal with the impact of cultural proximity on bilateral exports while the second and the fourth deal with their impact on bilateral imports.

In all specifications, we add the logarithm of bilateral geographical distance, the logarithm of each countries' GDPs. We also control for the stance of trade policy by adding two regional dummy variables. the first one takes the value of one if the two trade partners are members of European Union (EU) and zero otherwise. The second one takes the value of one if the two partners are members of the European Free Trade Area (EFTA) and zero otherwise. We apply a comprehensive sets of exporter and importer dummy variables to control unobserved economic variables, and a set of time dummy variables to control for global business cycle.

Apart from the religion proximity, the measure of cultural proximity are always statistically significant and of the expected signs. They have quantitatively substantial effects, both in absolute terms and also relative to the effect of geographical distance. We use the sample standard deviations of the variables to quantify their impact on bilateral trade flows.

Table 4 shows that a one standard deviation increase in the adjusted ESC score leads to 4.96 percent higher exports (0.0470×1.055) and to 3.17 percent higher imports (0.0300×1.055) . Increasing linguistic proximity by one standard deviation leads to 25.28 percent higher exports (0.813×0.311) and to 22.70 percent higher imports (0.730×0.311) [16] . Common legal origins boosts exports by 10.01 percent (0.262×0.385) and imports by 9.51 percent (0.247×0.385).To compare this with the effect of geographical distance, note that a one stan-

[16] Due to data availability, with linguistic proximity, the country sample is relatively small.

Table 4
Cultural proximity and trade

Variable	**Exports** ($\ln X_{ijt}$)		**Imports** ($\ln X_{jit}$)	
	(S1)	(S2)	(S3)	(S4)
Distance	-0.459***	-0.460***	-0.475***	-0.476***
	(0.11)	(0.13)	(0.11)	(0.13)
Domestic GDP	0.781***	0.790***	0.595***	0.601***
	(0.11)	(0.12)	(0.10)	(0.11)
Partner's GDP	0.674***	0.669***	0.743***	0.740***
	(0.11)	(0.11)	(0.12)	(0.12)
EU Dummy	0.259***	0.254***	0.237***	0.234***
	(0.067)	(0.066)	(0.063)	(0.064)
EFTA Dummmy	0.326**	0.329**	0.287**	0.289*
	(0.13)	(0.14)	(0.13)	(0.15)
FTA with EU	-0.234	-0.230	-0.219	-0.217
	(0.23)	(0.25)	(0.21)	(0.26)
FTA with EFTA	0.144	0.166	0.379	0.393
	(0.31)	(0.24)	(0.45)	(0.45)
Linguistic Proximity	0.828***	0.813***	0.740***	0.730***
	(0.24)	(0.27)	(0.23)	(0.28)
Religious Proximity	0.0567	0.0650	0.108	0.113
	(0.21)	(0.25)	(0.21)	(0.25)
Common Legal Origin	0.262**	0.262**	0.247**	0.247**
	(0.10)	(0.12)	(0.098)	(0.12)
Adjusted ESC score (A_{ijt})		0.0470***		0.0300***
		(0.011)		(0.011)
Exporters Dummies	Yes	Yes	Yes	Yes
Importers Dummies	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes
Observations	3462	3462	3462	3462
R-squared	94.00	94.00	94.00	94.00
Number of Clusters	176	176	176	176
Bootstrap Replications		1000		1000

Robust standard errors into parentheses. Bootstrapped standard errors in (S2) and (S4).
Standard errors have been adjusted for clustering within country pairs.
*** denotes statistical significance at one percent level
** denotes statistical significance at five percent level.
* denotes statistical significance at ten percent level.

dard deviation decrease in *geographical* distance (starting from the average distance) leads to an increase in exports by 4.05 percent $(0.460 \times 0.641/7.288)$ and to a boost in imports by 4.19 percent $(0.476 \times 0.641/7.288)$.

4.2 Disentangling the trade costs and preferences effects

We are now ready to exploit the two major advantages of the adjusted ESC score variable, namely its time dimension and its asymmetry. Cultural proximity of country i relative to country j, Π_{ijt}, has a constant and a time varying component so that we may write it as $\bar{\Pi}_{ij}\tilde{\Pi}_{ijt}$. We make the following identifying assumption: only the time invariant component of Π_{ijt}, i.e. $\bar{\Pi}_{ijt}$, is relevant for the effect of cultural proximity on trade costs and hence trade volumes, while both the time variant and the time invariant part matter for trade through the impact preferences. When we dummy out the time invariant part $\bar{\Pi}_{ij}$, any remaining effect of cultural proximity on trade volumes must be through preferences. The time variant dimension of the ESC score therefore allows us to neatly identify the preferences effect.

The asymmetric nature of the ESC data, in turn, allows to check whether our identification strategy is sensible or not. If we assume that $corr\left(\bar{\Pi}_{ij}, \bar{\Pi}_{ji}\right) > corr\left(\tilde{\Pi}_{ijt}, \tilde{\Pi}_{jit}\right)$, we would expect that a significant preferences effect on exports X_{jit} need not be associated with a significant preferences effect on imports X_{ijt}. In the extreme case, where the time invariant part of cultural proximity is symmetric and therefore perfectly correlated $\left(\bar{\Pi}_{ij} = \bar{\Pi}_{ji}\right)$, the ESC score should matter for imports and exports alike through the costs channel. However, if $corr\left(\tilde{\Pi}_{ijt}, \tilde{\Pi}_{jit}\right)$ is sufficiently low, $\tilde{\Pi}_{ijt}$ matters only for X_{jit} through the preferences effect, but not for X_{ijt}. That is, exports and imports are affected asymmetrically.

Table 5 represents the estimates associated to the strategy discussed above. Specifications (S1) and (S3) report the results of a regression of logarithm of exports and imports respectively on the adjusted ESC score, domestic and partner's GDP, trade policy indicators, exporter-country and importer-country dummies, as well as time dummies. In specifications (S2) and (S4), we add dyadic-specific dummy variables. These dummies take care of all time-

Table 5
Disentangling the cost and affinity channels. Introducing dyad-specific fixed effects.

Variable	**Exports** (ln X_{ijt})		**Imports** (ln X_{jit})	
	(S1)	(S2)	(S3)	(S4)
Adjusted ESC score (A_{ijt})	0.0510***	0.0217***	0.0466***	0.0121*
	(0.012)	(0.007)	(0.012)	(0.0071)
Distance	-1.180***		-1.083***	
	(0.080)		(0.080)	
Domestic GDP	0.438***	0.604***	0.527***	0.741***
	(0.083)	(0.071)	(0.087)	(0.068)
Partner's GDP	0.562***	0.696***	0.380***	0.477***
	(0.078)	(0.062)	(0.083)	(0.073)
EU Dummy	0.0163	0.246***	-0.005	0.227***
	(0.080)	(0.049)	(0.080)	(0.052)
EFTA Dummy	0.445***	0.169***	0.406***	0.146*
	(0.12)	(0.051)	(0.10)	(0.066)
FTA with EU	-0.262**	-0.122**	-0.200*	-0.0893*
	(0.11)	(0.050)	(0.11)	(0.051)
FTA with EFTA	-0.745***	-0.435***	-0.417**	-0.141
	(0.23)	(0.12)	(0.18)	(0.17)
Exporters Dummies	Yes	Yes	Yes	Yes
Importers Dummies	Yes	Yes	Yes	Yes
Dyadic Dummies	No	**Yes**	No	**Yes**
Time Dummies	Yes	Yes	Yes	Yes
Observations	9493	9493	9493	9493
R-squared	90.00	97.00	90.00	97.00
Number of Clusters	958	958	958	958
Bootstrap Replications	1000	1000	1000	1000

Bootstrapped standard errors in parentheses. Standard errors have been adjusted for clustering around the country pairs' identity.
*** denotes statistical significance at one percent level
** denotes statistical significance at five percent level.
* denotes statistical significance at ten percent level.

invariant dyad-specific determinants of bilateral trade, including the cost-relevant part of cultural proximity.

Our results can be interpreted as follows: The total effect of cultural proximity on trade as proxied by the estimate $\widehat{\widehat{\alpha}}$ on our adjusted ESC measure (columns (S1) and (S3) in Table 5) is 0.0510 in the export equation and 0.0466 in the import equation. These estimates imply that a one standard deviation increase in the adjusted ESC measure boosts exports by 5.38 percent and imports by

4.92 percent. Compared to these effects, a one standard deviation increase in the geographical distance lowers exports by 10.38 percent and imports by 9.52 percent.[17] Turning to specifications (S2) and (S4), the existence of country-pair fixed effects makes the inclusion allows the identification of the bilateral affinity effect $\hat{\alpha_2}$. Those estimates turn out 0.0217 and 0.0121 for exports and imports, respectively. This means that a one standard deviation increases in cultural proximity boosts exports by 2.29 percent and imports by 1.28 percent *through the bilateral affinity effect.* Accordingly, we find the effect of cultural proximity operating through the cost channel as $\widehat{\alpha}_1 = \widehat{\widehat{\alpha}} - \widehat{\alpha}_2 = 0.0293$, which implies that a one standard deviation increase in A_{ij} boosts exports by 3.09 percent and imports by 3.64 percent. The other coefficients, in particular those on GDP have the magnitudes and signs that are familiar from the literature.

One key observations relates to the asymmetry between exports and imports. Here it is useful to recall that the adjusted ESC score measures how close culturally the Importer country feels to the Exporter country. Exports (by the exporter country) should be affected by that variable even after controlling for the time-invariant components of cultural proximity. Imports (by the exporter country) should be affected only to the extent that the ESC scores are reciprocal. The lack of reciprocity that we have discussed above explains the findings that transpire from Table 4, namely that the adjusted ESC score boosts exports and imports in quantitatively similar fashion through through the cost channel (3.09 versus 3.64 percent, respectively), but the bilateral affinity effect is much smaller for imports (1.28 percent) than for exports (2.29), with only marginal statistical significance (the P-value in the (S2) is 0.007, while it is 0.094 in (S4). This finding lends credibility to our identification strategy.

[17] Again the sample mean has been used to compute these numbers.

4.3 Robustness checks

In this subsection, we provide two comments on endogeneity and measurement error before evaluating the robustness of our results. First, we do not push our findings as evidence that cultural proximity *causes* trade through the cost and affinity channels. Claims on causal effects are always delicate. Second, in the presence context, it is difficult to think about reverse causality. This is particularly true for the time-invariant part of cultural proximity. For example, linguistic, ethnic or religious proximity, across European countries have been shaped centuries ago through numerous military conflicts, ethnic cleansing and the redrawing of borders. While this events may have been partly caused and shaped by trade issues, this seems a remote possibility. Hence, we believe that we can plausibly treat that component of cultural proximity as exogenous to the determination of bilateral trade over 1975-2003. Besides these considerations, our empirical strategy does not require assumptions of the type $E[\nu_i, \nu_{ijt}] = 0$ or $E[\nu_j, \nu_{ijt}] = 0$ or $E[\nu_{ij}, \nu_{ijt}] = 0$. Hence, for consistent estimation of the bilateral affinity effect α_2, we need only $E\left[\Delta\nu_{ijt}, \Delta A_{ijt}\right] = 0$. We do not need that preferences are as such strictly exogenous (which is an assumption that virtually the entire theoretical and empirical trade literature makes). The weaker condition that changes in bilateral affinity are unrelated to the changes in the error term is enough. [18]

Turning to the time-variant part of cultural proximity, the above reasoning is somewhat more difficult to push. Clearly, with endogenous preferences, one could think about reverse causality running from trade to bilateral affinity. Two points arise here: First, preferences are usually taken as exogenous in

[18] One may argue that the condition $E\left[\Delta\nu_{ijt}, \Delta A_{ijt}\right] = 0$ may be violated due to habit formation. In that context, higher imports in $t-1$ would increase bilateral affinity in t. In oder to capture this, we have included interaction terms between the year and exporter/importer fixed effects (See Baltagi *et al.*, 2003). This lowers the degrees of freedom available, thus reducing the degree of precision of the estimates. However, our key results are not severely affected, neither quantitatively nor qualitatively.

most economic theory. Second, if we were willing to treat preferences as endogenous, it is difficult to think about any variable that could be related to swings in bilateral affinity and yet be uncorrelated to the error term in the trade equation. For these reasons, we do not analyze the issue of endogeneity. However, we have experimented with instrumenting the bilateral affinity variable by its lags, or differences. The F-statistic of these first stage regressions are very low. Second, ESC scores are noisy indicators of cultural proximity. Therefore, our estimates may suffer from attenuation bias due to measurement error. However, since this bias is negative, our estimates can be interpreted as lower bounds to the true effects. As long as the aim of the analysis is to reject the null of no evidence for the bilateral affinity effect, our results should hold *a fortiori* if the measurement problems could be somehow solved.

Next, we conduct two robustness checks. The first deals with the question, whether our results survive if the time dimension of the data is reduced. During short time horizons, the cost-relevant component of cultural proximity is more likely to be constant than over a longer horizon, hence, our identifying assumption is more likely to be met. We present the results in Table 6. Since there is no variation of the EFTA dummy variable from 1975 to 1985, this variable and the bilateral agreements that involves the EFTA are dropped from the regression. The same applies for the EU dummy variable and the bilateral agreements that involves the EU from 1996 to 2003.

The main results are in line with the baseline regressions of Table 5. Given market sizes and bilateral trade costs, the adjusted ESC score has a statistically significant effect on export flows in all sub-periods, with some variation in the degree of precision of the estimates and the range of the parameter estimates lying between 0.0181 and 0.0226 (Remember, the parameter estimate was 0.0217 in Table 5). The effect of the adjusted ESC scores on bilateral import flows remains positive, statistically insignificant, and up to a factor 3.2 smaller than the estimate for exports.

Table 6
Short Time Span

Variable	Exports ($\ln X_{ijt}$)			Imports ($\ln X_{jit}$)		
	(1975-1985)	(1986-1995)	(1996-2003)	(1975-1985)	(1986-1995)	(1996-2003)
Adjusted ESC score (A_{ijt})	0.0181**	0.0134*	0.0226**	0.00839	0.00420	0.0108
	(0.0089)	(0.0075)	(0.011)	(0.0073)	(0.0091)	(0.010)
Domestic GDP	0.104	0.381***	0.483***	0.345***	0.872***	0.551***
	(0.087)	(0.098)	(0.081)	(0.088)	(0.10)	(0.096)
Partner's GDP	0.226**	0.927***	0.486***	0.0570	0.124	0.395***
	(0.100)	(0.12)	(0.085)	(0.088)	(0.082)	(0.081)
EU Dummy	0.135	0.267***		0.0933	0.284***	
	(0.089)	(0.061)		(0.074)	(0.073)	
EFTA Dummy		-0.00798			-0.165***	
		(0.043)			(0.044)	
FTA with EU	0.0284	-0.108**	-0.0629	-0.190**	-0.0883	-0.0490
	(0.087)	(0.046)	(0.060)	(0.084)	(0.065)	(0.057)
FTA with EFTA		-0.0993			0.0065	
		(0.14)			(0.081)	
Exporters Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Importers Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Dyadic Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2335	3548	3610	2335	3548	3610
R-squared	99.00	99.00	98.00	99.00	99.00	98.00
Number of Clusters	362	672	873	362	672	873
Bootstrap Replications	1000	1000	1000	1000	1000	1000

Bootstrapped standard errors in parentheses. Standard errors have been adjusted for clustering around the country pairs' identity.
*** denotes statistical significance at one percent level
** denotes statistical significance at five percent level.
* denotes statistical significance at ten percent level.

We have argued above that the trade-cost relevant component of cultural proximity can be considered as roughly constant over the time. This assumption is more difficult to maintain the longer the time horizon, as over the long-run migration, etc., may well affect the relevant component of cultural proximity. The results presented in 6 indicate that our identification strategy is valid also over short time periods, so that they do not seem to be driven by variation in that component of cultural proximity that we take as trade-cost relevant.

The second robustness check concerns the change of ESC rules from a jury-based decision making process to Televoting. The first 2 columns of Table (7) are run over the time span 1998-2003, when Televoting was in force, the remaining columns use data from 1975-1997, when the decisions were taken by juries. Note that there are neither enlargement of the EU or the EFTA nor bilateral agreements that involves the EFTA over 1998 to 2003. The EU dummy variable, the EFTA dummy variable and the FTA*EFTA dummy variable remain thus constant in the televoting sample and are perfectly collinear with the exporters and importers dummy variables.

Table 7
Televoting versus Jury Decision

Variable	**Televoting**		**Jury Decision**	
	Exports	Imports	Exports	Imports
Adjusted ESC score	0.0310**	0.0136	0.0335***	0.0151**
	(0.012)	(0.011)	(0.0072)	(0.0076)
Domestic GDP	0.209***	0.378***	0.471***	0.756***
	(0.075)	(0.10)	(0.087)	(0.075)
Partner's GDP	0.205*	0.158*	0.717***	0.360***
	(0.11)	(0.089)	(0.079)	(0.084)
EU Dummy			0.287***	0.276***
			(0.050)	(0.051)
EFTA Dummy			0.113**	0.0365
			(0.055)	(0.074)
FTA with EU	-0.109*	-0.0753	-0.113	-0.126*
	(0.059)	(0.056)	(0.072)	(0.068)
FTA with EFTA			-0.327**	-0.198**
			(0.13)	(0.090)
Exporters Dummies	Yes	Yes	Yes	Yes
Importers Dummies	Yes	Yes	Yes	Yes
Dyadic Dummies	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes
Observations	2324	2324	7169	7169
R-squared	98.00	98.00	98.00	98.00
Number of Clusters	733	733	784	784
Bootstrap Replications	1000	1000	1000	1000

Bootstrapped standard errors in parentheses. Standard errors have been adjusted for clustering around the country pairs' identity.
*** denotes statistical significance at one percent level
** denotes statistical significance at five percent level.
* denotes statistical significance at ten percent level.

The results are in line with the baseline regressions of Table 5. Irrespective of the ESC rules, our measure of bilateral affinity has a positive and significant effect on bilateral exports, while it has a positive and insignificant effect on bilateral imports in the televoting sample. It is almost insignificant in the jury decision sample. These results are in line with Haan *et al.* (2005), who argue that the transition from a jury-based voting system to televoting has not triggered large changes in the way how song- or country-specific factors determine the ESC scores.

5 Conclusions

Standard measures of cultural proximity, such as common language, common religion, etc., do not allow to disentangle the channels through which bilateral trade volumes are affected: namely, trade costs and preferences. We argue that quality-adjusted Eurovision Song Contest (ESC) scores can be used as dyadic, time-variant information on European countries' cultural proximity. Since the trade-cost related component of cultural proximity is largely time-invariant, the time dimension of the ESC data allows to separately identify the preferences effect. The validity of our identification strategy can be tested by exploiting the lack of systematic reciprocity in ESC scores. While we find robust evidence for a sizable preferences effect, the impact of cultural proximity on trade runs largely through the cost effect.

Appendix

The Zero Inflated Negative Binomial (ZINB) distribution is a mixture distribution assigning a mass of p to excess-zeros and a mass of $(1-p)$ to a negative binomial distribution, where $0 \leq p \leq 1$. Note that the negative binomial distribution is a continuous mixture of Poisson distributions, which allows the Poisson mean λ to be gamma distributed. More specifically, the negative binomial distribution is given by

$$Pr(Y=y) = \frac{\Gamma(y+\tau)}{y\Gamma(\tau)} \left(\frac{\tau}{\lambda+\tau}\right)^{\tau} \left(\frac{\lambda}{\lambda+\tau}\right)^{y}, \tag{10}$$

where $\lambda = E(Y)$, τ is a shape parameter which quantifies the amount of over-dispersion. In the present context, Y is the ESC scores. The variance of Y is $\lambda + \lambda^2/2$. A negative binomial distribution approaches a Poisson distribution when τ tends to ∞ (no over-dispersion). A ZINB distribution arises as a mixture of a negative binomial and a distribution censored at zero, and is given by equation (11)

$$\begin{aligned} Pr(Y=y) =) &= p + (1-p)(1+\lambda/\tau)^{-}\tau, \quad if \quad y=0 \qquad (11) \\ &= (1-p)\frac{\Gamma(y+\tau)}{y\Gamma(\tau)}(1+\lambda/\tau)^{-}\tau(1+\tau/\lambda)-y, \quad if \quad y>0 \end{aligned}$$

The mean and variance of the ZINB distribution are $E(Y) = (1-p)$ and $var(Y) = (1-p)\lambda(1+p\lambda+\lambda=\tau)$, respectively. Observe that this distribution approaches the Zero Inflated Poisson (ZIP) and the negative binomial distribution (NB) as τ tends to ∞ and p tends to zero, respectively. We use a Likelihood Ratio test and find that the ZINB is preferable to the ZIP. The Vuong test clearly reject the NB model.

Finally, we use the Huber-White method to correct for heteroscedasticity. Since the data are pooled over years, we also correct for serially correlated responses from pair of countries (Wooldridge, 2002).

The first set of coefficients reported in Table 8 is related to the negative

Table 8
Adjusting the ESC scores

Variable Name	Negative Binomial Part	Zero Inflated Part	% change Inflated Part	% change Zero-Inflated Part
Google Counts	0.110***	-0.456***	11.7	-36.6
	(0.011)	(0.035)		
Internet	0.000	0.000**	-0.0	-0.0
	(0.000)	(0.000)		
GDP	0.012	-0.126***	1.2	-11.8
	(0.014)	(0.031)		
Population	-0.006	0.068*	-0.6	7.0
	(0.017)	(0.041)		
Cyrillic alphabet	0.047	-0.383***	4.8	-31.8
	(0.045)	(0.098)		
Song in English	0.098***	-1.076***	10.3	-65.9
	(0.027)	(0.089)		
Song in multiple languages	-0.025	-1.176***	-2.4	-69.2
	(0.066)	(0.159)		
Song in own language	-0.115**	-0.430***	-10.9	-34.9
	(0.048)	(0.107)		
Song in language of grader country	0.087**	-0.226***	9.1	-20.2
	(0.051)	(0.136)		
Repeated performance of singer	0.071***	-0.139***	7.4	-13.0
	(0.026)	(0.069)		
Time dummy	YES	YES		
Trend	YES	YES		
Number of obs.	10582			
Nonzero obs.	5195			
Zero obs.	5387			
LR test (ZIP vs. ZINB)	1522.20***			
Vuong test (ZINB vs. NB)	z=30.55***			
McFadden's Adj R2:	0.021			
Maximum Likelihood R2:	0.092			

Robust standard errors into parentheses. Standard errors have been adjusted for clustering around the country pairs' identity.
*** denotes statistical significance at one percent level
** denotes statistical significance at five percent level.
* denotes statistical significance at ten percent level.

binomial part of the equation predicting that the points are from the "Not Always Zero" group. These show that the Google counts, a song in English language or in the language of the grader country, or the repeated performance of singer increases the number of points that a country gives to a partner while a song in its own language decreases it. The second set of coefficients is related to the zero-inflated part of the equation predicting that the points are from the "Always Zero" group. These can be interpreted as logit coefficients. They predict zeros, so that their sign will usually be the opposite to that of the former coefficients.

The two-last columns present the percentage change of the ESC-Score with respect to a change in the song specific variables. A one percent increase in "*Google count*" increases the ESC score by 11.7%. A song written in English increases it by 10% while a song written in its own language reduces the score by 10.9%.

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